



1. INTRODUCTION.

1.1 THE LIFELONG LEARNING PROGRAMME AND PREVIOUS PROGRAMME.

1.1.1 PREVIOUS PROGRAMMES.

THE PREVIOUS LEONARDO DA VINCI PROGRAMME

It is a Community programme created in 1994 to support the vocational training strategies by funding projects carried out by transnational associations, with the aim of promoting innovation, improving the quality and fostering the European dimension of all types of vocational training.

The previous Leonardo da Vinci projects were projects financed by the EU with the aim of elaborating new innovative training materials in the Vocational Training scope.

The **strategic priorities** of this programme were:

1. Development of the European labour market.
2. Transformation, modernisation and adaptation of the European education and training systems.

It **specific aims** were:

1. To support the participants in continuing vocational training activities for the acquisition and use of skills, qualifications and competences.
2. To support quality and innovation improvements within the systems, institutions and vocational education and training practices.
3. To enhance the attractiveness of the vocational training and mobility opportunities for the enterprises and individuals, and to facilitate the mobility of the workers under training processes.

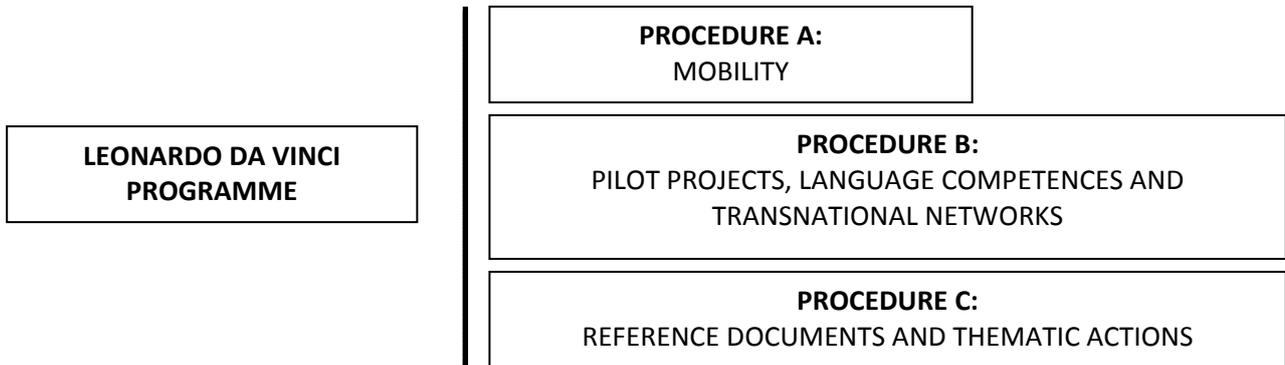
Procedures of the programme:

Before, the programme included 3 different procedures:





- A: Mobility.
- B: Pilot projects, language skills and transnational networks.
- C: Thematic actions and reference documents projects.





1.1.2 CURRENT PROGRAMME.

THE LIFELONG LEARNING PROGRAMME (LLP)

The European Commission has integrated its multiple training and education initiatives within a single programme. The Lifelong Learning Programme (LLP) supports learning opportunities from childhood to old age.

It has a budget of € 7000 millions for the period 2007-2013, and is the successor to the Socrates, Leonardo da Vinci and e-Learning programmes, which finished in 2006.

The programme is built on:

- 4 sectoral sub-programmes,
- 4 transversal programmes,
- the Jean Monnet programme.

SECTORAL SUB-PROGRAMMES

The **four sub-programmes** focus on different stages of education and training:

- **The Comenius sub-programme** meets the training and learning requirements of all the participants in pre-school and school education up to the level of the end of upper secondary education, as well as the needs of the institutions and organisations offering this kind of training.
- **The Erasmus sub-programme** meets the training and learning requirements of all the participants in higher education (including transnational student placements in enterprises), as well as the needs of the institutions and organisations offering or supporting this kind of training.
- **The Leonardo da Vinci sub-programme** meets the training and learning requirements of all the participants in vocational education and training, as well as the needs of the institutions and organisations offering or supporting this kind of training.
- **The Grundtvig sub-programme** meets the training and learning requirements of all the participants in the field of adult education, as well as the needs of the institutions and organisations offering or supporting this kind of training.





THE LEONARDO DA VINCI SUB-PROGRAMME

The new Leonardo da Vinci projects are projects currently developed in the framework of the Lifelong Learning Programme of the EU, and they intend to disseminate the products and materials created within the best projects previously developed. The sub-programme is addressed to meet the training and learning needs of the people involved in the vocational training and education field, as well as the needs of the institutions and organisations offering or supporting this kind of training.

There is a large rank of actions managed by the Executive Agency or by the different National Agencies:

- Multilateral projects for development of Innovation (Executive Agency)
- Multilateral Networks (Executive Agency)
- Accompanying measures (Executive Agency)
- Multilateral projects for transfer of Innovation (National Agencies)
- Associations (National Agencies)
- Preparatory Visits (National Agencies)
- Mobility actions (National Agencies)

MULTILATERAL PROJECTS FOR TRANSFER OF INNOVATION

The transfer of innovation projects intend to identify one or several solutions and innovative ideas to adapt them to be implemented in other countries or for other target groups. These projects intend to develop and achieve a specific product, unlike the associations, which intend to exchange good practices and methodologies between partners.

The transfer process of the innovative training contents include:

- Identification and analysis of the target group requirements.
- Selection and analysis of the innovative contents that may meet those requirements and analysis of the transfer feasibility.
- Integration of those contents in the training and educational systems and practices at national, regional and/or sectoral level.

This implies:

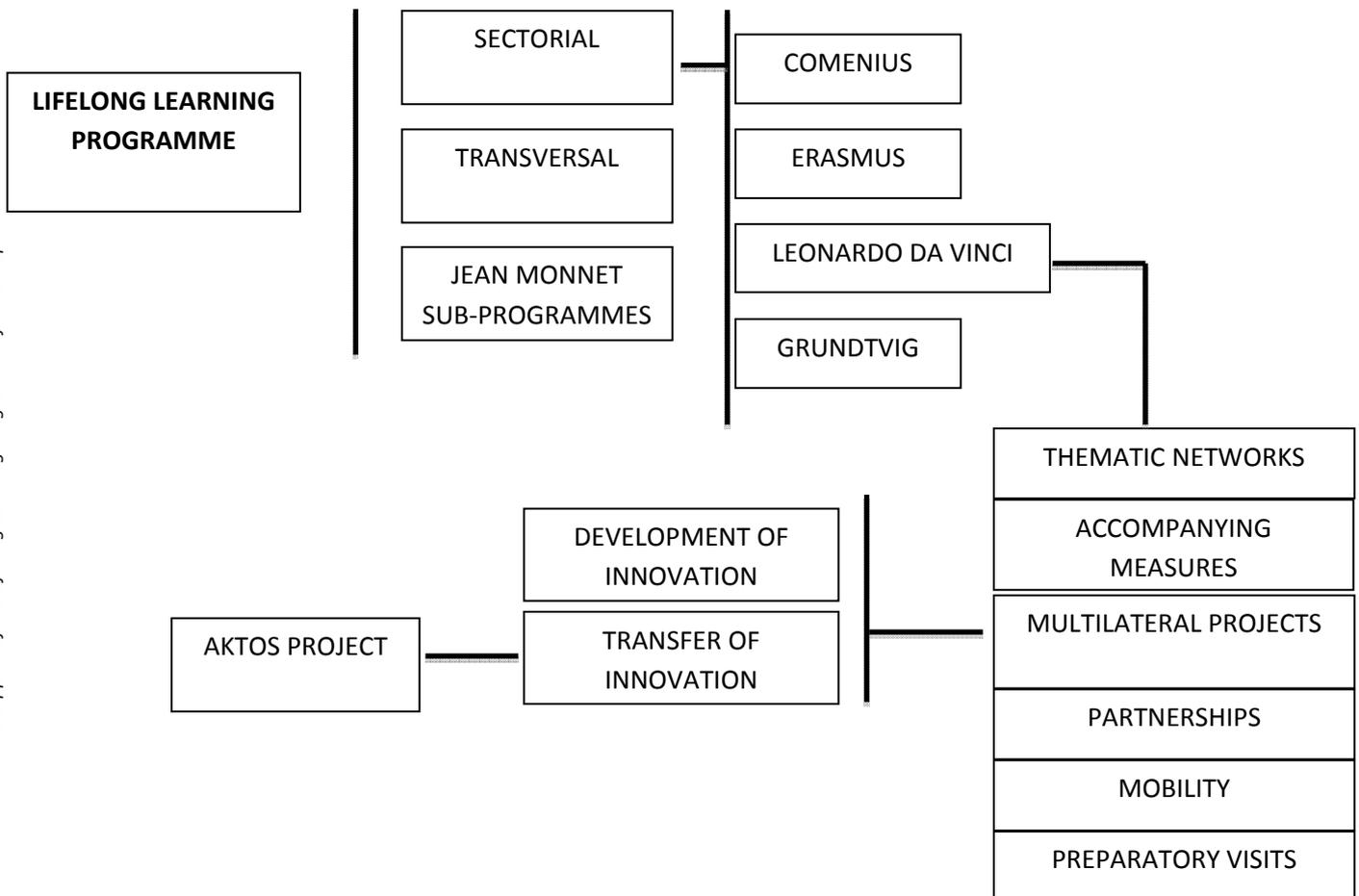
- Adaptation of the previous results to the training systems, cultures, needs and requirements of the target groups (updating the product, etc.).





- Transfer of the products to new socio-cultural and linguistic contexts.
- Use of the products in new sectors or by new target groups, including the organisation of pilot actions in public or private training institutions.

With the support of the Lifelong Learning Programme of the European Union





1.2. AKTOS PROJECT: TRANSFER AND DISSEMINATION OF GOOD PRACTICES MODELS FOR PROFESSIONAL TRAINING IN THE RURAL AREAS.

AKTOS Project: Transfer and dissemination of good practices models for professional training in the rural areas, is a Leonardo da Vinci - Transfer for Innovation Project, developed within the framework of the Lifelong Learning Programme and with a total lifetime of 18 months.

It intends to transfer the results of a previous project that was developed as Thematic Network within the previous Leonardo da Vinci Programme: “**FONTES project: Thematic network to validate and disseminate good practises and quality models of vocational training in rural areas**”, that was approved in 2005.

Within FONTES project, the valorisation of specific training itineraries through the development of different tools was proposed: European Observatory, Information and Learning Resources Centre, Tele-training Platform, Website of the project, dissemination material and Good Practice Guide.

The main result of the FONTES project that has been transferred within the AKTOS project, is the Good Practises Guide, that intends to inform the users and target groups, about the employment possibilities generated by the different endogenous resources of the rural areas, which in many cases are not yet properly exploited.





AIMS AND RESULTS

The **specific aims** of the project have been:

- To carry out the transfer of a tool that integrates innovative contents and results; that tool has been the Good Practice Guide of the FONTES Project.
- To transfer these materials to rural communities in need of a specific training related to the exploitation of the endogenous resources.
- To adapt the contents to the needs and requirements of the different target groups: rural women, non qualified-young people, disadvantaged groups, people with disabilities, social agents of the field and educational authorities.
- To carry out the transfer action to new socio-cultural and linguistic contexts.
- To promote the participation of companies, sectoral organisations and social partners related to the vocational training and employment fields.
- To promote equal opportunities in the action areas of the project.

The following **Results** have been achieved:

- Edition of an **Interactive Good Practice Guide**, available in English and in all the languages of the partners participating in the project.

This guide contains the main steps to be followed to achieve the transformation, modernisation and adaptation of the innovative and quality European vocational training systems. It intends to promote the recognition of the new professions related to the New Employment Resources.

- **Information and dissemination Website** (<http://aktos.org>), which main aim is to disseminate the information about different aspects of the project, its characteristics, its working, the activities carried out, the achievements obtained, ... and to transfer the results to other possible users. This information has been updated during the whole project lifetime, with the collaboration of all the partners.

This website is available in the languages of the participating partners and also in English.

- **Dissemination and training actions and edition of the dissemination material** of the project. The following has been carried out:

- A bilingual **informative brochure**, developed in each of the languages of the partners and in English. This brochure offers general information about the project, its objectives, the foreseen results, the target groups, the





transnational association, as well as about the Lifelong Learning Programme, the Leonardo da Vinci Programme and the Transfer of Innovation Multilateral projects.

- Four **digital informative panels**, where the progress of the project has been reflected, as well as some examples of Good Practices. These panels are available in the website of the project in all the languages of the partners and in English.
- **Dissemination and testing actions** carried out by the partners for the dissemination of the project and the testing of the transferred training materials. The topics for each course have been selected among the ones included in the FONTES project, according to the requirements of every partner action area and to the requirements of their target groups.
- **Collaboration agreements**, signed by different authorities, agents and companies related to the project thematic and/or that have been willing to collaborate in the project activities. These agreements have been achieved by each of the partners in their action areas.





1.3. EUROPEAN DIMENSION OF THE PROJECT. THE TRANSNATIONAL PARTNERSHIP.

The transnational cooperation has been the main pillar over which the project has been built. Otherwise it would lose all its meaning. **The Transnational Partnership of the AKTOS** project involves several different agents and has been formed by 6 partners from 5 different countries (Spain, Slovenia, Latvia, Bulgaria and Sweden). The partnership was created to address the need for a wide cooperation framework that meets the expectations and the needs of the project and of the target collectives. Such framework collects the experience of the different partners, a valuable contribution to the project.

The cooperation has been based on several common characteristics of the partners and also on the functioning of the network, which allows all partners to participate in the decision taking process and in the development of the network, as well as to enrich it with their contributions.

Partners have been also involved in the management and assessment of the project. They have contributed to its validation and to the adaptation of the contents and aims to the real needs of the regions where the project has been implemented.

A **Transnational Control Group** was created within the partnership. It included a representative of each of the partners. Their task was to carry out the follow up and assessment of project activities: objectives achieved, progress made, efficiency of the activities, quality of the products, etc.

Apart from regular cooperation throughout the project, the partners met in several transnational work sessions. In these meetings, they discussed different issues concerning the development of the project, the schedule, initiatives, duties in each activity, general progress or continuous assessment, in order to achieve the objectives put forward.

In all cases, a considerable informative effort has been made, in order to provide comprehensive information on activities and results to all partners at all times.





2. TOOLS DEvised BY THE PROJECTS FONTES AND AKTOS.

2.1. TOOLS DEvised BY THE FONTES PROJECT.

The main tools devised by the Project, besides other activities and products were:

- **The European Observatory**, that was an analysis tool that evaluated the interest, demand and implementation feasibility of specific training itineraries in specific media and for specific target groups, through the so-called **Analysis FONTES**.
- **The Information and Learning Resources Centre (ILRC)**, that worked as a virtual centre of information and learning resources and its main function was to be a reference informative site of the Thematic Network FONTES.
- The **Tele-training Platform Model**, that intended to be a useful guide for all those entities and organisations interested in offering educational and training services by using the new information and communication technologies.
- **The Good Practice Guide**, that includes a summary of the work carried out within the framework of the FONTES project, as well as some useful information about the New Employment Resources and the new emerging professions that may constitute a labour opportunity in the rural areas.
- **The Website of the project**, that was built according to some important requirements to fulfil: to disseminate the project, to facilitate the contact between different collectives, and to be a place to make easier the work between the partners.





2.2. TOOLS DEvised BY THE AKTOS PROJECT.

Within the AKTOS PROJECT, as we have already mentioned in the previous section, different activities have been carried out and different products have been obtained.

Among those products, the main tools created have been the following ones:

- **The Interactive Good Practice Guide**, that as result of the adaptation of the transferred material, intends to be a useful tool for the transformation, modernisation and adaptation of the innovative and quality European vocational training systems.

The Guide is available in digital format, in the different languages of the partners and in English. It is structured as follows:

1. Introduction
2. Tools devised by the projects FONTES and AKTOS
3. The New Sources of Employment (NSE)
4. Examples of comprehensive rural development plans
5. References

- **The Website of the project**, <http://aktos.org>, is available in the languages of the partners and in English. The website has been created with the aim of disseminating the project and also to make the contact between the different target groups easier.

The website includes different sections:

- **AKTOS project**, where some information about the project and about the sub-programme Leonardo da Vinci is given. The different parts in which this section is divided are: description, objectives, target groups, partnership and transnational sessions.
- **Project results**, where the main results obtained during the development of the project are shown. The different parts in which this section is divided are: brochure, collaboration agreements, informative panels, Interactive Good Practice Guide and testing actions.
- **Dissemination actions** carried out within the project. The dissemination and publicity actions, in their different versions, constitute a very important part of the project. The different parts in which this section is divided are: internet dissemination, press dissemination and informative and awareness actions.





- Interesting **links**, where different European links and links of the countries involved in the project can be found. These links are related to the main topics tackled by the project.
- **Photo gallery**, where different pictures about the work developed by the different partners during the project can be found. The different parts in which this section is divided are: transnational sessions, informative and awareness actions and testing actions.

This is a very active website, in which all the partners have collaborated for its updating and maintenance during the whole project.





3. THE NEW SOURCES OF EMPLOYMENT (NSE).

3.1. WHAT ARE THE NEW SOURCES OF EMPLOYMENT?

This term makes reference to new professional activities (either potential or emerging) that meet the new social needs and that are liable to become part of an ever-growing labour market.

These new professional activities must meet these four characteristics:

- Comply with social needs.
- Become part of incomplete or defective labour markets.
- Have a well-defined local context for the products or the services rendered.
- Have a high employment creation potential.





3.2. ORIGINS AND DEVELOPMENT OF THE NEW SOURCES OF EMPLOYMENT.

The deep changes that have taken place in Western countries in demographic, social and economic terms, have brought along new employment opportunities. The ageing of population, the transformation of family structures, the new industrial revolution and the globally interdependent markets, have to a great extent contributed to create new needs that have in their turn generated new employments and services that had been either inexistent or scarcely developed.

One of the greatest challenges of modern societies is creating the employment society is demanding. This is no easy task; it requires a great effort consisting on searching, spotting and experimenting in the new areas liable to generate employment at local and regional level.

All in all, we need to develop new activities that satisfy the new social needs. These new activities should be assigned a wage group and should also be labelled and thoroughly described in order to become a new profession connected to a New Source of Employment.

Daily-use services, services improving our quality of life, cultural and leisure services and environmental protection are the **four main pillars** of the so-called **New Sources of Employment**, as classified by the former President of the European Commission Jacques Delors in the White Paper *“Growth, competitiveness and employment entitled: The challenges and ways forward into the 21st century”*.

The aim of this action called New Sources of Employment is to promote local strategies liable to create employment. The practical implementation of these New Sources of Employment will be adapted to local characteristics and real needs in order to be effective in each territory.

The European Employment Strategy, in structural and market terms, requires an investment effort to increase Human Resources, especially as VET is concerned. Employment creation requires more flexible organisations and more effective labour market policies, the promotion of local and regional initiatives and the reduction of staff costs which are not related to wages.

Specific efforts should be made for the inclusion of young people in the labour market and to fight long-term unemployment as well as to achieve Equal Opportunities for men and women in the labour market.





An efficient implementation of the strategy requires the involvement of stakeholders at all levels, including Governments, regional and local authorities and social partners.

Employment creation associated to economic growth and competitiveness are based in three main pillars, as mentioned in the White Paper:

- The promotion of local initiatives that comply with the needs of individuals and enterprises;
- A greater involvement of enterprises, traditionally only involved in economic issues, in the search for new employment creation methods. Such commitment would turn enterprises into actual local development agents;
- The reduction of the indirect costs of labour would reduce the costs of unqualified work, which would contribute to the inclusion of unskilled unemployed people.

The New Sources of Employment do not comprise all new professions as a whole, only those connected with the new needs in a given territory.

The main elements that cause such needs are the following:

- a) The social and demographic changes** of the last decades and technological development as a whole, increase social needs.
- b) The ageing of population and the transformation of family structures bring about needs of a social and demographical nature.**
- c) The inclusion of women in the labour market.** The inclusion of women in the labour market brings about the need for new services derived from their absence from home.
- d) Technological developments** imply very important changes in our daily lives and in our homes in connection with time use.
- e) The ever-increasing urbanization of the territory.**
- f) The increase of the educational level and social willingness to move forward.**

We must emphasise that the New Sources of Employment are more than a set of actions for employment creation; they also boost competitiveness, economy and the social welfare.

We aim to create the necessary conditions, thanks to the **New Sources of Employment** (new professions), for rural areas to achieve sustainable development in the next decade, by increasing employment rates using endogenous resources and promoting the diversification of the local production structures.





3.3. TRAINING CONNECTED WITH THE NEW EMERGING PROFESSIONS.

TRAINING NEEDS

A need is the gap between the way things are and the way things should be. The concept “need” has different meanings depending on one’s point of view and activity. From the point of view of training, a “need” is the expression of the difference between the desirable qualifications and competences required in order to perform a given activity and the actual qualifications and competences.

TRAINING PLAN – METHOD FOR THE ELABORATION OF A CURRICULAR DESIGN

Training processes in rural areas are complex, due to the characteristics of rural areas and rural population.

Apart from the formal training offer available in each country, there are not many more options in order to get qualifications in a specific sector in rural areas.

The existing training needs are very varied, and in some cases it is difficult to find a homogeneous group of people with the same interest and liable to be trained.

Therefore, attention should be paid to the needs of the population addressed, rather than training itself, and to the ability of such target group to solve the problems caused by their needs.

At this point, we must be aware of the fact that the approach of LEONARDO DA VINCI sub-programme allows for new methods to be used, in order to reach people and to achieve the results sought by the training process, while promoting the interest of the target population.

We suggest an open training plan as training model for the new emerging professions, and a curricular design devised by FONTES Thematic Network, during the previous FONTES project.

The Training Plan and the Curricular Design suggested are structured in several stages, as described below:





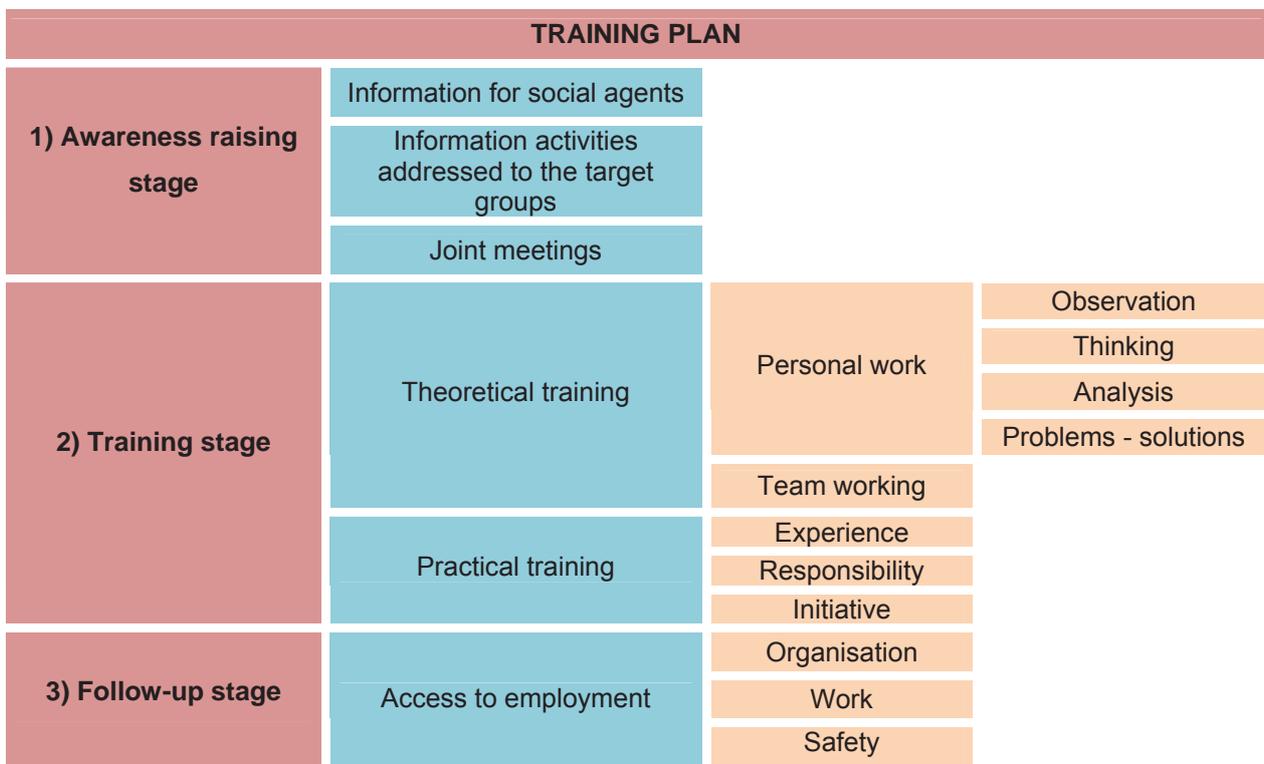
A) THE TRAINING PLAN

The aim of the Training Plan for the new professional profiles connected with emerging professions consists of training a versatile technical staff that meets the following requirements:

- They must be able to carry out the tasks assigned in a sensible way.
- They must have personality and professional maturity enabling them to become involved in a lifelong training process.
- They must be acquainted with the resources of the area in which they work.
- They must be committed with local development.
- They must be ready to face present and future challenges with initiative and creativity.

The Training Plan is structured in three phases:

- Awareness raising stage.
- Training Stage.
- Follow-up Stage.





AWARENESS RAISING STAGE

The awareness raising stage has two aims:

- To involve social partners in the training initiative, in order to ensure permanent adaptation to actual needs,
- and to encourage and promote the employment of the target group, for them to be able to adapt to the working method used and to have initiative and be resourceful.

The activities suggested for this stage are:

- 1) Meetings between those in charge of the training initiative and the representatives of the social partners of the sector.
- 2) Talks, discussions and seminars addressed to the target group and to professionals of the sector.
- 3) Bringing the representatives of the social partners and the representatives of the target group together.

TRAINING STAGE

1. Didactic guidelines and methodology.

The work programme used in the training stage is structured in several training modules.

Each module presents students a new approach to the topic being addressed, and gives them the chance to compare that approach with the one currently used in the sector.

The Programme intends to teach a series of interesting techniques, but also to illustrate the problems of the sector, make students think about them and, above all, give them the necessary qualifications to provide solutions to those problems. It also encourages team working and a positive attitude towards joint work and associations, both in order to defend the product and to diversify the offer.

The programme suggested consists of theoretical and practical lessons, depending on the modules. This approach is very participative, and encourages thinking.

Theoretical lessons will include different types of activities aimed to encourage the intellectual development of students, and their team working skills, as team working is becoming more and more important in rural areas.





Thus, the role of the teacher will be complemented with some personal work and some group activities.

The theoretical lessons may be accompanied with slide shows and documentaries.

It is also possible to invite someone qualified who may provide new points of view and experience in the subject, so as to enrich training contents and contribute with new practical solutions to specific problems. These activities bring the training initiative closer to reality.

Practical activities will be carried out, whenever possible, in areas which are familiar for the participants. Thus, the activities will be based on real situations and will also encourage the interest and dedication of students.

Depending on the subject matter being addressing in each case, the right season must be chosen in order to carry out practical exercises.

Organisation of theoretical activities:

The general model of theoretical activities will be as follows:

Activities
1. Theoretical explanation of the teacher
2. Handing out of work questionnaire
3. Consultation of pedagogic material
4. Filling in of the questionnaire (individually)
5. Work in small groups. Drawing up conclusions
6. General conclusions of the whole group
7. Solving of secondary problems and doubts
8. Slide show or documentary, whenever necessary





General aims of theoretical activities:

This work system is intended to achieve the following goals:

As an individual
Encouraging observation and thinking
Creating links with the rest of students
Analysing problems and its effects
Detecting specific problems
Understanding what is causing the problem
Coming up with possible solutions
Improving written expression
As a group
Being able to give one's opinion in front of the class
Improving oral expression
Listening and considering other's opinions
Understanding the point of view of other students
Joint search of solutions





Team working routines:

The work system suggested includes team working as an important part of the training process. Team working will always take place after individual work on the same issues that will afterwards be dealt with by the group, so that every student can provide their own ideas.

Team working will be tackled as follows:

Activities
1. Arranging students in small groups of 4-5 people
2. Appointment of a secretary in each group, who will keep a record of all the issues agreed by the group
3. Appointment of a coordinator that will organise speaking turns and will moderate the discussions that may arise
4. Participation of all the members in each group
5. Production of a final report or a draft

After drawing general conclusions and explaining them to the students, the teacher will provide some further technical and scientific knowledge in order to complement the work done so far. The teacher will explain any aspects that are not clear or that have not been discussed upon by the groups.

2. Didactic material and resources.

The **didactic materials and resources** to be used will depend on the context and on the characteristics of the students. In this flexible approach, teachers will choose the materials and resources they deem appropriate according to their own criteria. We must bear in mind that materials and resources are intended to help training, and they are expected to contribute to the training process.

It is advisable to develop the contents included in the design, so that they can be used as guidelines.





In addition to this, in order to develop the modular itinerary described, it is advisable to use **computers, audiovisual equipment etc.**

The classrooms used must be suitable for different group arrangements, in order to ensure the effectiveness of the training activities.

Practical training will be carried out in different premises (organic farms, rural tourism enterprises...etc.) depending on the subject matter being addressed.

Collaboration agreements must be signed with these centres, for them to admit the students during these practice periods.

Apart from the material and the facilities above mentioned, the students may be asked to have a logbook in which they will:

- Write down their opinions, ideas and points of view in connection with the work performed.
- Write down their doubts.
- On their own initiative, describe their suggestions in order to solve the problems that may arise.
- Write down their personal opinions on the practice period, and highlight those aspects that have been especially useful during training, and the ones that may need improvement.

3. Assessment.

The assessment will determine the progress of students as regards the objectives of the training initiative. Thus, the process will be constantly adapted to the needs of the students.

Assessment will be a continuous process, with three relevant moments:

- **Initial assessment:** It will be used to measure the initial knowledge and skills of the students. The results will be used in the subsequent analyses. The initial assessment helps adapting the training to the characteristics and the level of the students. Initial assessment will be carried out before starting theoretical training, and at the beginning of each module.





- **Formative assessment:** Formative assessment will be a continuous process, it will be used in order to adjust the training activities to the information gathered. The progressive adjustment of the process requires systematic observation of each student, which helps detecting at what point of the learning process they find obstacles, what are the causes, and what adjustments must be made in the training process.
- **Summative assessment:** The summative assessment will take place at the end of each module. It will tell us if the students have achieved the objectives sought. The level of learning achieved will be the starting point for the next training period.

Students must feel they are the **protagonists** of the training process, and that they are the ones deciding how far are they going to get during the process. Thus, trainers will carry out awareness raising activities, in order to engage the student's interest in the subject matter. To a certain extent, the students themselves will determine the limits of their learning process.

Information gathering procedures for the assessments will be based on the systematic observation of the students, the evaluation of their personal work, their logbooks, the group activities and the questionnaires.

The involvement of the students in the assessment process will be encouraged by means of "self-assessment" and "joint-assessment" routines.

Apart from assessing the learning process of students, the training process itself will be assessed, as well as the teacher's performance, the resources used, the facilities, the scheduling of contents, assessment criteria and tools and the curricular design.

FOLLOW-UP STAGE

The follow-up stage will be based on tailored tutorials.

Tailored tutorials will be used to create links between the student and the teacher-tutor, These links are very beneficial in the professional, technical, social and personal levels, and enable the teacher to follow-up the progress of the student.

Tutorials will consist on periodical conversations between the teacher and the student, in which personal goals can be established, for the student to benefit from a more professional and tailored training, adapted to his or her personal characteristics.





In tailored tutorials the following aspects will be dealt with:

- Personal assessment of the work carried out.
- Results obtained.
- Motivations:
 - Social.
 - Technical.
 - Professional.
- Problems of the student:
 - Concerning his or her background.
 - Concerning the student himself.
- Relationship with the teachers.
- Relationships with the rest of the students.
- Other issues:
 - Organisation of work: schedules.
 - Written and oral expression.
 - Initiative of the student.

These issues will be dealt with in a personal way, in order to establish close links with the student and the teacher, based on mutual trust, which will boost the academic progress and the process of maturity of the student.

Follow-up will help students to become aware of their progress in a professional, social and human level, and of the importance of achieving the goals in order to complete their training.

On the other hand, the teacher-tutor will become aware of the circumstances of each student and will aid their progress by establishing personal goals adapted to their needs.

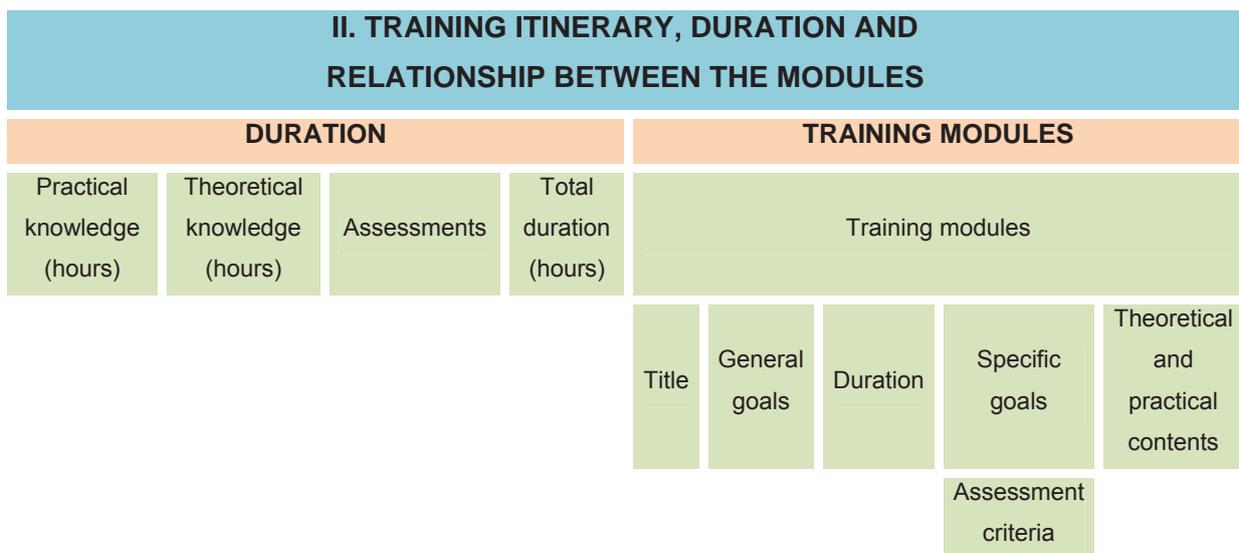
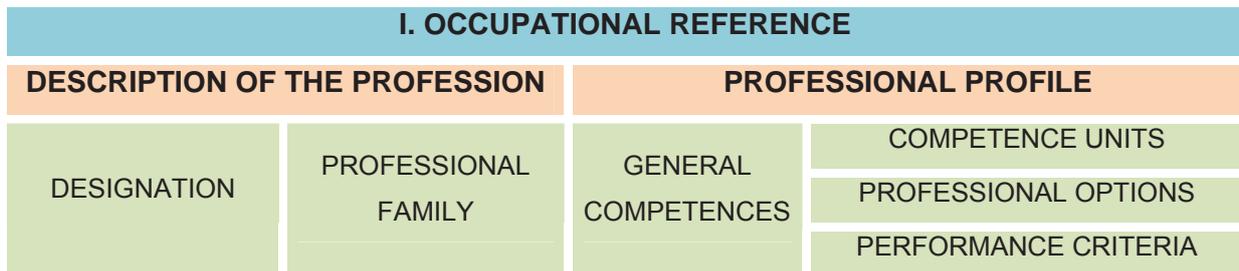
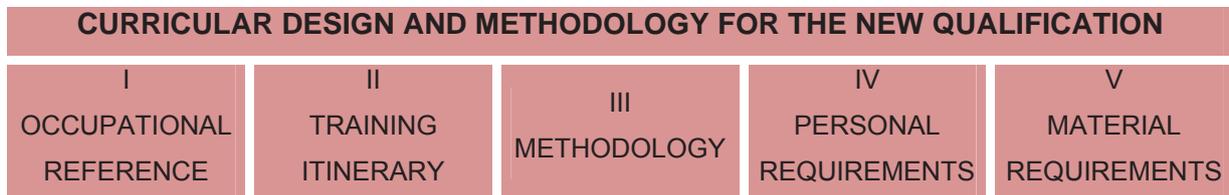




B) THE CURRICULAR DESIGN MODEL

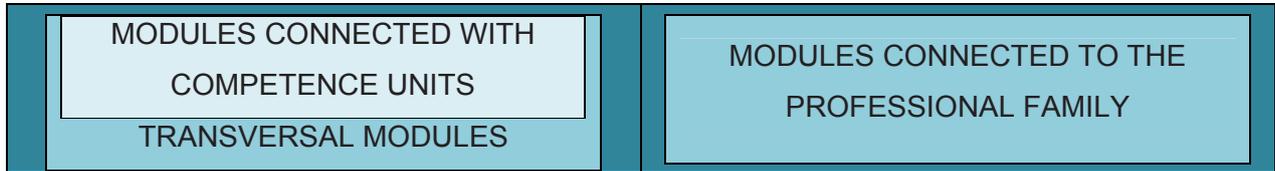
As mentioned before, training will be based on a work programme structured in several training modules. The structuring of training contents corresponds to a type of curricular design. In this curricular design model, itineraries and specific training goals are devised. The knowledge and processes required in order to achieve these training goals are identified and form a well-structured training programme.

We will now describe the curricular design model that may be used in order to devise training itineraries for the New Sources of Employment:





CLASSIFICATION OF THE MODULES



General Diagram of a Training Module:

1. Name of the module.
 - 1.1. Goals.
2. Curricular elements in the module.
 - 2.1. Target skills.
 - 2.2. Assessment criteria.
3. Programming.
 - 3.1. Training units.
 - 3.2. Curricular elements in each training unit.
4. References.
5. Assessment questionnaires.

III. METHODOLOGY

Explanations of the teacher

Team working

Workshops

Round tables with professionals

Practice periods in enterprises

Visits to enterprises

Tailored tutorials

IV. PERSONAL REQUIREMENTS

Training needs

Difficulties to enter the labour market

Professional, economic or social improvement

Technical qualification

Initiative in order to engage the own training

V. MATERIAL REQUIREMENTS

Classroom

Audiovisual elements

Library

Internet access

Relationships with enterprises of the sector





3.4 TRAINING OPPORTUNITIES.

3.4.1 STEPS THAT MUST BE FOLLOWED IN EACH COUNTRY TO INCLUDE NEW TRAINING ITINERARIES AND PROFESSIONAL PROFILES IN THE EDUCATIONAL SYSTEMS.

SPAIN

(Source: National Institute of Qualifications, INCUAL)

In Spain, the body in charge of the implementation and maintenance of the Professional Qualifications is the **National Institute of Qualifications (INCUAL)**, which is placed under the control of the Ministry of Education. This institute is responsible for defining, drawing up and updating the **National Catalogue of Professional Qualifications (CNCP)** and the corresponding **Modular Catalogue of Vocational Education and Training**.

The National Catalogue of Professional Qualifications constitutes the basis to elaborate the training offer that will lead to the consecution of Vocational Education and Training Diplomas and Certificates of Professional Standards. It is also the basis to elaborate the module training offer associated to different competence units, as well as to elaborate other training offers adapted to different target groups with special needs.

The National System for Qualifications and Vocational Educational and Training (SNCFP), established by the Organic Act 5/2002 of 19 June 2002, consists of instruments and actions which are necessary to promote and develop the integration of vocational education and training offers.

Besides, it aims at promoting and developing the assessment and accreditation of the corresponding professional competences.





The professional competence of a person is a group of skills (knowledge and capabilities), which satisfies occupations and job posts in the labour market. Each professional qualification has a general competence, which defines briefly the workers essential tasks and functions.

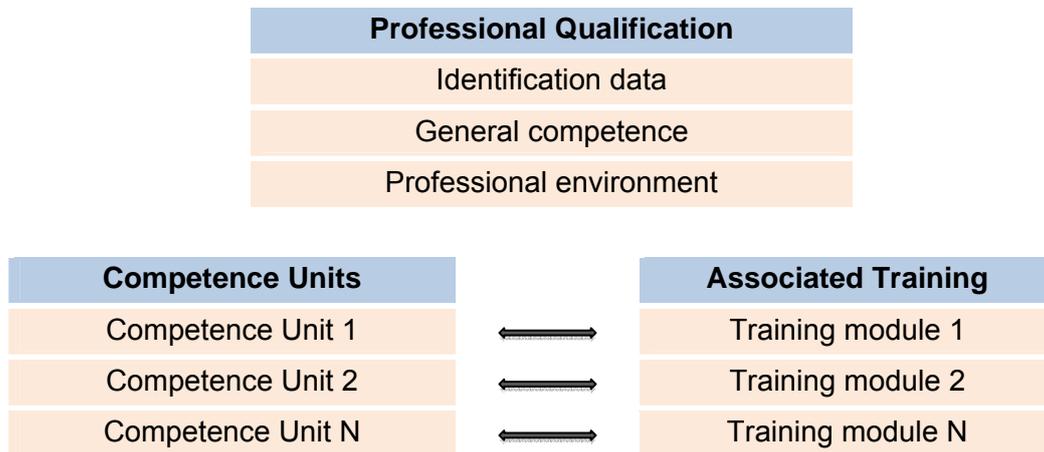
A **professional qualification** is defined as a set of professional competences significant in employment which can be acquired through vocational education and training (VET) modules or any other kind of learning structure, as well as through work experience.

Qualification Identification Data	
Official name	It is related to the main function of the qualification and is easily recognised within the sector. It does not show any professional category.
Professional family	It is the family in which the professional qualification is included.
Level	There are 5 levels available.
Alphanumeric code	It allows to distribute systematically the qualifications within the National Catalogue of Professional Qualifications (CNCP).





STRUCTURE OF A PROFESSIONAL QUALIFICATION



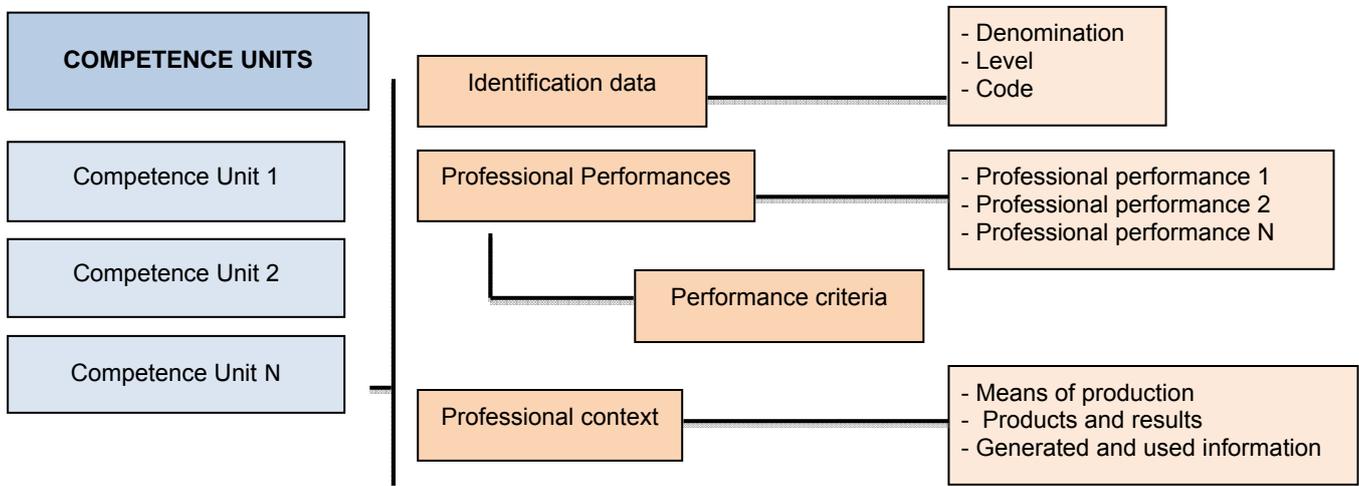
Every **professional qualification** consists of competence units. The **competence unit** is the minimum set of professional competences, which can be partially recognized and accredited.

The competence units are divided into **Professional Performances**. They establish the expected behaviour of one person, that's to say, the expected consequences or results of the activities performed by that person.

Each professional performance is assessed by a set of **Performance Criteria**, which express the acceptable level of one professional performance to meet the productive organizations targets, and they are a reference guide for the assessment of professional competences.

Every competence is developed within a specific **professional context**. The **Professional Context** is a guiding description of the elements considered to be necessary to set a professional performance.

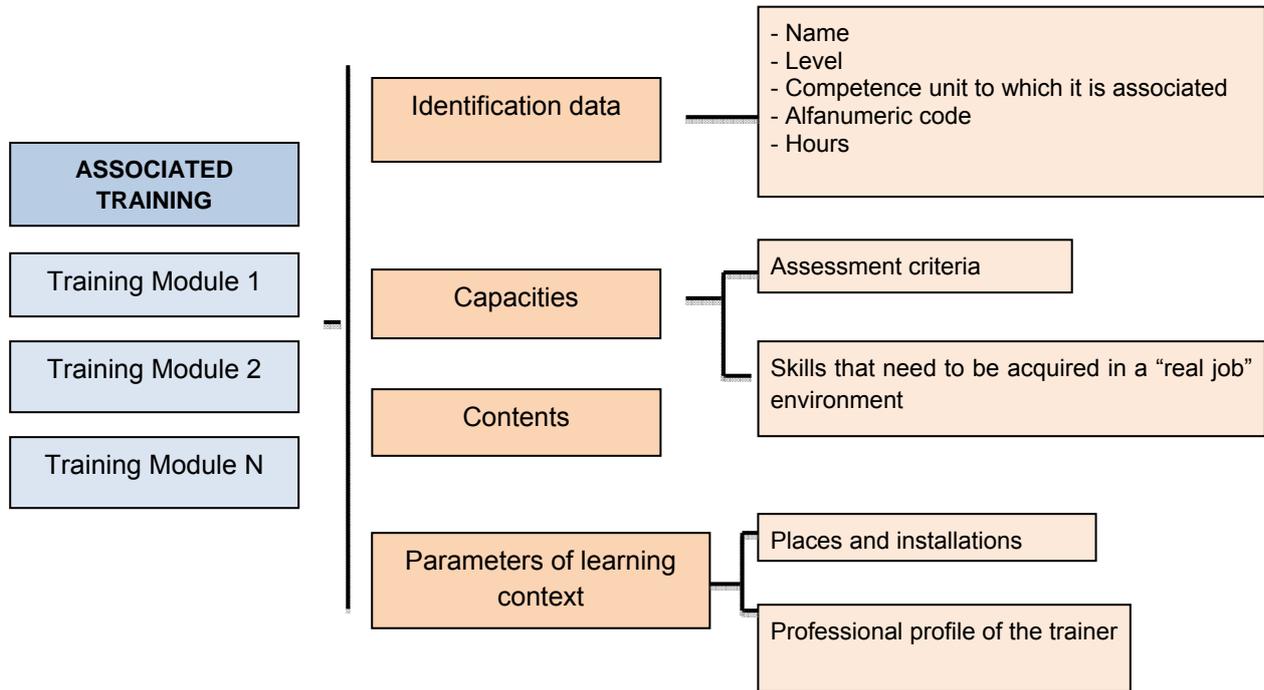




Each competence unit is associated with a **learning module**, which describes the necessary learning to acquire that competence unit. The **Modular Catalogue of Vocational Education and Training** is the set of learning modules associated to the competence units of the professional qualifications.

All the training offers associated to the Modular Catalogue of Vocational Education and Training, associated also to the National Catalogue of Professional Qualifications, can be available in the Integrated Vocational Training Centres. Some offers can be also available in the authorised Education and Training Centres and in the National Reference Centres.





THE NATIONAL CATALOGUE OF PROFESSIONAL QUALIFICATIONS - METHODOLOGY

The Catalogue methodology is based on the methodological guidelines approved by the **General Council of Vocational Education and Training**, in May 2003. The Council is the advisory body of the Spanish Government on vocational education and training. It is organized on a tripartite basis with representation of the central and regional Administration, the employer organizations and the trade unions.

In order to define the qualifications, **26 working groups** have been created (one per professional family). The members of these working groups are **educational and productive experts** selected by the organizations represented in the Council.

The activities addressed to identify and determinate the different qualifications are managed by the National Institute of Qualifications and are distributed in different stages:





These stages are:

A. Preparation of data and conformation of the working group

Collection and analysis of information about the professional, employment and training sectors. This will help to conform the observation field of every professional family. Then, a working group of experts is created, according to the professional profiles defined by INCUAL.

B. Design of the qualification

Taking into account the observation field, and implementing a functional analysis methodology, the general competence, the competence units and the professional context of every professional qualification are defined.

C. Definition of the associated training

For every competence unit an associated learning module is defined in terms of skills, with its corresponding assessment criteria and specifying also the contents and parameters of the training context. The quality of the qualification designed by the working group is then verified through an internal contrast or evaluation.

D. External contrast

The professional qualification is submitted to an evaluation, in order to improve its quality and its adaptation to the production (goods and services) systems, through the central and regional Administrations, the employer organisations and the trade unions (represented in the General Council of Vocational Education and Training) and other organisations related to the specific qualification in each case.

E. Approval of the qualification as Royal Decree

After consulting the Council of Vocational Education and Training, the State Educational Advisory Council and the Ministry departments involved, the government approves definitively the qualifications that must be included in the Catalogue.





The qualifications are officially established as Royal Decrees of the Spanish Cabinet Office, because they constitute a joint proposal of the Ministry of Education and Science and the Ministry of Labour and Social Affairs.

F. Updating

The National Catalogue of Professional Qualifications and the Modular Catalogue of Vocational Education and Training are continuously updated during the next 5 years after the date of inclusion of every qualification in the National Catalogue of Professional Qualifications.



Golden Valley, Allende (Ese-Entrecabos Valley).





SLOVENIA

In the Republic of Slovenia, education is a developed system, starting with the pre-school education in public and private kindergartens and ending with doctoral studies at universities. Regulated by many organic laws and associated regulations, the education system covers the organisation and financing and provides teachers and other professionals.

Powers and responsibilities for development and operation of the educational system are distributed between **the Ministry of Education and Sport, the Ministry of Higher Education, Science and Technology, the Ministry of Labour, Family and Social Affairs**, local authorities (**municipalities**), **expert panels** appointed by the Government of the Republic of Slovenia, and **institutions** established for development and consultancy in the field of education:

- National Education Institute of the Republic of Slovenia
- Vocational Education and Training Institute of the Republic of Slovenia (CPI),
- Slovenian Institute for Adult Education,
- National Examinations Centre,
- School and Extracurricular Activities Centre.

In the field of professional qualifications, responsible ministries and institutions also work with the chambers (Chamber of Commerce and Industry of Slovenia, Chamber of Craft and Small Businesses of Slovenia, Social Chamber of Slovenia, Chamber of Agriculture and Forestry of Slovenia and Chamber of Private Insurance of Slovenia) and other institutions in this field. They operate in social partnership and share responsibility for the quality system of occupational standards and national vocational qualifications, which meet the requirements, needs of the market and development policies of the society.





In Slovenia, officially recognized **education** is acquired through publicly recognized educational programmes adopted by the Minister of Education in cooperation with the expert council. State-approved programmes are carried out by public or private schools, which have to meet personnel and material requirements. Furthermore, they must be listed in the ministry register of schools. Private schools can decide for their own educational programmes which can lead to state-approved education, if the competent expert council finds their standards comparable with state-approved programmes adopted by the minister.

Vocational and professional education and training in Slovenia is the most dissected part of the educational system. Planning, programming and delivery of education is governed by the principles of social partnership. One can obtain lower vocational education (typically 2-year education), secondary vocational education (typically a 3-year education), secondary professional education (4-year education, or 2 years after completing 3-year education, or one-year vocational course after the general upper secondary school or 4-year professional school) and higher professional education (2-year education, at least 40 % at the employer). Secondary professional education is gained through a master, a foreman or shop manager exam taken at the Chamber of Commerce and Industry of Slovenia or at the Chamber of Craft and Small Businesses of Slovenia.

The scope of vocational education in Slovenia is closely connected to **the National Vocational Qualifications System**. This is based on the National Professional Qualifications Act, for which the Lifelong Learning and Scholarships Division is competent (under the auspices of the Ministry of Labour, Family and Social Affairs). The Lifelong Learning and Scholarships Division has particular responsibilities also in **determining professional standards**, the basis for developing educational programmes, and in **defining the catalogues of technical knowledge and skills**.

Vocational qualification can be acquired through school education, vocational and professional educational programmes, programmes of vocational training, higher





education study programmes or advancement study programmes or if one proves to meet the professional knowledge standards and skills listed in the catalogue.

Through verification and validation procedures, the national vocational qualification system enables to acquire national vocational qualifications also to adults who gained expertise knowledge, skills and experience outside the formal school system. The obtained professional qualification - **a certificate** - can be used to find work and also to receive further education since it proves that one has already finished a part of the educational programme. In the area of national vocational qualifications **the records of catalogues, issued certificates, the registry of procedure operators for identifying and validating professional qualifications and the records of license holders** are kept. The national vocational qualification demonstrates one's ability to perform a certain job, hence providing **new employment opportunities**.

The central institution in the system of national vocational qualifications is the **Vocational Education and Training Institute of the Republic of Slovenia (CPI)**. In coordination with social partners, it is responsible for background documents and management and preparation of professional knowledge and skills catalogues for vocational qualifications at the national level. It examines development trends in the labour market and prepares professional profiles and competence-based professional standards, which are the basis for developing vocational and technical educational programmes and certification of national vocational qualifications. Furthermore, it promotes and coordinates a variety of developmental and innovative projects at vocational and technical schools, proposes projects of equipping schools and in cooperation with publishers develops modern teaching materials and educational technologies. The Vocational Education Institute of the Republic of Slovenia also operates **the National Observatory of Vocational Education and the National Reference Point for Europass Training Initiative**.

The Vocational Education and Training Institute of the Republic of Slovenia (CPI) also operates **the National Reference Point (NRP) for National Vocational**





Qualifications, which includes databases of occupational standards, catalogues of the required technical knowledge and operators of national vocational qualifications procedures. The NRP provides access to national qualifications framework and in accordance with the recommendations of the EU provides information relevant to the transparency of vocational qualifications. European NRPs are included in the network, which enables access to information on vocational and secondary professional education. One of the biggest obstacles for those who want to work or gain education in another European country is the possibility that their qualifications and skills will not be recognized there. This is exacerbated by the fact that qualifications are expanding greatly, that there are different national educational and training systems and that the systems are subject to constant changes.

The Vocational Education and Training Institute of the Republic of Slovenia (CPI) is principally responsible **for introducing new vocational training programmes in Slovenia**. CPI monitors current educational programmes and collects information on conditions and implementation of educational programmes. Fundamental purpose of monitoring is to detect objectives of vocational education and training, identify examples of good practice, which are identified by educational institutions when defining the educational goals, and identify problems which hinder the schools to achieve quality educational process. Together with school representatives and other external educational field experts, the areas which appear anew, in accordance with the philosophy of the vocational education plan reforms, are planned and monitored.

Creation of officially recognised vocational and professional educational programmes is bound to the Law on Organisation and Financing of Education and the Law on Vocational and Technical Education. The objectives of the programme renovation derive from the statutory requirement for regulation of vocational and professional education based on the principles of social partnership and joint responsibility of the state, employers and workers. The preparation of the programme educational content is based on professional standards deriving from the Law on National Vocational Qualifications.





The professional standard specifies the content of vocational qualifications at a certain level of complexity, defines the necessary knowledge, skills and general and professional abilities which must be obtained. Expert Council for Vocational and Professional Education of the Republic of Slovenia defines, which professional standards need training programmes. The programme is generally designed in accordance with more professional standards. Name of the educational programme is usually also the title of vocational and professional education acquired by anyone who has completed the programme.

The Slovenian Institute for Adult Education is engaged in training and educating adults. The programmes are designed to educate, train and educate the persons who have completed compulsory schooling and have a wish to acquire, modernize, expand or deepen their knowledge without being a student or a pupil. Persons who engage in adult education are given the status of a person in adult education. Adult education is divided into formal and informal education. Formal education provides the acquisition of state-approved education, vocational qualification or a state-approved document, while informal education is dedicated to acquiring, restoring, distributing, updating and deepening of the knowledge. However, informal education is not proved by a state-approved document.

These organisations participate in professional organisations of the EU and as reference points for vocational and professional education form a part of the networking organized by the European Union Development Agencies.





LATVIA

Licence is a compulsory precondition for a training establishment to run a training program. With licence, the state grants legal right to run a training program to a training establishment. Training institutions running *curriculae* including 160 training lessons and more are licensed by the State Service of Education quality. Training institutions running adult education programmes and special interest programmes are licensed by local governments if they are not registered with the Register of Training Establishments.

Training programs have to be accredited. Accreditation grants the state official recognition of the certificate issued by a training establishment to graduates of the respective accredited training programme. Accreditation is given to programs including 160 and more training lessons by the State Service of Education quality. Accreditation is valid for specified period of time. Training institutions have the right to issue training certificates in their own name. Adult education programs and special interest programs are not accredited. Usually such certificates confirm certain practical skills obtained during a specialised training course, but they cannot be regarded as official education certificates.

According to the Vocational Education Law, the Cabinet of Ministers determine state policy and strategy direction in vocational education and determine profession standards and the procedures for development thereof. The Ministry of Education and Science establish and update a register of profession standards and organise the development of profession standards. For setting profession standards and occupational profiles, the ministry consults with industry experts and involves such experts in work to establish direct industry input and adjust profession standards to labour market needs.

Proposals regarding new professions in vocational field should be addressed to the Vocational Education and General Education department in the Ministry of Education and Science.





BULGARIA

ABOUT THE VET SYSTEM IN BULGARIA

The VET system in Bulgaria has been developing very fast during the last 10 years. Many diverse changes have occurred because of Bulgaria's transition to a market-based economy, which imposed totally new requirements to the VET authorities and providers.

Towards development of vocational education and training (VET), in March 2009, the three major institutions in the VET sector – the Ministry of Education, Youth and Science, the Ministry of Labour and Social Policy, the National Agency for VET and the nationally representative employers organizations signed a Framework Agreement for cooperation in VET. The objective is to take joint actions to modernize vocational education and training. In the period until 2015 employers representatives at all levels will carry out activities for modernization and optimization of VET on regional and sectoral basis and in accordance with national economic development priorities and labour force dynamics in order to ensure provision of qualitative VET. BULGARIA, VET in Europe – Country Report 2010 (CEDEFOP)

NATIONAL LLL STRATEGY

The objective of the National LLL Strategy, 2008- 2013, is to put in place conditions enabling every citizen to develop his or her personal and professional knowledge, skills and abilities towards improving his/her own welfare and the competitiveness of the national economy, through:

- Enhancing the adaptability of every individual to economic and social changes;
- Encouraging participation in all lifelong learning forms towards professional and personal development.

The aim is by 2013 Bulgaria to achieve in the lifelong learning sector:





- participation of the population aged 25- 64 in LLL at 5 %;
- share of early school leavers at 12 %;
- share of individuals aged 20-24 with completed secondary education at 85%.

The Action Plan for implementation of the National LLL Strategy includes as a priority action development of a skill needs study and forecast system. The system will make it possible to reduce qualified labour demand and supply imbalances and to improve labour force quality and mobility, hence the opportunities for employment and career fulfillment. The decision makers from the education, employment, economic and finance sectors as well social partners are engaged in the system development.

CURRENT DEBATES

Currently a particularly hot issue is that of the relation between vocational education and the business in the context of improved quality of vocational education and training. According to the business, introduction of practice-oriented training and education process decentralization will contribute to successful partnerships on branch or regional basis between vocational schools and high schools on the one part and companies on the other.

LEGISLATIVE FRAMEWORK

MAIN ACTS WHICH REGULATE IVET

- Vocational Education and Training ACT - VETA (1999) – provides the legislative framework of initial and continuing vocational education and training;
- Act on the Level of Education, Minimal General Educational Requirements and the Curriculum (1999) – defines the conditions and rules for the completion of education;





- The Public Education Act, the Law on Level of Education, General Education Minimum and Curriculum, and the State Educational Requirements regulate the attainment of lower and upper secondary education together with the study of a profession in vocational schools and vocational high schools;
- The Law on Crafts (2001) regulates the relations concerned with the practicing of crafts, and related apprenticeship training;
- Recognition of Vocational Qualification Act – RVQA (2008) – regulates the conditions and rules for the recognition of vocational qualifications, acquired in other member states or third countries in order to gain access and practice regulated professions.

COLLECTIVE AGREEMENTS

In 2006 a collective agreement was signed between national employers' organizations in the field of education and the Ministry of Education and Science regarding the following issues: labour, social security and social relations, and standards of living, which have not been regulated in the Labour Code or in any other legal acts.



Министерство на труда и социалната политика
Агенция по заетостта



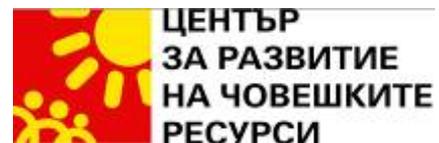
Another important document for social cooperation is the Pact for economic and social development of Bulgaria till 2009, signed by the Government and national employers' organizations and trade unions.





INSTITUTIONAL FRAMEWORK FOR IVET AND ORGANIGRAM

- The **National Assembly** performs the legislative activity in the field of education, in particular vocational education. It has special commissions on education, science, children, youth and sports matters, as well as a labour and social policy commission;
- The **Council of Ministers** sets out the government policy in the field of vocational education and training;
- The **Ministry of Education, Youth and Science** directs, coordinated and controls the implementation of the government policy for vocational education and training;
- **Ministry of Labour and Social Policy** implements the government policy for **labour market training**;
- The **Ministry of Culture** implements the government policy in the schools of arts;
- **National Agency for Vocational Education and Training** is a specialized body within the Council of Ministers for licensing of activities within the VET system and for coordinating the institutions concerned with vocational guidance and vocational education and training. **As an consultative body** develops the State Educational Requirements for the vocational education and training system and the List of Professions for vocational education and training;
- The **Human Resources Development Centre** is a Bulgarian coordinating body (national agency) within the EU Lifelong Learning Program;
- **The representative employer organizations and worker and employee organizations at national level** participate **on the principle of social**





partnership and social dialogue in the development, coordination and updating of the legislation and of strategic and concept documents.

FUNCTION LEVEL	DECISION MAKING	EXECUTIVE	CONSULTATIVE	PARTNERSHIP
National Level	National Assembly	The Council of Ministers; The Ministry of Education, Youth and Science; Ministry of Labour and Social Policy;	National Agency for Vocational Education and Training	Tripartite Council The representative employer organizations and worker and employee organizations
Regional Level		Regional administration Regional Employment Services Regional Inspectorates of Education	Permanent and provisional employment commissions at the regional development councils of the regions	
Local level	Municipalities	Schools	School Councils	

BULGARIA, VET in Europe – Country Report 2010 (CEDEFOP)

With the support of the Lifelong Learning Programme of the European Union





NATIONAL AGENCY OF VOCATIONAL EDUCATION AND TRAINING (NAVET)

(<http://www.navet.government.bg>)

The Agency is a specialized body to the Council of Ministers of the



Republic of Bulgaria established with the Law for the Vocational Education and Training in 2000. It is a legal entity financed by the state budget with headquarters in Sofia.

It aims at:

- assuring and maintaining quality in the vocational education and training of young people and adults according to the labour market needs and the development of the Bulgarian economy competitiveness;
- Cooperation with the social partners in implementing coordinated policies for lifelong learning, continuing vocational training and introducing successful European practices;
- Expanding the access of the unemployed and the employed to vocational education and training according to the labour market needs;
- Ensuring public access to useful information concerning the continuing vocational training and lifelong learning in the country and in the EU;
- Development of the List of professions for vocational education and training;
- Development of State Educational Requirements (standards) for acquiring qualifications.

Long-term agreements for partnership have been established between NAVET and all nationally representative employers and employees organizations, state institutions and organizations from various economic and vocational sectors –





fostering participation in NAVET activities, forming coordinated positions on key issues concerning human resources development.

Under an agreement with the Employment Agency (EA) joint actions have been started in relation to the quality and control assurance of the vocational training of the employed and the unemployed.

FUNCTIONS

Apart from licensing and conducting follow-up control of the centers for vocational training and the centers for information and vocational guidance, NAVET develops and provides to the Minister of Education and Science for approval the following:

- The List of professions for vocational education and training;
- The State educational standards for acquiring vocational qualification.

INTRODUCING NEW TEACHING CURRICULA AND PROGRAMS IN THE VET SYSTEM IN BULGARIA

STATE EDUCATIONAL REQUIREMENTS

These are standards which determine the activities to be performed within the profession, as well as the requirements in relation to the development of the respective competencies – knowledge, skills and personal qualities needed for the profession successful implementation. They serve as a basis for the preparation of the teaching curricula and programmes.

They are developed according to approved by NAVET Managing Board documents – Framework requirements, Methodological guidelines and Rules for the order and conditions of State educational standards development.





Specialists from various vocational areas participate in developing the State educational standards for acquiring vocational qualification. Each Standard is revised by two reviewers, discussed in the respective vocational area Expert Commission, approved by the Managing Board and endorsed by the Minister of Education, Youth and Science.

CONTENTS:

The STATE EDUCATIONAL REQUIREMENTS give professional description of working activities and responsibilities, equipment and tools, requirements for exercising the profession training objectives, learning outcomes – knowledge, skills and personal qualities needed for practicing the profession requirements to the training facilities and trainers.

It is important to mention that State Educational Standards have not been developed for all the professions in the List of Professions yet. Those ready are regularly published in the official gazette. Many of them are being currently developed.

ADULT TRAINING PROVIDERS

Following these standards, adult training providers develop their own teaching curricula and programs for each profession and submit them to NAVET for licensing. These are reviewed and evaluated by NAVET expert committees and improved if necessary before the licensing. Each VET Center is



free to change or adapt or enrich the programs to make sure they comply with the labour market needs. Moreover, VET Centers are supposed to tailor these programs to the needs of their earners and/or the employers. VET Centers have another very





important role - to propose new curricula and professional profiles according to the demands.

The license entitles VET providers to provide and certify vocational training to unemployed and the employed over the age of 16 with acquiring a vocational qualification degree or qualification in part of a profession.

VOCATIONAL SCHOOLS

Each Vocational school develops their own curricula and plans, approved by the school boards and the regional inspectorates. They determine the school subjects and allocation of school hours within them for the whole duration of studies. They are in compliance to students' interests as well as with the school resources and equipment. School educational plans are developed on the grounds of a preliminary approved Educational Plan by the Minister of Education, Youth and Science.

INTRODUCING NEW PROFESSIONS IN THE LIST OF PROFESSIONS

LIST OF PROFESSIONS FOR VET

The list includes all the contemporary and perspective professions and specialties at the labour market which have been suggested by the employers, the trade unions, education and training providers, state institutions, non-governmental organizations, vocational unions and professionals in various areas.

All registered in NAVET proposals for changes are discussed and approved by the Expert Commissions in vocational areas and the Managing Board.





The List reflects all statistical information in relation to the vocational education and training at regional, national and international level. It is useful in matching the labour market needs with a state students enrollment plan in the vocational high schools, the vocational schools, the vocational colleges and in the arts schools. It helps apply, plan and conduct training in the centres for vocational training.

New professions could be added to the List of Professions for VET only by order of the Minister of Education, Youth and Science of Republic of Bulgaria. The Minister issues the order following proposals by the National Agency of Vocational Education and Training, which, in all cases, have been coordinated with the respective ministries and other authorities, and with representatives of the employers' and employees' organizations at national level.

Follow this link to go to the List of Professions:

<http://www.navet.government.bg/bg/snpzn>

TO SUMMARIZE

In order to ensure quality curricula and programs VET authorities, vocational schools and adult VET providers try to be in permanent contact with employers and employer associations. This is a way to guarantee that vocational trainings are adequate to labour market needs.

It is worth mentioning that VET authorities and institutions have realized the importance of establishing relations with relevant institutions and colleagues from other European countries, not only to share experience but also to work together on particular fields to ensure equal quality of VET at EU level. The Lifelong Learning Program is a wonderful opportunity to do so.





USEFUL LINKS

National Assembly of the Republic of Bulgaria <http://www.parliament.bg>

Council of Ministers <http://www.government.bg>

Ministry of Labour and Social Policy <http://www.mlsp.government.bg>

Ministry of Education and Science <http://www.minedu.government.bg/>

Ministry of Healthcare <http://www.mh.government.bg/>

Ministry of Economy and Energy <http://www.mi.government.bg>

Ministry of Finance <http://www.minfin.bg/>

Ministry of Agriculture and Food <http://www.mzgar.government.bg/>

Ministry of Regional Development and Public Works <http://www.mrrb.government.bg/>

Ministry of Transport <http://www.mtc.government.bg/>

State Agency for Youth and Sports <http://www.youthsport.bg/>

Bulgarian Small and Middle Enterprises Promotion Agency
<http://www.sme.government.bg/>

Employment Agency <http://www.az.government.bg/>

Bulgarian Chamber of Commerce and Industry <http://www.bcci.bg/bulgarian>

Bulgarian Industrial Association http://www.bia-bg.com/default_bg.htm

Economic Initiative Association <http://www.ssi-bg.org/>

Bulgarian Union of private Entrepreneurs "Vuzrazdane" <http://www.union-vuzrazdane.com/>

Confederation of Independent Trade Unions in Bulgaria <http://www.knsb-bg.org/>

Confederation of Labour "Podkrepa" <http://www.podkrepa.org/>

European Centre for the Development of Vocational Training CEDEFOP
<http://www.cedefop.eu.int/>

European Commission - Education and Training





http://ec.europa.eu/education/index_en.html

http://www.minedu.government.bg/top_menu/vocational/

http://libserver.cedefop.europa.eu/vetelib/eu/pub/cedefop/vetreport/2010_CR_BG.pdf

<http://www.hrdc.bg>





SWEDEN

This section gives a brief description to the Swedish system for classification of professional profiles, and to the main vocational training opportunities in the country. It should be pointed out that there are no binding correlation between the two systems.

STANDARD FOR CLASSIFICATION OF OCCUPATIONS

(Source: Statistics Sweden, SCB)

The Swedish Standard Classification of Occupations (SSYK) outlines the professional profiles. The standard is a national adaptation of the *International Standard Classification of Occupations (ISCO-88)*.

The standard have four levels, and is best described in the following matrix.

SSYK major groups with number of sub-groups and skill levels:

<u>Major groups</u>	<u>Sub-major groups</u>	<u>Minor groups</u>	<u>Unit groups</u>	<u>ISCO skill level</u>
1 Legislators, senior officials and managers	3	6	29	--
2 Professionals	4	21	67	4th
3 Technicians and associate professionals	4	19	72	3 rd
4 Clerks	2	8	17	2 nd
5 Service workers and shop sales workers	2	7	27	2 nd
6 Skilled agricultural and fishery workers	1	5	11	2 nd
7 Craft and related trades workers	4	16	58	2 nd
8 Plant and machine operators and assemblers	3	20	59	2 nd
9 Elementary occupations	3	10	14	1 st
0 Armed forces	<u>1</u>	<u>1</u>	<u>1</u>	--
Totals	27	113	355	

Skill levels:

1. Normally no requirements for education.





2. Normally requiring competences comprising to upper secondary school level.
3. Normally requiring competences comprising to upper secondary school level completed with additional education steps or shorter university education (up to 3 years).
4. Normally requiring competences comprising to longer university education (3-4 years or more) and an academic examination.

THE EDUCATION SYSTEM

Upper secondary education for adults (formal learning)

In the framework of upper secondary education for adults, there are currently several systems to create opportunities for the development of locally adapted vocational courses or programs. In essence we can create Vocational- and Apprenticeship Training for adults.

The programs funded by government grants through The Swedish National Agency for Education, which is the agency that receives applications- and decides on the financial frame for each applying municipality. Within these forms of training, each educator have some freedom to build courses made up of different courses. Within adult Vocational education is a certain freedom to shape local courses, while the Apprenticeship Training for adults instead require that educators adhere to the nationally approved secondary vocational courses. Therefore, the former is preferable from this perspective. It should be mentioned that both of these initiatives are temporally distinct, and therefore it is not obvious that they will be available as an option in the future.





Post upper secondary education (formal)

The educational offer in the Swedish formal education system at post upper secondary school level is College / University and the Higher Vocational Education, where the later is the most prominent regarding formal vocational training. The main differences between the types of schools is that the College/University education is based on scientific evidence while the Higher Vocational Education is based on knowledge derived from the production of goods and services.

From a project perspective, looking at the target groups and areas of focus, the Higher Vocational Education system should be seen as most interesting. Within its framework the training provider shapes the training offer together with the labour market. It provides wider opportunities to create programs based on current and local needs than is possible within the College / University. A training form leading to professional qualifications where the students quickly get productive in the profession they trained for. The creation of a vocational training programme in a specified occupation follows a process initiated by the industry / labour market, who can show relevant proofs of demands in a 3 – 5 years frame. The education provider investigates the need, together with the labour market, on a national and regional level. Together they shape educational goals and content, after which an application is sent to The Swedish National Agency for Higher Vocational Education. Competition for the funds that finance Higher Vocational Education is vast, why not everyone who applies get to start their educations.

Non formal adult education, Folkbildning

Non formal adult education (Folkbildning in Swedish) is deeply rooted in Swedish society, and is almost a part of the Swedish soul. The nature of “Folkbildning” is that it is free from government control and voluntary for people to participate in. In this fact lies a significant social force.

Folkbildning offers meetings between people who want to develop. As education, it is non-formal, and may consist of courses or workshops.





Because Folkbildning is such an important a part of society, it is supported from the state, counties / regions and municipalities. The State allocates most funds, which have become increasingly important as the county councils / regions and municipalities lower their funding. Since 1991 the adult education is free from the state. This means that the state specifies the purposes for how the state grant shall be used, but that the public education players determine how these objectives are achieved and how the state grant will be distributed them selves. The purpose for the State's contribution to Folkbildning is to:

- Support activities that help strengthen and develop democracy.
- Help to make it possible for people to influence their own lives and create commitment to participate in community development.
- Contribute to equalize educational disparities and enhance training and education in society.
- Contribute to broaden interest and increase participation in cultural life.

The free form of Folkbildning makes it one of the most accessible types of education when it comes to creating education programs based on local needs and preferences. The programs can even though they are not formal, lead to recognized occupational skills, particularly by the shape Folk High School.





Education Forms under the Adult Education

Folk High School

There are 150 Folk High Schools in Sweden. 107 of these are linked to various social movements, NGOs, foundations or associations. 43 colleges are run by county councils and regions.

Folk high schools are independent, and decide independently of the courses they organize and what profile they have on their school. The social movements, NGOs and counties or regions which have the main responsibility for the school has great potential to make its mark on the activities. It is not tied to centrally determined curriculum, but instead are working based on their own business plans. Folk high schools are financed by state grants and county funding.

(Source, Folkbildningsrådet)

Study associations

The Study associations have offered adult education in Sweden for over 100 years. Today there are ten associations that arranges workshops, cultural programs and other public education activities. Study associations are very different from each other, but together they constitute the largest meeting place for people who want to develop.

The Study associations have distinct profiles and specializations that are characterized by the organizations they interact with and that they have their origin in different parts of civil society, labour, university student associations, the Islamic movement, the temperance movement, the Swedish church, outdoor recreation and environmental movement, independent churches, rural movement and amateur culture. Since there are Study associations with different orientations, people and organizations can find the Study associations that will meet their specific needs.

(Source, www.studieforbunden.se)

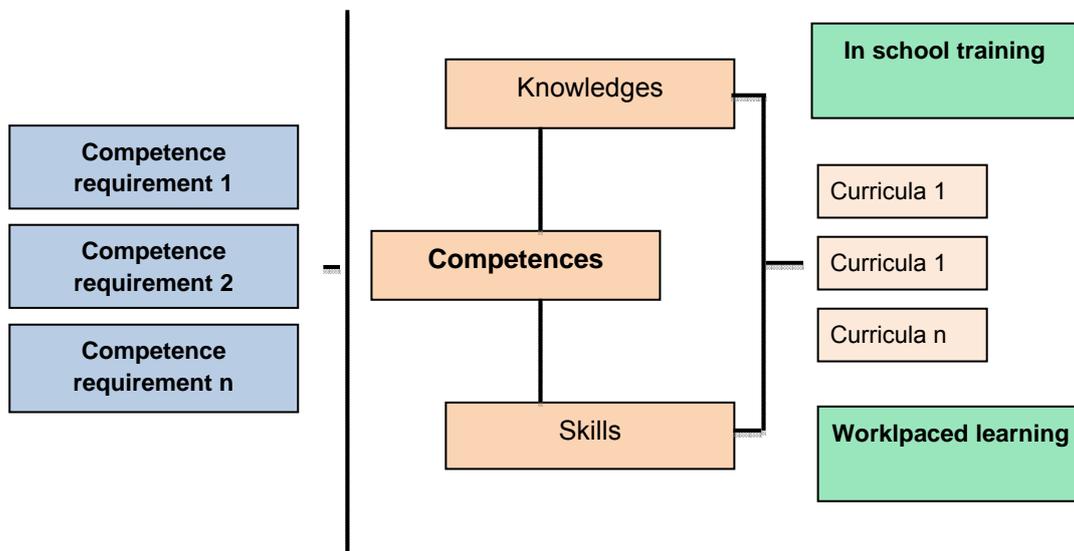




STRUCTURE OF A PROFESSIONAL QUALIFICATION

Depending on what level of the qualification system you look at, the structure in most cases is based upon the same fundamentals. The base for all qualification is the knowledge about the skills that are needed for an individual, to perform at a demanded level in a given occupational situation. The knowledgebase for this lies with the work marker, in respective branch. Therefore, regarding vocational education, regardless the level, the work market has an important role to play.

As it comes to training offers for a 2nd (second stage) up to the 4th level on the ISCO - scale, the *formal education system*, the basic model is that representatives for the labour market interact with the respective national agency, or with a specific education locally. This consist all the stages from creating the educational programme to, in some cases, examination of the students. A very important role is to ensure that the development of a programme continues, hand in hand with the constantly changing demands on the work market, transforming the competence requirements to traditional curricula's.



Looking at the informal paths, the freedom is total, making it possible to create training programmes or courses based upon the demand from the people.





3.4.2 CURRENT TRAINING OPPORTUNITIES IN THE ACTION AREAS.

SPAIN

ESE-ENTRECABOS VALLEY (PRINCIPALITY OF ASTURIAS)

The current Vocational Training offer in the territory of the Ese-Entrecabos Valley is offered by three different secondary education high schools, which participate within the project through the signature of collaboration agreements between them and the Rural Development Centre of Valle del Ese-Entrecabos.

SECONDARY EDUCATION HIGH SCHOOL Valdés Salas (Salas)

PROFESSIONAL INITIATION (European Union Qualification Level: 1)

(MAM276_1) Carpentry worker

Professional family: Wood and furniture

Modality: INITIAL PROFESSIONAL QUALIFICATION PROGRAMMES

Duration: 990 hours

General competence: To work with mechanic equipment for the elaboration of carpentry and furniture elements, to adjust and pack carpentry and furniture products and elements and to collaborate in their assembly and installation with the required quality, occupational safety & health and environmental conditions.

Competence units:

- UC0162_1: To mechanise wood and derived products.
- UC0173_1: To adjust and pack carpentry and furniture products and elements.
- UC0882_1: To give support during the assembly and installation tasks of carpentry and furniture elements.

Modules:

1. Mechanisation of wood and derive products.
2. Setting and packing of carpentry and furniture elements.
3. Assembly and installation of carpentry and furniture elements.





INTERMEDIATE-GRADE (European Union Qualification Level: 2)

(MAM21) Carpentry and furniture customized manufacturing and installation

Professional family: Wood and furniture

Modality: INTERMEDIATE-GRADE TRAINING CYCLES

Duration: 2.000 hours

General competence: To define constructive solutions according to the customer requirements, to elaborate customized carpentry and furniture elements, to install them in “being built” houses under proper safety and quality conditions and to manage, if needed, a small enterprise or workshop.

Competence units:

- To define constructive and installation solutions related to customized carpentry and furniture elements.
- To carry out the mechanisation and construction tasks of customized carpentry and furniture elements.
- To carry out the installation and finishing tasks of carpentry and furniture elements.
- To carry out the administration, management and merchandising tasks of a small enterprise or workshop.

Modules:

1. Definition of customized solutions for carpentry and furniture elements (320 hours).
2. Basic mechanisation operations on customized carpentry and furniture elements (350 hours).
3. Customized carpentry and furniture manufacturing (330 hours).
4. Installation and finishing tasks for customized carpentry and furniture elements (235 hours).
5. Administration, management and merchandising in small enterprises (95 hours).
6. Materials and products in wood industries (160 hours).
7. Safety in wood and furniture industries (65 hours).
8. Training at workplace (380 hours).
9. Labour training and guidance (65 hours).





SECONDARY EDUCATION HIGH SCHOOL Concejo de Tineo (Tineo)

PROFESSIONAL INITIATION (European Union Qualification Level: 1)

(COM412_1) Trade Assistant

Professional family: Trade and Marketing

Modality: INITIAL PROFESSIONAL QUALIFICATION PROGRAMMES

Duration: 990 hours

General competence: To carry out replacement and conditioning activities in the sale point and delivery services to close places, always following the established instructions and criteria, using the required equipment, respecting the safety and health regulations and giving, if needed, structured and standardized support and information to the customers in the sale point or during the delivery service.

Competence units:

- 327_1: To carry out assisting tasks for the replacement and conditioning of the products in the sale point.
- UC1326_1: To prepare orders efficiently and effectively, following the established procedures.
- UC1328_1 To manipulate and transfer products in the trade centre and also during the delivery service, using pallets and handcarts.
- UC1329_1 To give support and operative, structured and standardized information to the customers.

Modules:

1. Assisting tasks in the sale point.
2. Preparation of orders.
3. Manipulation and transfer of products with pallets and handcarts.
4. Basic customer support.





(AGA398_1) Worker on forest activities

Professional family: Agriculture

Modality INITIAL PROFESSIONAL QUALIFICATION PROGRAMMES

Duration: 990 hours

General competence: To carry out the necessary assisting tasks for the exploitation of the forest products, according to specific instructions or working plans, implementing quality and efficiency criteria and respecting the specific standards on workplace risk prevention and environmental risk prevention.

Competence units:

- 290_1: To carry out assisting activities in wood loggings.
- UC1291_1: To carry out assisting activities during uncork operations.
- UC1292_1: To harvest fruits, seeds, mushrooms, plants and other forest commercial products.

Modules:

1. Assisting tasks in wood loggings.
2. Assisting tasks during uncork operations.
3. Harvesting of fruits, seeds, mushrooms, plants and other forest commercial products.





INTERMEDIATE-GRADE (European Union Qualification Level: 2)

(ADG-201) Administrative Management

Professional family: Administration and Management

Modality: INTERMEDIATE-GRADE TRAINING CYCLES

Duration: 2.000 hours

General competence: To carry out administrative support activities in the labour, accounting, commercial, financial and fiscal scopes, as well as to carry out customer/user support services, in both public and private enterprises, implementing the valid regulations and quality protocols, assuring the customer's satisfaction and following the standards on workplace risks prevention and environmental protection.

Competence units:

- Entering data and texts in computers under safety, quality and efficiency conditions.
- Use of computing programmes during information and documentation management.
- Reception and process of internal and external communications.
- Development of the administrative actions related to the trade process.
- Communication in a foreign language at independent-user level, during the administrative management activities related to customers.
- Management of files in conventional and digital support.
- Development of treasury administrative actions.
- Development of administrative support activities for Human Resources Departments.
- To carry out accounting records.

Modules:

1. Business communication and customer support.
2. Buying & selling administrative operations.
3. Business and Administration.





4. Computing treatment of information.
5. Accounting techniques.
6. Human resource administrative operations.
7. Treatment of the accounting documentation.
8. English.
9. Business in classroom.
10. Assisting operations on treasury management.
11. Labour training and guidance.
12. Training at workplace.





(ACA25) Forest and Preservation Works

Professional family: Administration and Management

Modality: INTERMEDIATE-GRADE TRAINING CYCLES

Duration: 2.000 hours

General competence:

- To carry out works related to forest activities, as well as works related to the environment surveillance, maintenance and protection; always taking into account the proper safety and hygiene conditions and the preservation of the productive sources.
- To use and maintain the necessary machinery and equipment.
- To organise and manage a family forest logging.

Competence units:

- To organize and manage a family forest logging.
- To prepare, manage and maintain the facilities, machinery and equipment of the agriculture logging.
- To carry out the processes and works needed for the achievement of sustainable forest products.
- To carry out reproduction, spread and production tasks / operations with nursery plants.
- To carry out the processes and works needed for the planting of trees and bushes in the mounts, as well as the works for the maintenance, preservation, inventory and defence of forest stands.
- To carry out environmental control and surveillance tasks, as well as activities related to the public use of natural areas.

Modules:

1. Organization and management of a family agriculture logging (110 hours).
2. Agriculture facilities (110 hours).
3. Agriculture mechanisation (210 hours).
4. Forest uses (200 hours).





5. Cynegetics and fishing uses (110 hours).
6. Plant production (220 hours).
7. Preservation and defence of forest stands (225 hours).
8. Activities related to the public use of natural areas (85 hours).
9. Agro-technology (220 hours).
10. Relationships within work teams (65 hours).
11. Training at workplace (380 hours).
12. Labour training and guidance (65 hours).



Daybreak. Tineo, Ese-Entrecabos Valley.





UPPER-GRADE (European Union Qualification Level: 3)

(ADM31) Administration and Finances

Professional family: Administration and Management

Modality: UPPER-GRADE TRAINING CYCLES

Duration: 2.000 hours

General competence: Organise and carry out the staff, economic and financial administration and management tasks, as well as the information and guidance tasks for customers or users. This will be done in both public and private scopes, according to the size and activity of every business and body and to the established aims, internal rules and current regulations.

Competence units:

- To administrate and manage stock supplies.
- To administrate and manage financing, budget and treasury sections.
- To administrate and manage human resources sections.
- To carry out and analyse accounting and fiscal operations.
- To carry out and monitor guidance, negotiation and claim operations, as well as product and service selling operations.
- To administrate and manage in Public Administrations.
- To inform and advice about financial and insurance products and services.
- To carry out the corresponding actions of an audit service.

Modules:

1. Stock supply management (125 hours).
2. Financial management (160 hours).
3. Human resources (130 hours).
4. Accounting and tax system (290 hours).
5. Computer applications and keyboard operations (255 hours).
6. Trade management and customer support service (90 hours).
7. Public administration (110 hours).





8. Financial and insurance products and services (110 hours).
9. Entrepreneurial project (195 hours).
10. Labour training and guidance (65 hours).
11. Audit (90 hours).
12. Training at workplace (380 hours).

Access to University Studies:

- This training cycle gives access to all grade studies that do not have limited placement.
- For those grade studies with limited placement, a specific admission process must be followed.





(ACA32) Organisation and management of natural and landscape resources

Professional family: Agriculture

Modality: UPPER-GRADE TRAINING CYCLES

Duration: 2.000 hours

General competence:

- To manage the natural and landscape resources, programming and organising the human and material resources and the works needed to achieve the natural environment production and protection aims.
- The technicians will act under the general monitoring of Architects, Engineers or Bachelors and/or Technical architects, Technical engineers or staff with Master degree.

Competence Units:

- To organise and manage an agriculture enterprise.
- To programme and control the exploitation of the forest resources.
- To programme and control the forest resource restoration, maintenance, defence and management.
- To programme and control the setting-up and maintenance works in parks and gardens, as well as the works regarding vegetation rebuilding in natural areas and landscape restoration.
- To organise and control the maintenance, repairing and working of the facilities, machinery and equipment of an agriculture enterprise.
- To programme and control the activities related to the public use and preservation of the natural environment.
- To programme and organise the reproduction, spread and production processes of nursery plants.

Modules:

1. Organisation and management of an agriculture enterprise (100 hours).
2. Management of forest loggings (165 hours).
3. Management of cynegetics and fishing loggings (135 hours)
4. Forestry management (165 hours)





5. Protection of forest stands (105 hours).
6. Setting-up and maintenance of gardens and landscape restoration (285 hours).
7. Mechanisation and facilities of an agriculture enterprise (240 hours).
8. Management of the natural environment public use (75 hours).
9. Management and organisation of plant production (220 hours).
10. Relationships in the labour environment (65 hours).
11. Training at workplace (380 hours).
12. Labour training and guidance (65 hours).

Access to University Studies:

- This training cycle gives access to all grade studies that do not have limited placement.
- For those grade studies with limited placement, a specific admission process must be followed.





SECONDARY EDUCATION HIGH SCHOOL Carmen y Severo Ochoa (Luarca)

PROFESSIONAL INITIATION (European Union Qualification Level: 1)

(ELE255_1) Assistant of Electro-technical and Communication Installations

Professional family: Electricity and Electro-technics

Modality: INITIAL PROFESSIONAL QUALIFICATION PROGRAMMES

Duration: 990 hours

General competences: According to the superior instructions, to carry out assisting actions for the assembly and maintenance of electro-technical and telecommunication installations in buildings devoted to different uses. During these actions, the techniques and procedures required will be implemented in each case, according to quality criteria, safety conditions and the current regulation.

Competence units:

- UC0816_1: To carry out operations for the assembly of low voltage electric installations and domotic installations in buildings.
- UC0817_1: To carry out operations for the assembly of telecommunication installations.

Modules:

1. Operations for the assembly of low voltage electric installations and domotic installations in buildings.
2. Operations for the assembly of telecommunication installations.





INTERMEDIATE-GRADE (European Union Qualification Level: 2)

(TMV-202) Electromechanics of automobile vehicles

Professional family: Transport and Maintenance of Vehicles

Modality: INTERMEDIATE-GRADE TRAINING CYCLES

Duration: 2.000 hours

General competence: To carry out maintenance operations, accessory assembly and transformation actions in the fields of mechanics, hydraulics, pneumatics and electricity, in the automotive sector. The procedures and times established will be respected, as well as the quality, safety and environmental protection specifications.

Competence Units:

- To maintain the charge and start systems of vehicles.
- To maintain the auxiliary electric circuits of vehicles.
- To maintain the safety and comfort systems of vehicles.
- To maintain thermic engines.
- To maintain the auxiliary systems of thermic engines.
- To maintain the hydraulic, pneumatic, steering and suspension systems.
- To maintain the transmission and brake systems.

Modules:

1. Vehicle electronic technician.
2. Electronic electrician for the automotive maintenance and repair.
3. Automobile mechanic.
4. Automobile electrician.
5. Automobile electro-mechanic.
6. Engine and automobile / motorbike auxiliary systems mechanic.
7. Pneumatic and hydraulic system repairman.
8. Transmission and brake system repairman.
9. Steering and suspension system repairman.
10. Vehicle inspection operator.
11. Vehicle accessory installer.
12. Operator of enterprises devoted to spare part manufacturing.
13. Motorbike electro-mechanic.
- 14. Spare parts and diagnosis equipment salesman / distributor.**





(ELE-202) Electric and automatic installations

Professional family: Electricity and Electronics

Modality: INTERMEDIATE-GRADE TRAINING CYCLES

Duration: 2.000 hours

General competence: To assemble and maintain telecommunication installations in buildings, low voltage electric installations, electric machines and automated systems, implementing the current regulations and rules, the quality, safety and labour risk protocols and assuring their functionality and the environmental respect.

Competence units:

- UC0822_2: To assemble and maintain automatism installations in housing buildings and small industries.
- UC0820_2: To assemble and maintain low voltage electric installations mainly in housing buildings.
- UC821_2: To assemble and maintain low voltage electric installations in marketing buildings, office buildings and several industries.
- UC0823_2: To assemble and maintain low voltage aerial electric networks.
- UC0824_2: To assemble and maintain low voltage underground electric networks.
- 20_2: To assemble and maintain installations for the reception of audible broadcasting and tv signals in buildings or sets of buildings (antennas and via cable).
- UC0121_2: To assemble and maintain installations for the access to the public available telephone services and access control installations (indoor telephony and video doorphones).
- UC0836_2: To assemble solar photovoltaic installations.
- UC0837_2: To maintain solar photovoltaic installations.
- UC0825_2: To assemble and maintain electric machines.

Modules:

1. Industrial automatisms (288 hours).
2. Electronics (96 hours).





3. Electrical engineering (192 hours).
4. Indoor electric installations (288 hours).
5. Distribution installations (132 hours).
6. Common telecommunication infrastructures in housing and other buildings (132 hours).
7. Domotic installations (132 hours).
8. Solar photovoltaic installations (44 hours).
9. Electric machines (132 hours).
10. Labour training and guidance (96 hours).
11. Enterprises and entrepreneur initiatives (88 hours).
12. Training at workplace (380 hours).





(ADG-201) Administrative Management

Professional family: Administration and Management

Modality: INTERMEDIATE-GRADE TRAINING CYCLES

Duration: 2.000 hours

General competence: To carry out administrative support activities in the labour, accounting, commercial, financial and fiscal scopes, as well as to carry out customer/user support services, in both public and private enterprises. All these actions will be carried out bearing in mind the valid regulations and quality protocols, assuring the customer's satisfaction and following the standards on workplace risk prevention and environmental protection.

Competence units:

- Entering data and texts in computers under safety, quality and efficiency conditions.
- Use of computing programmes on information and documentation management tasks.
- Reception and process of internal and external communications.
- Development of the administrative actions of the trade process.
- Communication in a foreign language at independent-user level, during the administrative management activities related to customers.
- Management of files in conventional and digital support.
- Development of treasury administrative actions.
- Development of administrative support activities for Human Resources Departments.
- To carry out accounting records.





Modules:

13. Business communication and customer support.
14. Buying & selling administrative operations.
15. Business and Administration.
16. Information computing treatment.
17. Accounting technique.
18. Human resource administrative operations.
19. Accounting documentation use.
20. English.
21. Business in classroom.
22. Assisting operations on treasury management.
23. Labour training and guidance.
24. Training at workplace.





PROVINCE OF LEÓN

Official or accredited Vocational Training Courses placed under the control of the General Directorate of Vocational Training, Educational Department of the Council of Castilla y León.

In the province of León there are currently 23 training centres supported with public funds, which offer on-site training diplomas. These centres are distributed among 12 localities of the province and offer a total of 74 Vocational Training diplomas.

Among them, the ones belonging to the Professional Families in which the New Sources of Employment of the AKTOS project could be included are:

Professional family – Agriculture Activities				
Key	Title	Hours	Centre	Locality
ACA24	Gardening	2000	School Sierra Pambley	Hospital de Órbigo
ACA25	Forest works and works for the preservation of the natural environment	2000	Agriculture Training Centre	Almázcara
ACA32	Management and organisation of the natural and landscape resources	2000	Agriculture Training Centre	Almázcara

Professional family – Agriculture Activities				
Key	Title	Hours	Centre	Locality
AGA03M	Gardening and Floristry	2000	School Sierra Pambley	Hospital de Órbigo

Professional family - Physical Activities and Sports				
Key	Title	Hours	Centre	Locality
AFD31	Entertainer on Physical Activities and Sports	2000	Public School “La Inmaculada”	Camponaraya

Professional family - Food Industries				
Key	Title	Hours	Centre	Locality
INA01M	Bakery, Pastry and Confectionery	2000	Secondary High School of Astorga	Astorga
INA02M	Olive oils and Wines	2000	Public School “La Inmaculada”	Camponaraya
INA03M	Elaboration of Food Products	2000	Secondary High School	Ponferrada





Professional family - Food Industries				
Key	Title	Hours	Centre	Locality
			"Fuentesnuevas"	
INA02S	Processes and Quality in the Food Industry	2000	Secondary High School "Fuentesnuevas"	Ponferrada
INA21	Vegetable, Meat and Fish Canned Products	1400	Secondary High School "Fuentesnuevas"	Ponferrada
INA31	Food Industry	2000	Secondary High School "Fuentesnuevas"	Ponferrada

Professional family – Hotel and Tourism Industries				
Key	Title	Hours	Centre	Locality
HOT01M	Cooking and Gastronomy	2000	Integrated Vocational Training Centre "Ciudad de León"	León
HOT02M	Restaurant Services	2000	Integrated Vocational Training Centre "Ciudad de León"	León
HOT03S	Guide, Information and Tourism Support	2000	Integrated Vocational Training Centre "Ciudad de León"	León
HOT04S	Cooking Management	2000	Integrated Vocational Training Centre "Ciudad de León"	León
HOT34	Restaurant Management	2000	Integrated Vocational Training Centre "Ciudad de León"	León

Professional family – Social, Cultural and Community Services				
Key	Title	Hours	Centre	Locality
SSC01S	Early childhood education	2000	Secondary High School "Ordoño II"	León
SSC21	Health and social care attention	2000	Secondary High School "Ordoño II"	León
SSC31	Socio-cultural Animation	1700	Public School "La Inmaculada"	Camponaraya





Unaccredited or non-formal Vocational Training Studies for the Employment 2011/2012, placed under the control of the Employment Public Service of Castilla y León. Offer addressed first and foremost to unemployed people.

FOD Courses, those related to the topics tackled by the project are:

FOD Courses (those related to the topics tackled by the project are)				
Code	Speciality	Hours	Municipality	Qualification needed
AGAE10	Forest Worker	350	Folgo de la Ribera	School-leaving certificate or similar level of knowledge
AGAO40	Nurseryman	600	Folgo de la Ribera	School-leaving certificate or similar level of knowledge
ENAE0108	Assembly and maintenance of solar photovoltaic installations	360	Folgo de la Ribera	<ul style="list-style-type: none"> • High School or Compulsory Secondary Education Degree. • To accede to Level 2: Professional certificate – Level 1 of the same professional family and area. • To meet the academic requirements to accede to the Intermediate-grade training cycles or to pass the corresponding access exams regulated by the Educational Administrations. • To have passed the University access exam for people over 25 and/or 45. • To have enough training or professional knowledge to be able to attend the speciality courses successfully.
ENAE0208	Assembly and maintenance of solar thermic installations	360	Folgo de la Ribera	<ul style="list-style-type: none"> • High School or Compulsory Secondary Education Degree. • To accede to Level 2: Professional certificate – Level 1 of the same professional family and area. • To meet the academic requirements to accede to the Intermediate-grade training cycles or to pass the corresponding access exams regulated by the Educational Administrations. • To have passed the University access exam for people over 25 and/or 45. • To have enough training or professional knowledge to be able to attend the speciality courses successfully.





ENAE0208	Assembly and maintenance of solar thermic installations	600	Santovenia de la Valdoncina	<ul style="list-style-type: none"> • High School or Compulsory Secondary Education Degree. • To accede to Level 2: Professional certificate – Level 1 of the same professional family and area. • To meet the academic requirements to accede to the Intermediate-grade training cycles or to pass the corresponding access exams regulated by the Educational Administrations. • To have passed the University access exam for people over 25 and/or 45. • To have enough training or professional knowledge to be able to attend the speciality courses successfully.
ENAE30	Technician on renewable energy systems	400	León	High school or similar
HOTR0108	Basic cooking operations	360	León	No studies required
HOTR0508	Bar and cafeteria services	650	León	<ul style="list-style-type: none"> • High School or Compulsory Secondary Education Degree. • To accede to Level 2: Professional certificate – Level 1 of the same professional family and area. • To meet the academic requirements to accede to the Intermediate-grade training cycles or to pass the corresponding access exams regulated by the Educational Administrations. • To have passed the University access exam for people over 25 and/or 45. • To have enough training or professional knowledge to be able to attend the speciality courses successfully.





INAI0108	Butchery and elaboration of meat products	520	Santovenia de la Valduncina	<ul style="list-style-type: none"> • High School or Compulsory Secondary Education Degree. • To accede to Level 2: Professional certificate – Level 1 of the same professional family and area. • To meet the academic requirements to accede to the Intermediate-grade training cycles or to pass the corresponding access exams regulated by the Educational Administrations. • To have passed the University access exam for people over 25 and/or 45. • To have enough training or professional knowledge to be able to attend the speciality courses successfully.
SSCF01	Introduction to didactic methodology	110	León	Training or degree appropriate to be able to attend the course successfully.
SSCF10	Training and development specialist	390	León	First level University or Bachelor's degree, VET II, or professional knowledge.
SSCS0108	Home health and social care attention	610	León	<ul style="list-style-type: none"> • High School or Compulsory Secondary Education Degree. • To accede to Level 2: Professional certificate – Level 1 of the same professional family and area. • To meet the academic requirements to accede to the Intermediate-grade training cycles or to pass the corresponding access exams regulated by the Educational Administrations. • To have passed the University access exam for people over 25 and/or 45. • To have enough training or professional knowledge to be able to attend the speciality courses successfully.





SSCS0208	Health and social care attention for dependent persons in social institutions	470	León	<ul style="list-style-type: none"> • High School or Compulsory Secondary High School or Compulsory Secondary • High School or Compulsory Secondary Education Degree. • To accede to Level 2: Professional certificate – Level 1 of the same professional family and area. • To meet the academic requirements to accede to the Intermediate-grade training cycles or to pass the corresponding access exams regulated by the Educational Administrations. • To have passed the University access exam for people over 25 and/or 45. To have enough training or professional knowledge to be able to attend the speciality courses successfully.
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SLOVENIA

For Slovenia, an EU member country since 2004, similar developmental changes and challenges like in most other member countries are characteristic. This means that the population ages, the market changes very rapidly, together with rapidly changing and developing information and other technologies. Furthermore, globalisation creates constantly changes in working and living conditions. With every day, greater social stratification is perceived. These differences can also be reduced through education and training, for this enables one's personal growth, employment, prosperity and improves social security, alongside with society developing, progressing and creating social cohesion.

For realisation of this plan, national resources and resources from the European Social Fund are available, which are increasingly invested in this field, in order to reduce educational deficit, which has increased over the recent years.

The European Commission has brought together several different training and education initiatives under a single programme named **Lifelong Learning Programme**. It promotes educational opportunities from childhood to old age. Programme includes four sub-programmes (**Comenius, Erasmus, Leonardo da Vinci and Grundtvig**), which are well established also in Slovenia.

For the implementation of the programmes **the Centre of the Republic of Slovenia for Mobility and European Educational and Training (CMEPIUS)** is responsible. It deals with the international position of Slovenian organisations, with the aim of involving educational institutions in the wider European social environment and gaining formal and informal knowledge and experience within the European educational space.

Combining national and European resources, experience and expertise, such organisations help create a knowledge-based society and thus contribute to technological, scientific, and economic reconstruction of Slovenia and Slovenia's integration into the European educational space.





LATVIA

Out of 63 vocational schools in Latvia, several offer educational programs in tourism and hospitality.

The following training programs include contents related to active tourism, which is the main interesting resource for the Latvian partners within this project:

2 vocational schools offer:

Training program: tourism services

Professional qualification: Ecotourism specialist

Professional profile: Ecotourism specialist can be employed in the state, self-government and private sector in management of nature attraction objects. Ecotourism specialist participates in planning and design of eco tourism routes and can work as a guide for individual tourists or groups. Ecotourism specialist participates in introduction of environment friendly technologies in practice.

3 vocational schools offer:

Training program: Rural tourism services

Professional qualification: Rural tourism specialist

Professional profile: Planning and organisation of daily routine tasks in a rural tourism establishment: accommodation and service provision to customers. Knows how to use farm produce in tourist services.

Part of the content is relevant to rural tourism as it covers essential skill areas in running a rural tourism business and delivering accommodation service. Product development in active tourism and delivery of tourist activity services is not the subject of the currently available training programs. At the moment, there are no formal training opportunities in active tourism in Latvia today.





BULGARIA



The AKTOS project intends to transfer the results of a previous Leonardo da Vinci project, namely the FONTES project. The FONTES project was meant to create new employment opportunities in the rural world in the following fields: Fungi, Organic Farming, Chestnut Tree, Active Tourism, Interpretation in Rural Areas, Renewable

Energies, and Professional Caregivers. This Handbook, which is part of the AKTOS Transfer of Innovation Project, covers only four of the most relevant topics, which we consider useful to our geographical realities.

The topics are the following:

- Fungi;
- Interpretation in Rural Areas;
- Renewable Energies;
- Professional Caregivers.





INFOCENTER EOOD is part of the AKTOS Transfer of Innovation Project. INFOCENTER started in 2001 as a result of a USAID-funded project to provide ICT access and trainings in remote and underserved Bulgarian communities. Nowadays INFOCENTER is an accredited 16+ VET Centre and works in close collaboration with businesses, the Employment Agency and its labour offices to enhance social inclusion. Its mission is to contribute to local sustainable development by meeting local needs of trainings and by facilitating the interaction of groups to develop innovative approaches to Vocational Education and Training. To achieve these organization targets a great variety of groups and collaborates with local, national and international institutions and authorities. It keeps a wide network of qualified vocational trainers of adults who are experienced in curricula design and development, and influence the quality of VET systems throughout Bulgaria and Europe.



The project topic relevant trainings, offered by INFOCENTER, are mentioned in the table below. Information on other trainings could be found at: <http://infocenter.tryavna.biz>

We would like to mention that the following information is intended to give the users an idea of where and how they can search for training opportunities in the above-mentioned fields. This information is not intended as a complete list of the existing opportunities. It is worth mentioning that due to the intensive development of the VET system in Bulgaria new adult VET centers will appear during the following years and the number of training opportunities will probably increase a lot.

What is important is that the National Agency for Vocational Education and Training (NAVET) and the Employment Agency to the Ministry of Labour and Social Policy (MLSP) are working to create databases where one can check and find what they need in terms of trainings.





The National Agency for Vocational Education and Training (NAVET) has created an on-line information system containing all accredited VET Centers in Bulgaria where one can search by different categories.

(<https://is.navet.government.bg/>)

The training opportunities mentioned below are currently offered in the districts of Gabrovo and Veliko Tarnovo, which are two of the 28 districts of Bulgaria and are located in the north-central region of the country.

Trainings in professions and specialties related to the four topics are described below:





Some Training opportunities in the table below:

PROJECT TOPIC	RELEVANT TRAINING OPPORTUNITIES	TRAINING ORGANIZATION	LOCATION	STATUS
FUNGI	*Plant-growing *Mushroom-growing	“Alpha-Metal”	Gabrovo	16+ training center
RENEWABLE ENERGIES	Qualification in renewable energies	Lomonosov Vocational School in electronics and electrical engineering	Gorna Oryahovitsa	Vocational School
INTERPRETATION IN RURAL AREAS	*Rural Tourism *Organization of tourist and leisure activities	“Infocenter”	Tryavna	16+ training center
	Traditional wood-carving, icon-painting and interior design	National School in Applied Arts	Tryavna	State-funded Vocational School
	Knowledge provide in: national psychology, rhetoric, ethnography, History of Culture	Aprilov National High School	Gabrovo	State-funded Vocational School
	*Rural Tourism *Organization of tourist and leisure activities	“Veda Consult”	Gabrovo	16+ training center
	*Rural Tourism *Tourist animation	“Alpha-Metal”	Gabrovo	16+ training center
	*Organization of tourist and leisure activities	Pencho Semov Vocational School in Tourism	Gabrovo	Vocational School
	*Organization of tourist and leisure activities	Vocational School in Tourism	Veliko Tarnovo	Vocational School
“Cultural tourism” A two-semester qualification course	University of Veliko Tarnovo	Veliko Tarnovo	University	
PROFESSIONAL CAREGIVERS	*Social service assistant	“Infocenter” EOOD	Tryavna	16+ training center
	*Social service assistant	“Veda Consult”	Gabrovo	16+ training center
	*Social service assistant	“Alpha-Metal”	Gabrovo	16+ training center
	“Caregivers” Postgraduate qualification course	Technical University of Gabrovo (TU)	Gabrovo	University

With the support of the Lifelong Learning Programme of the European Union





SWEDEN

The current Vocational Training offer in the region of Gävleborg is offered by municipal learning centres or, in some cases, private entrepreneurs. The offer consists mainly of Higher Vocational Education, even if there are some actions also within the upper secondary school system.

HIGHER VOCATIONAL EDUCATION, CFL – Centre for flexible learning (Söderhamn)

Wind power technician – offshore

Professional family: Technology

Modality: POST UPPER SECONDARY EDUCATION (VET)

PROFESSIONAL INITIATION (European Union Qualification Level: 6)

Duration: 400 Point (EQUIVALENT to 400 days), 2 years

General competence: To work with operation, service and maintenance of wind power turbines, on- or off shore, or in other industrial application where you can make use of the competences built up during the education.

Courses:

- Electricity and electronics, 20 p
- Electronic circuits, 20 p
- Control- measuring- and regulation technology 40p
- Hydraulics and mechanics 15p
- Generators and transformers 15p
- Technical English 10p
- Control applications 35p
- Service-, operation-, and maintenance 30p
- Wind power, basics 20p
- Wind power, Technology 20p
- Wind power, Offshore 20p
- Occupational safety - offshore 30p
- Administration - IT 10p
- LIA – Learning at work place 100p
- Thesis 15p





UPPER SECONDARY EDUCATION, Slottegymnasiet (Ljusdal)

Nature utilization* – Forrest, Bio Energy

Professional family: Technology

Modality: UPPER SECONDARY EDUCATION (VET)

PROFESSIONAL INITIATION (European Union Qualification Level: 4)

Duration: 2500 Points (EQUIVALENT to 2500 hours), 3 years

General competence: The focus area forest provides knowledge about the forest as a renewable and sustainable resource. The approach emphasizes technical and biological knowledge for a high yield while maintaining biodiversity and high value products and services. The focus area forest will also provide knowledge of the forest for recreation and experiences. The focus area gives competences to work as forest machine operator, working with the forest service or forestry, wildlife and water conservation.

In the branch Bio Energy, the focus will be on modern bioenergy production in the forest as a base and in close cooperation with industry. The students follow the raw material a step further, from the forest to an incinerator. Also, the students gain the knowledge to run a loader and other equipment for bio-energy raw materials used in production, and also learn the basics of energy

The Swedish upper secondary educational programmes consists of 2500 hours (h), partly mandatory content (i.e. English, History, Maths, Natural science, Religion, Social science, Swedish and Physical education), and partly character subjects, which in this program consists of:

- All-terrain Transportation 100 h
- Timber Transport with forwarder 100 h
- Renewable energy 100 h
- Loaders and trucks 100 h
- Services Engineering Nature Utilization 100 h
- Forest management specialization 100 h





The student also can make a personal choice of courses for leading to competence as Entrepreneur:

- Building Maintenance 100 h NABT1203
- Small scale transports 50 h NABT1206
- Forest inform systems 50 h local rate
- Small business 200 h local rate
- Biology B 50 h BI1202

*The Nature Utilization programme can also offer other directions, i.e. Hunting and Forrest machinery within Bio Energy. It also offers the orientations Zoological education, Dogs and Horses.





REGION OF GÄVLEBORG

National vocational upper secondary education under control of The Swedish National Agency for Education offered in the province of Gävleborg.

In the Region of Gävleborg there are currently 23 upper secondary schools, distributed in the regions 10 municipalities. Among those, the following vocational oriented educations are offered, related to the project topics. In many cases, the same education, sometimes with small differences in focus areas, is offered at several schools, as seen in the table below.

Upper Secondary Education I Sweden consists of mandatory 2500 hours in school training, even if small variations can occur, due to individual choices.

Professional family – Agriculture Activities				
Key	Title	Hours	Centre	Locality
NB	<u>Nature utilization</u> Orientations: Animals, Farming, Forrest,	2500	Naturbruksgymnasiet Nytorp, Gävle praktiska gymnasium, Realgymnasiet Gävle, Naturbruksgymnasiet Ljusdal, Slottegymnasiet Ljusdal	Bollnäs, Gävle, Ljusdal

Professional family – Commerce and administrative service				
Key	Title	Hours	Centre	Locality
HA	<u>Commerce and administrative service</u> Orientations: Adminstrative service, Commerce and service,	2500	Thoren Business School Gävle, Borgarskolan, John Bauer gymnasiet, Träutbildningar i Hälsingland Bessemergymnasiet, Staffangymnasiet,	Gävle, Söderhamn, Ljusdal, Sandviken





Professional family – Hotel and tourism				
Key	Title	Hours	Centre	Locality
HT	<u>Hotel and Tourism</u> Orientations: Hotel and tourism, Hotel and conference	2500	Borgarskolan, Träutbildningar i Hälsingland Bessemergymnasiet, Torsbergsgymnasiet	Gävle, Sandviken

Professional family – Restaurant and food				
Key	Title	Hours	Centre	Locality
RL	<u>Restaurant and food</u> Orientations: Restaurant and food, Kitchen and serving	2500	Borgarskolan, Träutbildningar i Hälsingland Bessemergymnasiet, Torsbergsgymnasiet	Gävle, Sandviken

Professional family – Childcare and leisure				
Key	Title	Hours	Centre	Locality
BF	<u>Child and leisure</u> Orientations: Child and leisure, Leisure and helth,	2500	Voxnadalens gymnasiet, Björkhagaskolans gymnasiet, Slottegymnasiet, Torsbergsgymnassiet, Bessemergymnasiet, Gävle praktiska gymnasium, Polhemsskolan	Ovanåker, Bollnäs, Ljusdal, Gävle, Sandviken, Hofors

Professional family – Health care				
Key	Title	Hours	Centre	Locality
VF	<u>Health care</u> Orientations: Health care	2500	Staffangymnasiet, Torsbergsskolan, Bessemergymnasiet, Slottegymnasiet	Söderhamn, Gävle, Sandviken, Ljusdal

National vocational post upper secondary education under control of The Swedish National Agency for Education offered in the province of Gävleborg,





In the Region of Gävleborg there are currently 8 education organizations performing Vocational education on a post upper secondary school level. Among those, the following vocational education programmes are offered, related to the project topics.

Professional family – Renewable energy			
Title	YH-Points	Centre	Locality
<u>Windpower Technician – Offshore</u>	400	CFL, Centre for flexible learning	Söderhamn

Professional family – Professional caregivers			
Title	YH-Points	Centre	Locality
<u>Social pedagogic treatment</u>	45	CUL, Centre for development and learning	Hudiksvall

Professional family – Agriculture			
Title	YH-Points	Centre	Locality
<u>Forrest harvester driver</u>	205	Alfta Skogstekniska	Alfta





3.5. DESCRIPTIONS OF THE NEW SOURCES OF EMPLOYMENT AND THE NEWLY EMERGING PROFESSIONS

3.5.1. INTRODUCTION

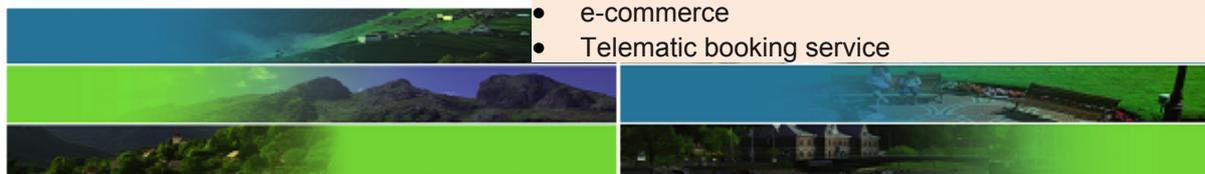
SPAIN, SLOVENIA AND SWEDEN

The markets in European countries markets are developing new fields of work. A lot of new sources of employment exist in Europe. For the ones which are not extended yet, there are possibilities to develop and they can be an opportunity for people who are unemployed.

At present there is an open list of New Sources of Employment classified into 19 areas by sociologists and European Commission experts.

The list is also classified in four main axes:

Main Axes	Area of activity	
Daily life services:	1. Home help.	<ul style="list-style-type: none"> • Assistance in bureaucratic procedures • Meal preparation and home delivery • Home delivery of goods. • Escort services for elderly people • Domestic cleaning services • Elderly assistance
	2. Childcare.	<ul style="list-style-type: none"> • Nurseries • Preschool education • Out of school hours nursery services. • Medical assistance during sickness • Out of school hours sport programmes • Assistance for problem children • Holiday camps • Sport camps • Childcare services provided by enterprises or groups of enterprises
	3. New information and communication technologies.	3.1. Personal services: <ul style="list-style-type: none"> • Telematic applications • Telemedicine • Multimedia and leisure • Computer assisted training services • e-commerce • Telematic booking service





Main Axes	Area of activity	
		<ul style="list-style-type: none"> • Access to information (Internet) • Home monitoring • Telematic information on local issues
		<p>3.2. Telework for enterprises:</p> <ul style="list-style-type: none"> • Lifelong training • Access to specialised business information • Production techniques • Adaptation to market fluctuations • Enlargement of markets • Managerial services • Computer assisted design • Tailored software • Telematic service
		<p>3.3. Telework for the local public sector:</p> <ul style="list-style-type: none"> • e-government. • Telework support. • Telematic services support.
		<p>3.4. Socioterritorial cohesion:</p> <ul style="list-style-type: none"> • Access to public information • Management of transports • Circulation support
	4. Support for young people facing difficulties and insertion support.	<ul style="list-style-type: none"> • Out of school support services to students facing academic failure • Rehabilitation of young delinquents • Rehabilitation of drug addicts • Support services for the disabled
Services to improve the quality of life:	5. Housing improvement.	<ul style="list-style-type: none"> • Restoration and repairs inside buildings • Restoration of the outside of buildings • Maintenance and surveillance in buildings
	6. Security.	<ul style="list-style-type: none"> • Surveillance in public spaces • Surveillance in collective transport services. • Home security systems • Security systems for enterprises • Security systems in public spaces • Tele-surveillance
	7. Local public transport services.	<ul style="list-style-type: none"> • Improvement of technical comfort in public transport • Improvement of the access to public transport for disabled people. • Creation of new collective transport organisation systems (multi-service enterprises, supply, vehicle maintenance, bus and taxi local associations) • Escort services for people with difficulties • Security • Information (reception, advice, tourism...etc.) • Surveillance of vehicles





Main Axes	Area of activity	
		<ul style="list-style-type: none"> • Microtransport systems that specialise in a given area or a given service
	8. Redevelopment of urban areas.	<ul style="list-style-type: none"> • Redefinition of functional spaces into multi-purposed areas for cohabitation • Remodelling and restoration • Maintenance of public spaces • Initiatives that require specialised workers and allow for the upkeep and reassessment of certain professions
	9. Local trade.	<ul style="list-style-type: none"> • In rural areas: Adaptation to the changes in the configuration of population (permanent or commuting) • In suburban areas: Development of local trade as a way to redevelop and adapt these areas to new lifestyles (working women, ageing population)
	10. Energy management.	<ul style="list-style-type: none"> • Energy saving in buildings and homes • Energy saving advice service for families • Use of new energy sources
Leisure services:	11. Tourism.	<ul style="list-style-type: none"> • Rural tourism • Cultural tourism • Adventure tourism • Specialised tourism (routes, circuits) • Organisation of activities and events • Tourism for the elderly
	12. The audiovisual sector.	<ul style="list-style-type: none"> • Film making • Film distribution • Production of TV programmes • TV broadcasting • Interactive television (remote access to museums, libraries etc.) • Production of multimedia advertisements (for instance presentations of enterprises, institutions or products)
	13. Promotion of cultural heritage.	<ul style="list-style-type: none"> • Restoration (qualified craftsmen needed) • Creation of cultural centres (artists, keepers etc.) • Promotion of culture • Reception, guides, scientists, technical staff, editors... etc.)
	14. Local cultural development.	<ul style="list-style-type: none"> • Promotion of popular culture (endogenous potential) • Link between recovery, maintenance, transmission, dissemination, conservation and role at local level, with the cultural tourism and the implementation of multimedia systems
	15. Sports.	<ul style="list-style-type: none"> • Management of sports clubs • Sports as an instrument for insertion • Sport education and sports as an instrument for a healthy lifestyle • Professional sports and show events





Environmental services:	16. Waste management.	<ul style="list-style-type: none"> • Separate waste collection and treatment • Recovery and marketing of collected material
	17. Water services.	<ul style="list-style-type: none"> • Protection of water sources • Cleansing and maintenance of watercourses • Cleanup of river basins • Protection against water pollution • Management of infrastructures. • Promoting public awareness on the sustainable use of water: citizens and enterprises • Water as a leisure resource
	18. The protection and maintenance of natural areas.	<ul style="list-style-type: none"> • Control its deterioration • Programmes for natural parks, natural reservations, reforestation and recovery • Protection of wild natural areas • Protection of reception centres
	19. Regulation, pollution control and required installations.	<ul style="list-style-type: none"> • Goods and services connected with less polluting technologies. • Export of process technologies • Energy saving technologies • Awareness raising on pollution control and energy saving: among citizens and enterprises





LATVIA

In Latvia, the following areas can be regarded as sources of employment according to the present market situation:

Source of employment	Occupational areas	Professional skills and knowledge
Daily life services	New information and communication technologies	1. Personal services: <ul style="list-style-type: none"> • E-commerce • Access to information (Internet) 2. Services to enterprises: <ul style="list-style-type: none"> • Adaptation to market fluctuations • Enlargement of markets • Managerial services 3. Services to the local public sector: <ul style="list-style-type: none"> • E-government. • Territorial cohesion: Access to public information
Services to improve the quality of life:	Local public transport services:	Creation of new collective transport organisation systems (multi-service enterprises, supply, vehicle maintenance, bus and taxi local associations)
	Energy management.	Energy saving in buildings and homes
Cultural and leisure services	Tourism.	Cultural tourism Nature tourism Active tourism
	Promotion of cultural heritage	Restoration (qualified craftsmen needed)
	Local cultural development	Link between recovery, maintenance, transmission, dissemination and conservation (role at local level of cultural projects and links with cultural tourism and the implementation of multimedia systems)
	Sports	Sport education and sports as an instrument for a healthy lifestyle
Environment services	The protection and maintenance of natural areas	Control its deterioration Programmes for natural parks, natural reservations, reforestation and recovery
	Pollution control	Goods and services connected with less polluting technologies. Energy saving technologies





BULGARIA

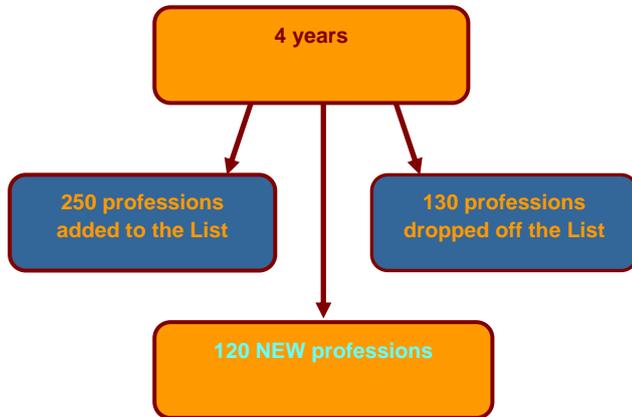
New professions appear when the employers need employees to do tasks which no-one has ever done before.

Do you know a typist or a cashier? If yes, then you are a lucky person, because these are two of the disappearing jobs. Modern technologies turned typewriters into antiques while no employer would employ cashiers because of the debit and credit cards and the non-cash payment opportunities. The last couple of years have definitely proved that we are living in dramatic times which are totally changing our lives. Labour market trends in the world and in Bulgaria are directly influenced by these changes - we need new jobs to help us successfully adapt our businesses and lives to the new realities.





STATISTICS



Statistics show that for the last **4 years** the economical development of Bulgaria has lead to the advent of **250 new occupations**. 250 new professions have been added to the National Classification of Jobs, while **130 old occupations** have been removed.

JOB HUNTING





Ten new professions have been officially introduced since 1st July 2011, following the last changes in the National Classification of Jobs, which has been constantly updated. The following occupations are among the new professions:

<p>OFFICIALLY INTRODUCED NEW PROFESSIONS IN BULGARIA from 2007 to 2011</p>	▪ sports manager
	▪ medical professional in paediatrics
	▪ medical professional in internal medicine
	▪ medical rehabilitation and ergo therapist
	▪ tax advisor
	▪ sports instructor
	▪ head coach
	▪ executive producer
	▪ cookstall attendant
	▪ head of group (building and construction)
	▪ bath attendant
	▪ companion
	▪ shoebblack
	▪ sommelier
	▪ bodyguard
	▪ butler
	▪ hardware technician
	▪ tattooist
	▪ marriage consultant
	▪ personal trainer
▪ horse riding instructor	

With the support of the Lifelong Learning Programme of the European Union

The process of emerging of new professions is related mainly to the fast development of economic sectors as ICTs, communications and advertising, as well as to changes in legislation. The full list of professions and positions is published on the website of the Ministry of Labour and Social Policies (www.mlsp.government.bg). Specialists think this will assist international companies in the process of selection of staff, as well as in working out staff labour agreements in different languages. The following occupations are an example of the newly emerging manager positions:





▪ Logistics Manager
▪ Advertising Manager
▪ PR Manager
▪ HR Manager
▪ Software Design Manager
▪ Networks Manager
▪ Corporative Planning Manager
▪ Office Manager
▪ Facility Manager

Professionals presume there will be more competence-segmented occupations in the near future, mainly connected to social media and networks.

Along with the above-mentioned changes, the List of Professions for Vocational Education and Training (LPVET) has been constantly changed, enriched and synchronized. The last update being made on 30th June 2011, which resulted in the addition of the following new professions:

- Mechatronics, qualification in “Automobile mechatronics”
- Agroecologist, qualification in “Agroecology”
- Courier, qualification in „Cargo and service logistics”

The herein Good Practices Guide pays special attention to those activities and emerging professions in the rural areas connected with the following activities:

- 1. Home help.
- 10. Energy management.
- 11. Tourism.
- 13. Promotion of cultural heritage.
- 14. Local cultural development.
- 15. Sports.
- 18. Protection and maintenance of natural areas.





3.5.2. SPECIFIC NEW SOURCES OF EMPLOYMENT

In this section, the following New Sources of Employment are fully described:

- Fungi.
- Organic Farming.
- Chestnut trees.
- Active tourism.
- Interpretation in rural areas.
- Renewable energies.
- Professional care-givers.





3.5.2.1 FUNGI.

1. GENERAL DESCRIPTION.

1.1. Description of the resource.

1.1.1. Introduction.

Fungi are among the most important renewable natural resources in many rural areas. Collecting and marketing fungi is an important source of income.

The main aim of this sector is to achieve the valorisation of fungi in their forestry ecosystems, and manage the resource so as to increase fungal production and fructification without being detrimental to nature conservation and laying the foundations for the sustainable utilisation of fungi producing forests.

The connection between forests, pastures or coppices and fungi is caused by the existing symbiosis between plants and mushrooms.

During fungi seasons (autumn and spring), the sustainable picking of edible fungi, an abundant and valuable resource, can be very profitable if all the stages of the marketing process take place in producer areas.

Edible fungi from European forests, mountains and wastelands may be collected and marketed. Tree species such as beeches, holm oaks, oaks or pines can produce several tens of kilos per hectare each season.





1.1.2. General characteristics of fungi.

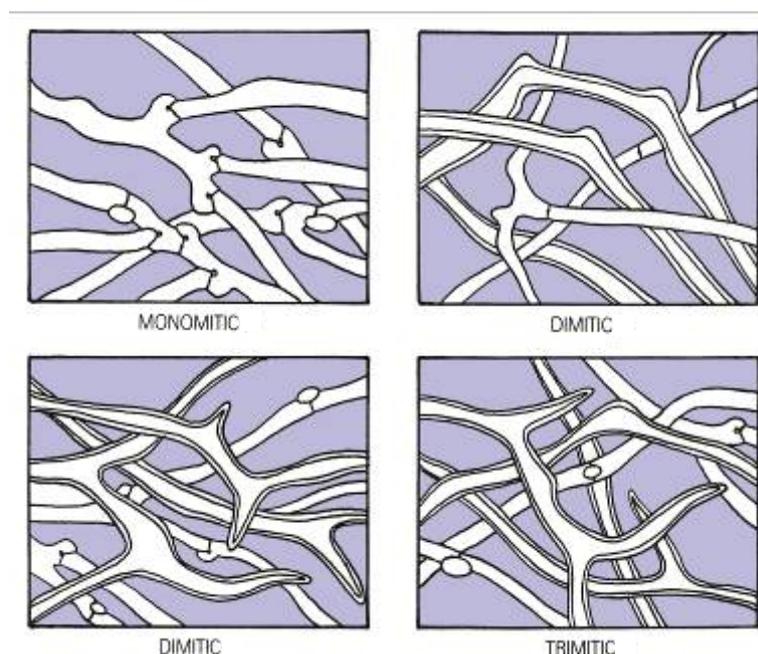
a) Morphology.

All macromycetes or mushrooms have two distinct parts:

- THE MYCELIUM

It is the vegetative part of fungi. It is formed by *filaments* or *hyphae*, which normally are white. It lives underground, in humus, among the roots, over leaves or dead wood, even over other fungi, plants or animals.

These *filaments* or *hyphae* grow radially in all directions and indefinitely. In some cases, there are spontaneous and mysterious fructifications forming complete circles, which are called "*fairy rings*" or "*fairy circles*".



Different types of mycelia.

- THE CARPOPHORE

Commonly known as **mushroom**. The "**fruiting body, mushroom or carpophore**" sprouts from the mycelium, forming a tissue, which is sterile in its most part. Only a small portion of the mushroom or carpophore is





fertile. This area is called "*hymenium*", and is formed by gills, tubes or spines. In other cases, it is a smooth or slightly creased surface.

The **hymenium** produces the **spores** in charge of disseminating the species. Spores disperse when they reach maturation and fall over substrate, which may be or may not be adequate. In most cases, spores do not find the necessary conditions and are not viable.

In adequate conditions, spores germinate and produce a very thin filament (called **primary filament**) that comes into contact with another filament produced at the same time by a spore of the opposite sex. These filaments fuse together forming a new filament (**secondary filament**). The group of filaments or hyphae is called **mycelium**.

The **fruiting body** or mushroom develops from the **mycelium** or **vegetative body** of the fungus. A single carpophore or fruiting body (mushroom) can produce tens of thousands of spores.



Development of the carpophore.

b) Macroscopic examination.

Carpophores or mushrooms present many characteristics that may seem very insignificant but are of great importance for their identification.





- CAP

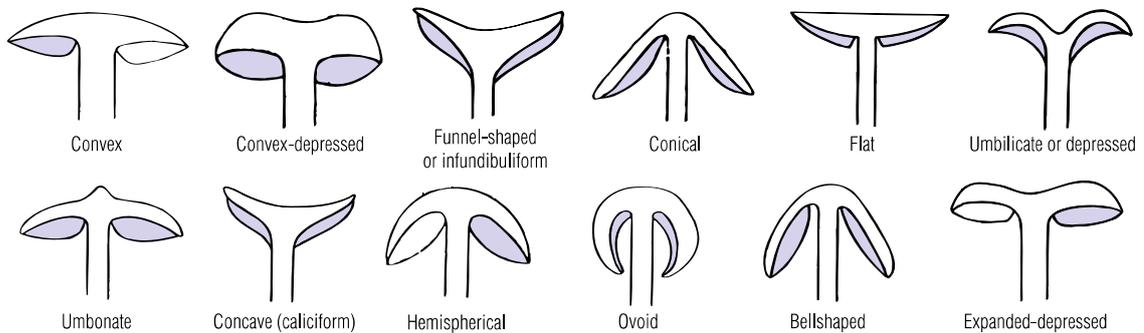
The most common shape is similar to an umbrella, with a stipe and cap, although there are many variants, depending on the type of hymenium. There is a very wide range of shapes and colours: round, flat, umbilicate, convex, umbonate, funnel-shaped, hemispherical, bellshaped,...

The cuticle: The cuticle is the outer membrane that covers the cap. It is very important in order to classify fungi according to their structure and colour.

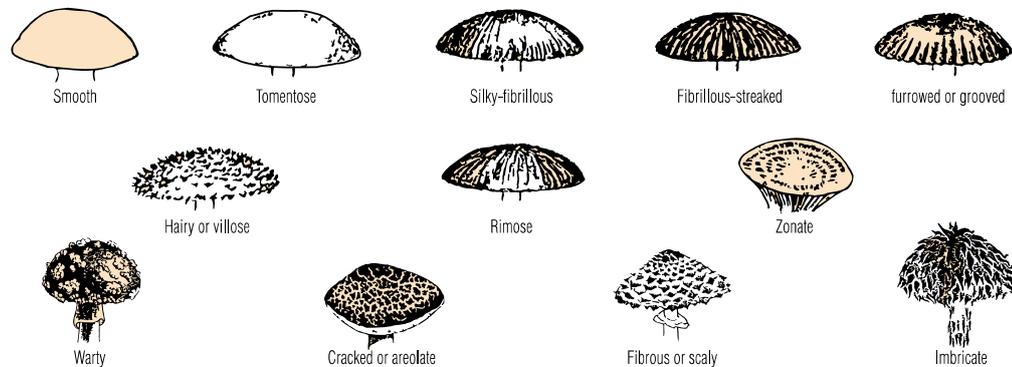
The surface of the cap may be: slimy or dry, with or without patches, easily separated from the flesh, smooth or scaly, fibrous, warty, cracked or rimose, zonate... etc.

The margin: The margin of the cap may be smooth, wavy, striate, furrowed, scalloped, thin or thick, etc.

Different cap configurations.

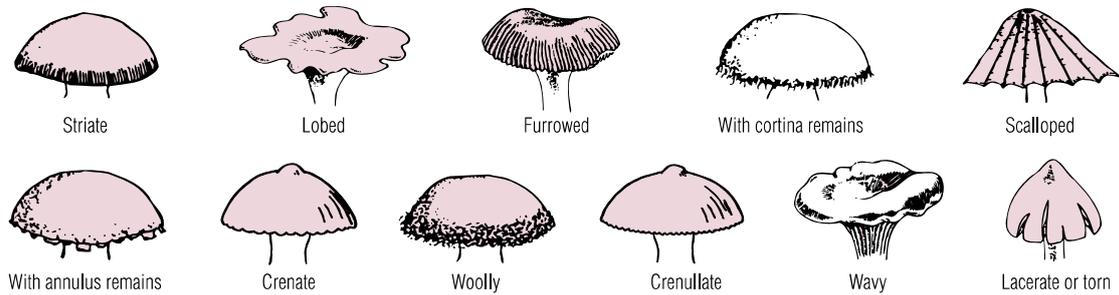


Characteristics of cap surface.





Types of cap margins.



- **HYMENIUM**

This is the area where spores are, and consequently, it is the fertile portion of the carpophore.

Gills: gills are thin vertical ridges on the bottom of the cap.

They go from the cap to the stipe, and can have different configurations:

- Distant (when they are distant from the stipe).
- Free (when they come close to the stipe but without touching it).
- Emarginate (when they are notched near the stipe).
- Adnate (when a small part of the gills is in contact with the stipe).
- Decurrent (when they descend down the stipe and cover a part of it).

Pores: Pores are small orifices at the edge of tubes, in the bottom of the caps of fungi belonging to the order *Boletales* and in the family *Polyporaceae*. Tubes can have different colour and length, and more or less easily separated from the flesh. Pores can be round, elongated, single, double, angular...etc. Their position with regard to the stipe can be, as in the case of gills, decurrent, adnate, free, emarginate and distant.

Spines: Spines are small projections in the bottom part (hymenium) of some mushrooms, as those in the family *Hydnaceae*. They can be short or elongated, thick or thin, firm or gelatinous.

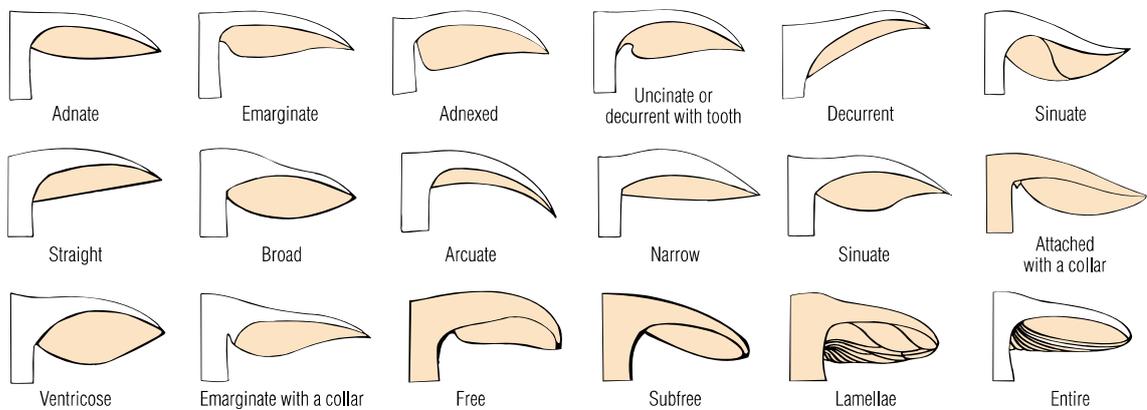
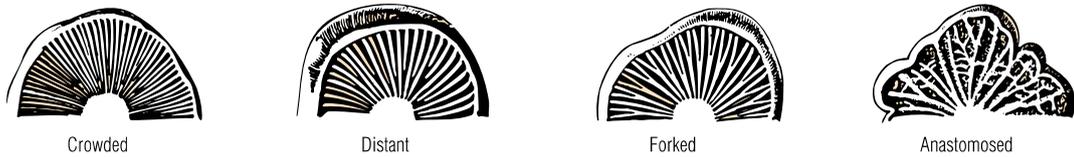




Types of hymenophores.



Gill edges.



Characteristics of hymenophores and types of gills.



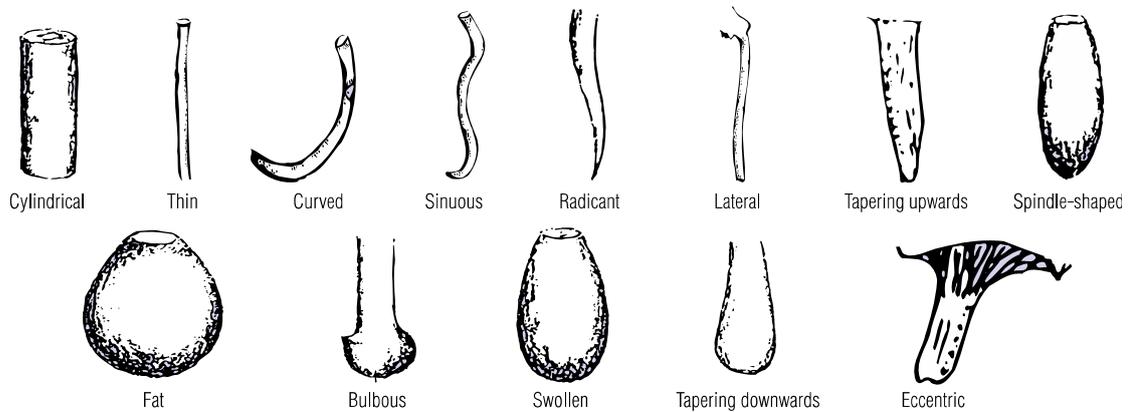


• STIPE

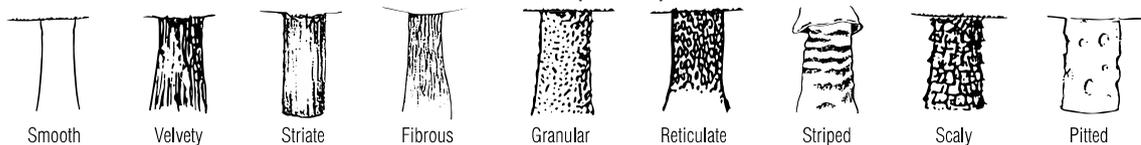
The stipe is the part of the mushroom that holds up the cap. Its colour, size, shape, as well as its fibrous or granular structure, hollow or solid condition, are important aspects in its taxonomy.

The shape of the stipe: Stipes can be solid or hollow, central, lateral or eccentric, thin or thick, curved, sinuous, radicant, tapering upwards, tapering downwards, bulbous, fibrous, cartilaginous or granular.

The surface of the stipe can be: reticulate, smooth, fibrillous, scaly, granular or velvety. The insertion point of the stipe in the cap is one of the most relevant characteristics of the mushrooms in the family *Agaricaceae*. In some specimens, the cap is hard to separate from the stipe, as it is the case with homogeneous fungi, whose cap is the continuation of the flesh of the stipe. In other cases, the two parts can be separated easily. This is the case of the so-called heterogeneous fungi, the flesh of whose cap is completely different of that of the stipe.



Different stipe shapes.



Stipe surface.





- ANNULUS

The annulus is the remains of the partial veil. Some mushroom species are covered with a membrane or partial veil when they are developing. This membrane protects the hymenium and covers both the stipe and the cap. When the cap grows, it breaks the membrane, and in some cases, parts of it stay in the stipe, forming a ring or annulus around it. The existence or non-existence of an annulus in the stipe is very useful in fungi classification.

The annulus can be: single or double, attached or movable, funnel-shaped, scaly, farinaceous, granular, skirt-like or with a cartwheel structure. An annulus can be persistent or evanescent, which makes taxonomy more complicated.



Types of annulus.

- CORTINA

The cortina is formed by very thin, cobwebby fibrils that join the margin of the cap with the stipe. It is very frequent in the genera *Cortinarius*, *Inocybe*, *Hebeloma* and *Psathyrella*. Cortinas are evanescent, and can only be seen in very young specimens. It disappears in mature mushrooms, leaving just a few filamentous remains in the upper part of the stipe.

- VOLVA

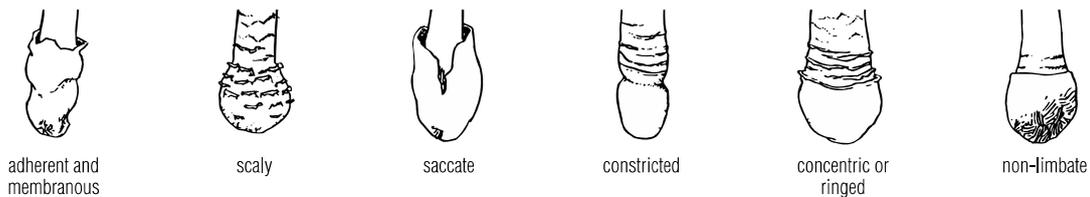
The origin of the volva is in the universal veil, which is a membrane that covers the carpophore in young specimens and breaks when the mushroom grows. If this membrane is broken only in its upper part, the lower part remains within a sheath or volva. The lower part of the stipe needs to be examined carefully in order to see the volva or its remains,





especially in the cases where it is buried. In the classification of the genera *Amanita* and *Volvaria*, the shape of the volva is essential.

Volvas can be: farinaceous, membranous, scaly, conical or spherical, bulbous, cylindrical, evanescent or persistent.



Types of volvas.

- FLESH

Consistency: The flesh can be fibrous, granular, cartilaginous, hard or soft, firm or spongy, coriaceous, slimy, hydrophanous...etc.

Colour: In some genera (*Lactarius*, *Leccinum*, *Boletus*, *Cortinarius*...etc) the colour of the flesh can be altered due to an oxidation process. Moreover, the colour of the flesh can also change with the weather.

Smell: It is advisable to smell mushrooms when we are collecting them and after they have been conveniently preserved. Some mushrooms smell like fresh flour (*Calocybe gambosa*, *Entoloma lividum*, *Tricholoma tigrinum* or *pardium*), others smell like anise (*Agaricus sylvicola*, *Clitocybe odora*), phenol (*Agaricus xanthoderma*) or garlic (*Lepiota cristata*, *Marasmius alliaceus*). Others have a fetid smell (*russula foetida*) or smell like bitter almonds (*Hygrophorus agathosmus*), chlorine (*Mycena alcalina*), radishes (*Hebeloma*) or raw potatoes (*Amanita citrina*)...etc.

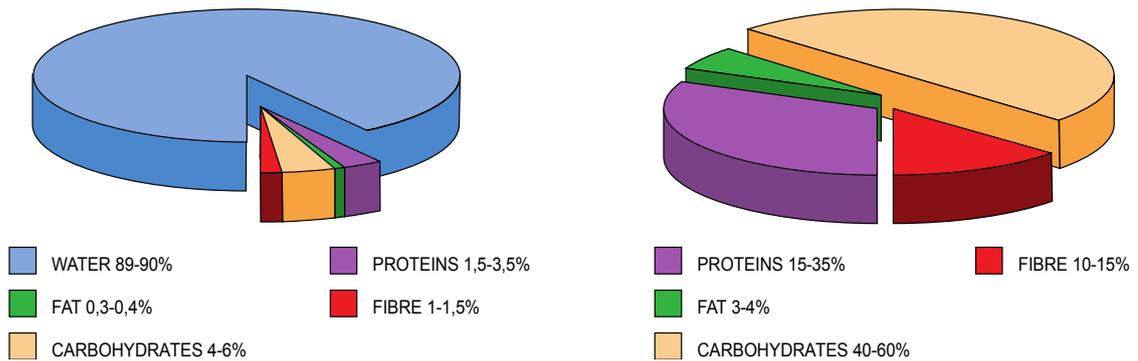
Taste: The taste of mushrooms can be sweet, bitter or spicy, and it can be pleasant or unpleasant.





c) Main components of fungi.

Fungi have a very large water content (90%) and low energy yield (fat content 1-2%). Many fungi have medicinal properties.



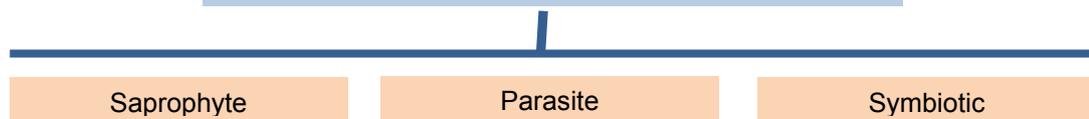
Main components of fungi.

d) Main life forms.

Due to the lack of chlorophyll and photosynthetic and chemosynthetic pigments, fungi have to either establish relationships with other organisms in order to subsist and get the necessary organic nutrients, or obtain nutrients from organic matter, dead or living.

Fungi have adapted to virtually all elements and all life forms, both aquatic and terrestrial. They can live under the snow, in fresh water and seawater. They can live in earthy soils, in the torrid sands of deserts or the dunes of sandy beaches, in wood or excrements, over bryophyte plants, etc.

Classification of fungi according to their nutritional status



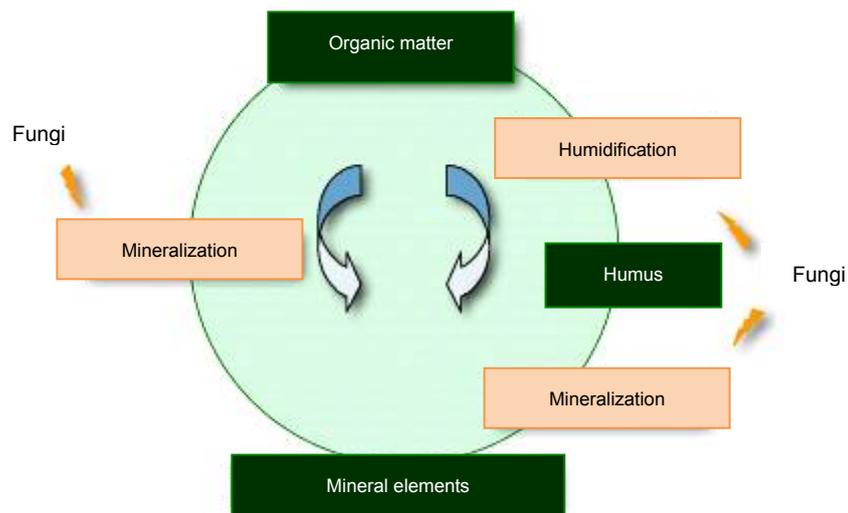


- SAPROPHYTES

A saprophyte fungus (*sapros*=putrid and *fyton*=plant) feeds from dead or decaying matter. These are the most common fungi. They take part in the fermentation and mineralization of vegetables so that they can become humus.

Fungi can decompose all types of organic natural matter. Thanks to them, the life cycle of organic matter can be completed, and matter transforms into the mineral elements that plants feed on. This cycle is essential for life.

Phases of organic matter degradation.



In some cases the difference between parasite fungi and saprophyte fungi is not very clear. Some species behave as semisaprophytes or semi-parasites, which means that they can be saprophytes or parasites depending on their circumstances and needs. *Kuehneromyces mutabilis* is an example; it is a very efficient saprophyte fungus that becomes a parasite when it finds a weak organism (as the trunk of a tree).





- **PARASITES**

Parasite fungi colonise other animals, vegetables and fungi and live at their expense. They may cause diseases or even death to the host. Fungi represent the 90% of the existing vegetable parasites. Moreover, some argue that they destroy more than 15% of the vegetable production worldwide yearly. They are capable of overcome the cellular defences of the host organism due to the large number of enzymes, toxins and antibiotics that they produce.



Chestnut infected with chestnut blight.

- **SYMBIOTIC OR MYCORRHIZAL FUNGI**

The mycelium on the soil may feed on decaying organic matter or may establish a mutual relationship with green plants, that is, with trees, weeds, ferns, seaweeds, etc. Such mutual relationship is usually based on feeding and protection. The relationship between fungi and green plant roots is a specific type of symbiosis called mycorrhizal symbiosis.

These mycorrhizal fungi obtain reserve sugar, starch in particular, from the roots of the plant. The plant on its turn improves its capacity to absorb water and mineral elements (phosphorus) thanks to the union between mycelium and its roots.





1.1.3. Mycorrhizae in nature.

a) Rhizosphere.

The rhizosphere is the region of soil where plant roots are.

It is the soil that is adhered to a root when we pluck it. The chemical and biological activity of the rhizosphere takes place in a 1mm thick portion of the soil.

Broadly speaking, the rhizosphere is the portion of the soil that is colonised by plant roots.

The rhizosphere has two outstanding characteristics:

- The density of organisms is larger than that of other portions of soil.
- The stability of the soil is greater, due to the physical action of roots and due to the exudates of all the existing organisms.

Among rhizospheric micro-organisms, mycorrhizal fungi are essential. Nevertheless, these symbiotic relationships are governed by other groups of rhizospheric microbes that deal with the recycling of nutrients and with plant nutrition.



Mycorrhizal fungus associated to chestnut trees.

The effects can be:

R

Encourage the germination of infective propagules.

Development of a symbiotic association.

Opening of access points.

Mycorrhizal symbiosis in its turn changes the quality and quantity of plant exudates and creates physical modifications around the roots. All these physical and chemical changes affect the rhizospheric microbes and leads to a new balance.





b) Mycorrhizal associations.

Mycorrhizal associations are very evolved mutualist associations (symbiosis) between plant roots and the fungi in the soil. The relationship between the fungus and the plant is beneficial for both. It enables the plant to better absorb the nutrients around it, and it improves its protection against pathogens. Most frequently the mycorrhizal fungus would not be able to subsist without this symbiotic relationship. The members of these associations are fungi (Basidiomycetes, Ascomycetes and Zygomycetes) and most vascular plants.

- TYPES OF MYCORRHIZAL ASSOCIATIONS

Mycorrhizal associations are classified in two big groups, according to their structure and morphology: ectotrophic and endotrophic.

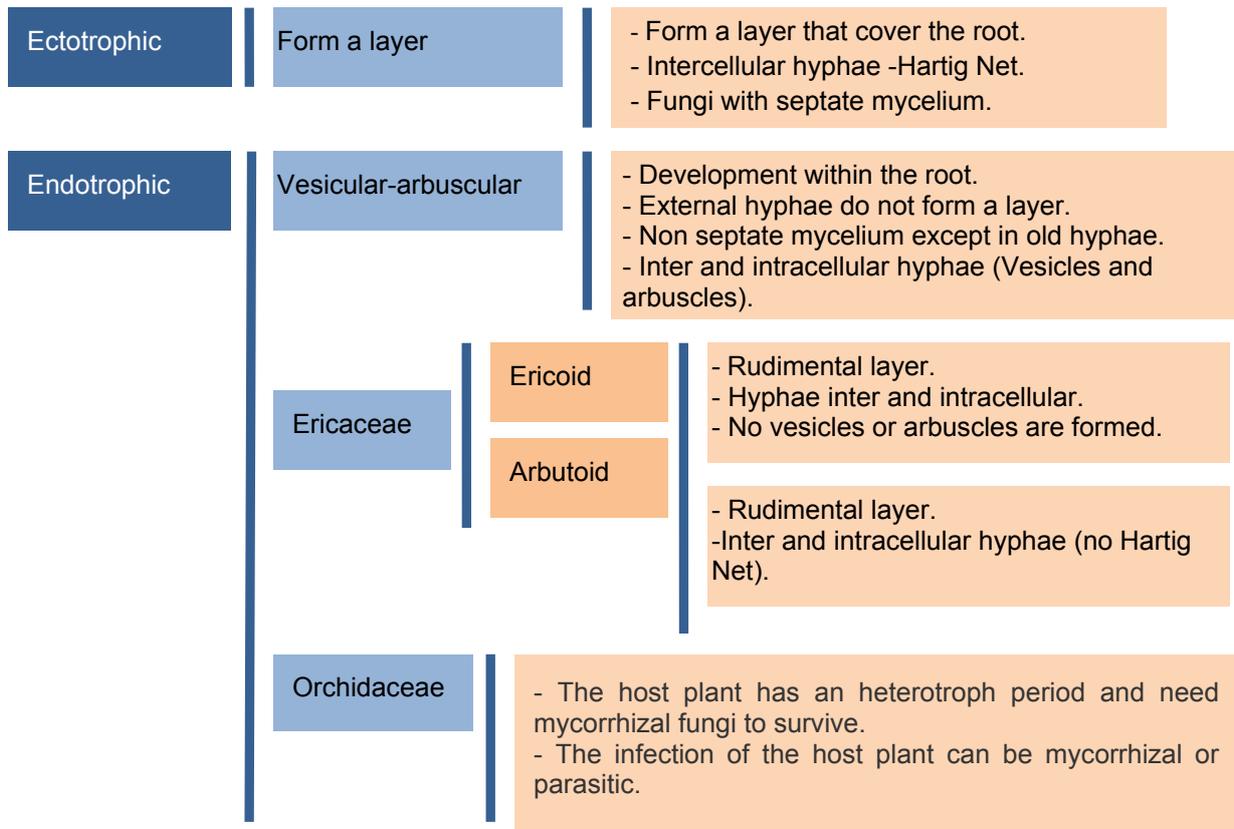
Ectotrophic Mycorrhizae

Ectotrophic mycorrhizae are those mycorrhizal associations in which the fungus, normally having septate mycelium, forms a layer of hyphae around the root. The development of the fungus takes place intercellularly within the root bark, and it is called "Hartig Net".

Endotrophic Mycorrhizae

In endotrophic associations, the fungus does not form a layer around the root and hyphae enter the cells in the bark. Nowadays, we know that the fungi taking part in endomycorrhizae are very different in a taxonomic and physiological sense, and therefore the classification has changed and former endotrophic mycorrhizae were split in different groups.

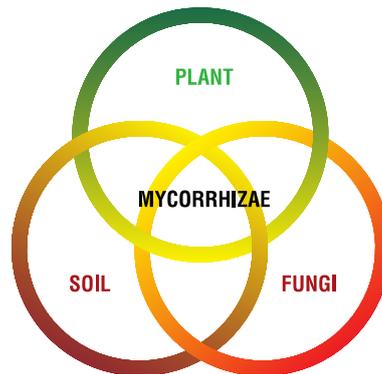




The most usual mycorrhizae are vesicular-arbuscular ones. This type of symbiosis is present in all climates that allow for plant growth and most plants with farming and industrial interest have this sort of symbiotic relationship.

Ectomycorrhizal associations are much easier to manipulate in silvicultural plantations than vesicular-arbuscular associations are in other farming systems.





Elements involved in mycorrhizal associations.

This is a consequence of:

- Ubiquity of vesicular-arbuscular fungi in all types of soils.
- Capacity of many ECM fungi, but not of vesicular-arbuscular ones, to colonise sterile crops.
- Compatibility of conventional practices with fungal inoculation in tree nurseries.
- Specificity between mother trees and many ECM fungi.

- **HOST PLANTS**

Researchers have discovered that the plants involved in mycorrhizal associations are predominant in most natural ecosystems worldwide. The trees and plants involved in ectomycorrhizal association have an important role in most habitat; non-mycorrhizal species are also common. There is a lot left to learn about fungal-plant associations, including species of economic interest.





- MYCORRHIZAL FUNGI

The species in the kingdom fungi obtain nutrients in several different ways, including decomposing organic substrate, predation, parasitism and mutual relationships.

Many soil fungi are saprobic and have the enzymatic ability to digest organic substrates of different complexity; however, some live in soils with very little organic and inorganic substrate.

Mycorrhizal fungi are an important component of the soil mycoflora but normally have a rather limited saprophytic capacity.

It is thought that mycorrhizal fungi have lived in the same type of soil habitat for million years, and have slowly adapted to the changing conditions in such habitat. It seems that some fungi species have a worldwide distribution pattern, and have adapted to a wide range of habitat types.

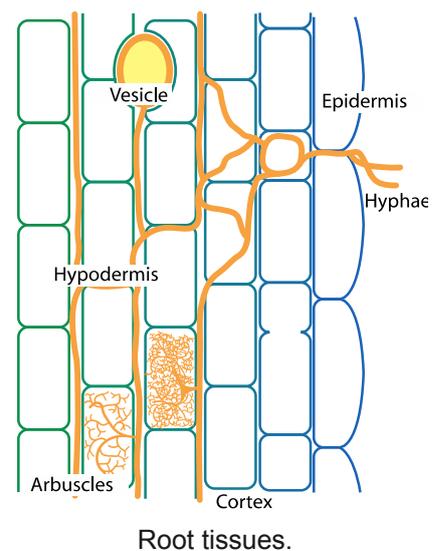
- STRUCTURE AND DEVELOPMENT OF MYCORRHIZAL ROOTS

We must become acquainted with the structure of non-mycorrhizal roots before studying the changes that mycorrhizal associations cause in them.

Some roots have mycorrhizal potential among its anatomic characteristics.

We must be aware of the differences between primary and secondary roots, and the different types of roots, as they have different functions. Root types vary in growth speed, life span and structure as well as in water and nutrient intake capacity or mycorrhizal capacity.

Root tissues are produced by cell division in the root apex, and by cell expansion in subapical regions.

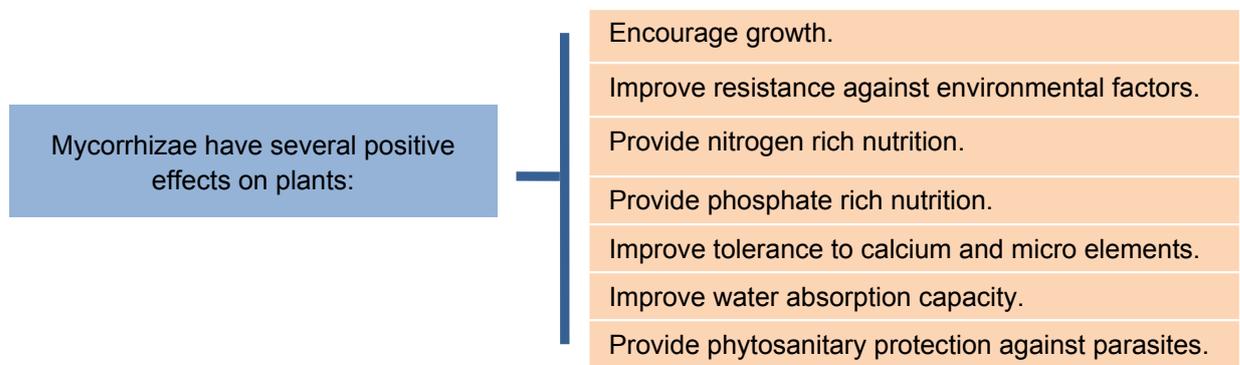




These tissues develop at large distances from the root apex, and may be identified under a microscope thanks to their specific features, as cell walls and cytoplasm.

In mycorrhizal roots, cell components are very important for metabolic and transportation processes, and provide information on the functioning of mycorrhizal associations.

c) Effects of Arbuscular Mycorrhizae on plants.



- EFFECTS ON GROWTH

The most outstanding effect of arbuscular mycorrhizae (AM) on plants is an increase in their capacity to absorb mineral nutrients, which has a positive effect on their growth. The spreading of fungal mycelium in the rhizospheric soil is the main factor causing such effect, as it allows for the intake of nutrients beyond the depletion area around the roots, caused by the absorption of the plant itself.

- RESISTANCE TO CLIMATIC FACTORS

Another outstanding effect of arbuscular mycorrhizae is the increased resistance of plants against water stress, salinity, and soil pathogens, as well as higher transplant survival rates. A mycorrhized plant can grow in sandy soils, and is able to add more soil particles to their roots per mass





unit than a non-mycorrhized plants. The production of soil aggregates is essential to reduce erosion.

- PHOSPHATE-RICH NUTRITION

Phosphorus is a stable element and does not move in the soil; therefore, the lack of phosphorus is not uncommon. Phosphorus ions are entrapped within the colloids or fixed as iron or aluminium phosphates. Most of the phosphorus in the soil is insoluble.

Studies show that ectomycorrhizal roots absorb more label phosphorus than non-mycorrhized roots of the same age. The same effect has been noticed in endomycorrhizae.



Mycorrhizae are beneficial for plants.

Mycorrhized plants grow more due to the active mechanisms that transport phosphorus from the fungus to the plant.

- NITROGEN-RICH NUTRITION

Mycorrhizal fungi absorb ammonium ions; some of them can also absorb nitrates. Label nitrogen accumulates in ectomycorrhizae and endomycorrhizae in the form of amino acids: glutamate-glutamine, aspartate-asparagine and alanine. Roots and fungi assimilate ammonium in different ways.

Roots assimilate it via glutamine synthase and glutamate synthase.

Fungi assimilation involves glutamate dehydrogenase NADP. Glutamate synthase seems to be involved too. Nitric and ammoniacal activity of fungi allows for the plant to adapt to very varied pedoclimatic conditions.





- TOLERANCE TO CALCIUM AND MICRO ELEMENTS

In calcium-rich soils, acidophilous¹ species present chlorosis². This is caused by disorders in the metabolisation of nitrogen and micro elements. Mycorrhizae develop a tolerance to limy soils.

The presence of manganese in acid soils may cause phytotoxicity and therefore, low yields and the typical foliar symptoms. Mycorrhization prevents toxicity as it modifies the distribution of manganese in the plant (stalk 45% and roots 20%, non-toxic concentrations lower than those in non-mycorrhizae).

- WATER INTAKE

The mycelium layer may absorb and provide the plant with water that is a few centimetres further off than the roots can reach. The mycorrhized plants resist transplants much better and have a more positive response to water stress. An improved intake of minerals and the hormonal processes that control the opening of stomata explains all these physiological effects³.

- PHYTOSANITARY PROTECTION

Mycorrhization influences the functioning of plants to a great extent; in particular, it makes them less sensitive to diseases. The influence of the mycorrhizae depends on the nature of the infectious agent and of the disease it causes.

Mycorrhizal symbiotic associations are undeniable biological control methods against telluric pathogens. This prophylactic activity is caused by the joint action of several mechanisms (nature of the exudates, ability of

¹ Organism that grows in acid soils with low pH.

² BOT. Yellowing of leaf tissue due to a lack of chlorophyll.

³ BOT. Stomata are small pores found in the surface of a plant leaf.





the mycorrhizal fungi, mechanical barrier, inhibitory substances, metabolic by-products, etc).

d) Applications of mycorrhizae.

The study of mycorrhizal associations comprise several scientific fields, which include:

- mycology (fungal taxonomy, physiology, development, etc.);
- botany (physiology, mineral nutrition and morphology of mycorrhizal plants);
- soil science (soil nutrients, structure, biology etc.);
- ecology (nutrition cycle, environmental quality, reconstruction of ecosystems, biotic interactions, etc.);
- humanities (economical, nutritional, medicinal value of fungi and associated plants);
- and other applied studies (silviculture, farming, plant pathology etc.).

Nowadays research on this field focuses on the utilisation of the potentials of mycorrhizal associations in silviculture, farming, horticulture and production of new edible fungi species.

Important research initiatives intend to manipulate micorrhizal associations in order to increase the productivity of the plants in silvicultural plantations as well as in new plants used in the recovery of damaged ecosystems. The functional diversity of mycorrhizal fungi increases the resistance of ecosystems and provides new opportunities to select fungi that have adapted to specific combinations of mother plant/environment/soil, in order to encourage tree growth in plantations.





Some of the mycorrhized trees with commercial value belong to the following families:

<i>Pinaceae</i>	Pines, fir trees, cedars, pseudotsugae, larch trees, spruces.
<i>Fagaceae</i>	Holm oaks, chestnut trees, oaks, beeches.
<i>Tiliaceae</i>	Lime trees.
<i>Betulaceae</i>	Alder trees, birches, hazel nut trees.
<i>Salicaceae</i>	Willows, black poplars.
<i>Rosaceae</i>	Apple trees, pear trees, plum trees.
<i>Jugladaceae</i>	Walnut trees.
<i>Mimosaceae</i>	Acacias.
<i>Ulmaceae</i>	Elms.
<i>Ericaceae</i>	Heathers, strawberry trees.

All these families form ectomycorrhizae and some of them form endomycorrhizae too. Endomycorrhizae prevail only during the first months or years of the life of trees, after which ectomycorrhizae are predominant. Mycorrhizal communities vary with the passing of time.

Examples of some of the main mycorrhizal fungi:

Ectomycorrhizal	Amanita	Boletus	Cortinarius
	Paxillus	Russula	Rhizopogon
	Phallus	Pisolithus	Laccaria
	Scleroderma	Tuber	Suillus
	Lactarius		
Endomycorrhizal	Glomus	Gigaspora	Acaulospora
	Sclerocystis	Marasmius	Fomes
	Coriolus	Fomes	Armillaria
	Rhizoctonia	Pezicella	Sebacina
	Corticium		

The main forests of interest depend on ectomycorrhizae. When fungi colonise poor soils, they help plant nutrition and adaptation.

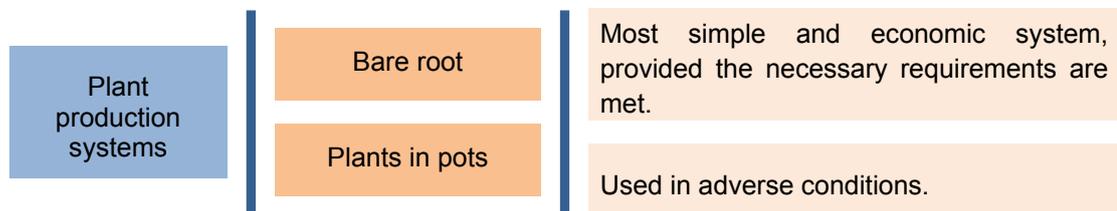




Controlled mycorrhization in nurseries allows reforestation with plants that are mycorrhized already. The main objective of controlled mycorrhization is to improve forest productivity and sometimes also to produce fungi.

Mycorrhizae reduce mortality and transplant stress. They fasten the growth and production of forests.

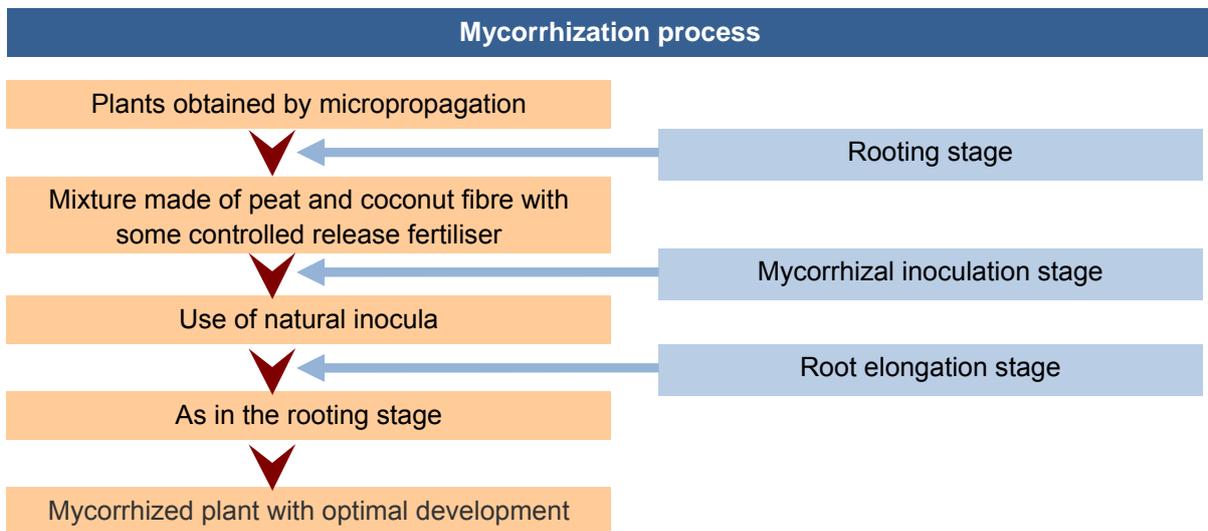
At present it is impossible to modify significantly and permanently the balance of the mycorrhizal flora and the root in adult specimens. Therefore, all initiatives must focus in the early stages of the life of the plant. This is an essential step in controlled mycorrhization.



In the mycorrhization process, it is possible to use natural inocula as meiotic spores, sclerotia, rhizomorph fragments, mycelium or old mycorrhizae.

Advantages and disadvantages of natural inocula:	
Advantages:	Disadvantages:
This type of inoculum does not require any devices or techniques to be used.	It is difficult to purify the inoculum.
Costs are very low.	They are genetically unstable.
	There are risks of pathogenic infection.



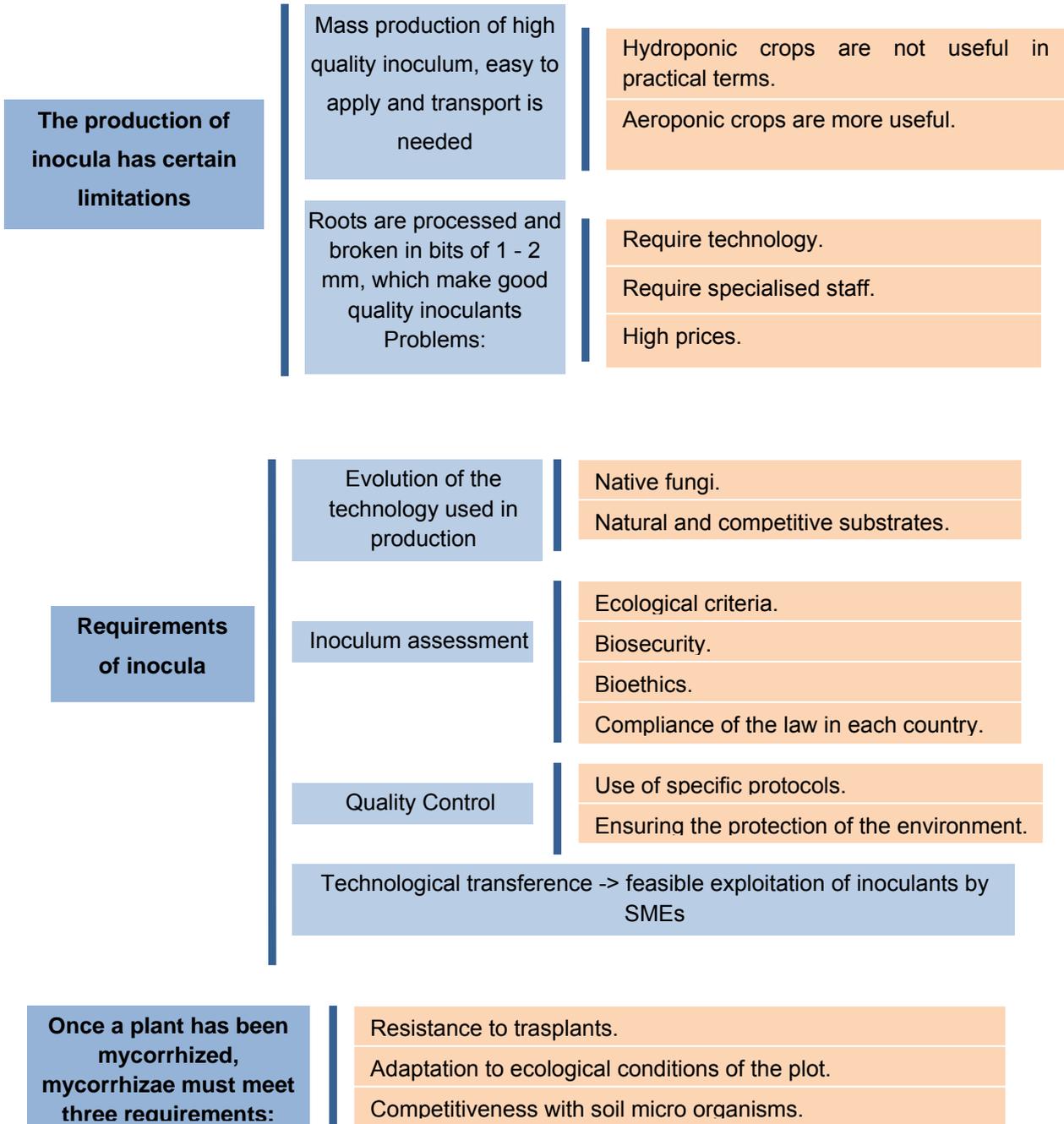


Once we have the necessary amount of inoculum, we can use it in the mycorrhization process.

Nursery inoculation techniques:	
Soil disinfection	Disinfection can be carried out with heat or fumigation.
Adding up of the inoculum	The inoculum is mixed with the soil before sowing.
Cultivation tasks	They normally involve moderate fertilising and phytosanitary treatments.

Factors affecting the development and activity of mycorrhizae:	
Light. The light affects the mycorrhizal infection. The infection is drastically reduced if it takes place in shadowy places. 80% drop of spore production.	
Low temperatures have the same effects.	
The use of nitrogen and phosphorus rich fertilisers .	
Soil fertility , which is connected with root growth: A fast growth does not allow for the mycorrhizal infection to take place. A slow growth allows for the mycorrhizal infection to take place.	
The presence of plant hormones (auxines and ethylenes) favours the creation of mycorrhizae.	
The interaction with other micro-organisms of the rhizosphere may have different effects: Azotobacter has positive effects. Pseudomonas has positive effects.	
Pesticides have negative effects.	







e) Ecology of mycorrhizae.

Some recent studies show how trees start producing fungi when they reach a certain age. **As the ecosystem grows older, the complexity of the mycorrhizal fungal population increases.**

Therefore, young plantations or plantations having suffered some sort of damage (fire, long periods of drought, grazing) have very limited mycorrhizal fungal populations, both as regards its diversity and number of propagules.

Both factors increase as the vegetation itself increases with the passing of time, as there are more propagules that find a favourable niche and there are more organic matter and nutrients, as well as a greater diversity of species.

Moreover, the surrounding vegetation, which is not directly connected with the fungus but provide favourable conditions for its development, can influence the process if is not too abundant.

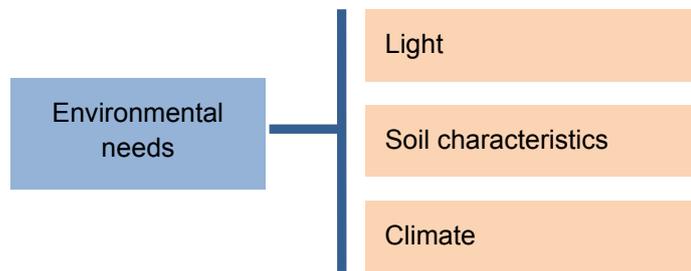
In some areas, the greater concentrations of *Boletus edulis* are associated with species as *Vaccinum myrtillus*, *Erica vagans* and *Myriqa gale*, the later being responsible for nitrogen fixation.

Carpophores present high levels of proteins, and therefore N-fixing plants are very useful, as ectomycorrhizal fungi are able to mineralise organic nitrogen from the soil thanks to mycorrhizae and give it to the symbiotic plant they are associated with.

The ecology of fungi implies certain pedoclimatic preferences and determines in what periods they can successfully compete with other living organs for the existing resources.

Thus, it has been verified that apart from associating with another organ able to provide them with carbohydrates, mycorrhizal fungi have other environmental requirements.





- LIGHT

As for light needs, even if fungi do not have any photosynthetic activity, some species require considerably dense vegetation layers while others (*Boletus edulis*, *Lactarius deliciosus* o *Amanita caesarea*) may need a more direct exposure to light.

The abandonment of rural areas causes coppice to grow too dense, which makes it difficult for some fungal species as *Amanita caesarea*, truffles or *Terfecia* to proliferate.

Other species seem to adapt to both shadowy and sunny environments. This is the case of the *Chanterelle*. Other edible fungi, as *Boletus pinicola* grow preferably in dense and shadowy forests.

- SOIL CHARACTERISTICS

Some species are intolerant to certain features; for instance, the valued truffles (*Tuber* sp.) prefer limy soils.

Moreover, the type of soil conditions the type of mycoflora that is liable to live in it, which is subject to pedoclimatic evolution:

- *Suillus bellini* grows in dry, eroded and limy soils.
- *Pisolithus tinctorius* and *Rizhopogon roseolus* are very efficient and competitive in acid and damaged soils. These species are being used in order to regenerate soils where other plants cannot survive easily.

Many species of the genera *Cortinarius*, *Russula* or *Boletus* grow in mature soils. *Lactarius* is more common in loose, well-drained and sandy soils resulting from the degeneration of sandstone, granite, quartzite, slate and





schist. On the other hand, truffles grow in limy soils and grow near holm oaks, Portuguese oaks and other broadleaf species.

- CLIMATE

The climatic preferences of fungal species are normally linked to the preferences of the trees or bushes they are associated with. However, the amount of fruiting bodies produced depends on yearly climatic conditions.

Thus, a given species may be latent and never get to grow, or do it only to a certain extent, due to climate conditions of the ecosystem.

A connection has been found between production and the last rains of the summer, after a sequence of dry days, when this particular moment coincides with the time when trees accumulate the maximum amount of nutrients.

Therefore, it is possible to predict production to a certain extent by considering climatic variables, and thus plan the management of fungal resources taking into account the alternation of high and low yield years which is characteristic of fungal production⁴.

In general terms, acid soils in areas with more than 600 ml of yearly rainfall are considered to have good conditions for fungal proliferation.

Edible fungi normally grow in forests located in rainy areas. However, they may also grow in dryer areas.

Fungal production is not only connected with tree species, but also with pastures (where *Terfezia arenaria* usually grows) or scrublands and thorn

⁴ High and low yield years affect the amount of fruit or flowers produced by a plant. One year there is abundant fructification or flowering and the next the production is much lower. This is very common in olive trees.





forests, where the valued St. George's mushroom (*Tricholoma georgii*) grows, among other species.

Frosts condition or even hinder the production of some species.

With respect to the spatial distribution of mycorrhizal fungi, it is important to observe the distribution of mycelia and how it changes with the passing of time. This aspect is essential in order to understand the role of fungi in natural ecosystems.

Nowadays, we know that young fungal populations tend to group in numerous but small thalli, while adult populations tend to be less numerous but larger, and have a more heterogeneous distribution.

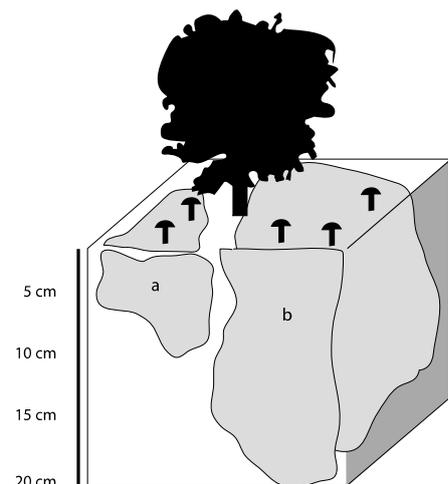
The size the mycelium of fungi can go from a few centimetres to some tens of meters, and age can range from some tens to some hundreds.

The surface and depth covered by mycelia is not even; they can be at different depths regardless the species they belong to.

All in all, each fungal species, and some times each specimen, require different types of forest, associated plant, tree coverage, soil, water conditions... etc.

In addition to this, each species have its own growth rate and reproductive characteristics. The managers of these resources can improve these characteristics and keep or even increase production.

In order to make the most of fungal resources and favour both forest ecosystems and their sustainable exploitation, the utilisation and recovery of fungal resources must be planned carefully.



Distribution of fungi.





1.2. Evolution in the use of the resource.

Silviculture is the act of applying a group of treatments to forests in order to preserve them in time and in accordance with the principles of sustainability and multiple use. These treatments vary depending on the target species and on the objectives sought.

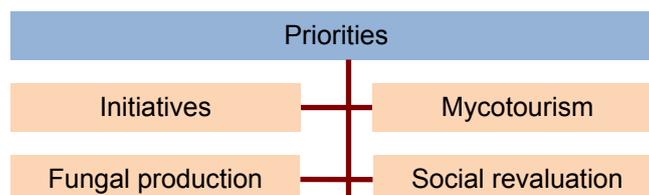
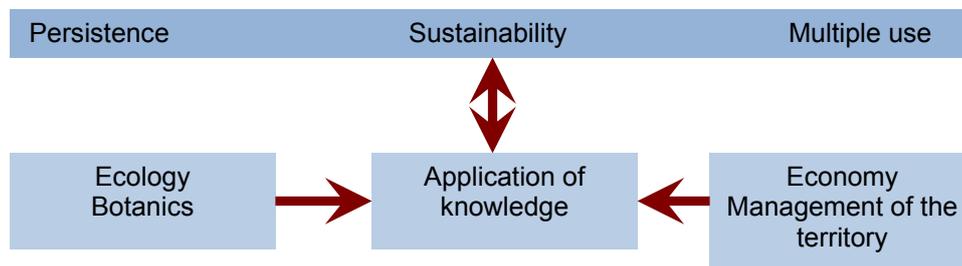
Silviculture intends to apply the knowledge on the characteristics, structure, growth and reproduction of forest plants in order to obtain a continuous production of goods that are necessary for society.

Until recent times, management (treatments, distribution in space and time) focused mainly on timber.

However, there are many other products in forests, which are more and more valued nowadays. This is especially true of Mediterranean areas, where the diversity of forest production and services (hunting, pastures, **fungi**, berries) is much more profitable than timber itself.

Edible fungi are among the products that are starting to be appreciated by managers, researchers, owners and users.

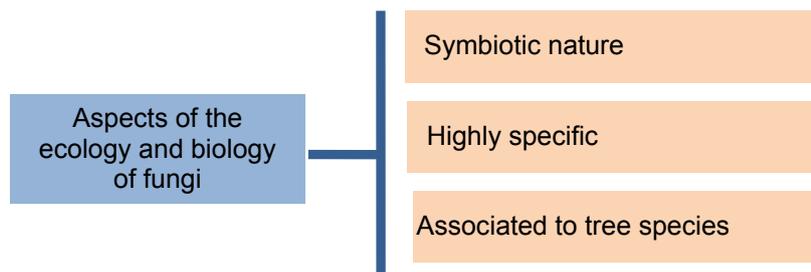
Many of the edible fungi that grow in forests and bushes are largely ignored and undervalued. On the other hand, in some areas they are subject to excessive collection, due to the increasing demand of this kind of products and due to the growing popularity of mushroom picking.





Principles of silviculture and forest management

Silvicultural practices are necessary in these ecosystems in order to preserve the balance of forests and fungal populations. Fungi play an important ecologic role in areas with extreme pedoclimatic conditions, as they encourage the development of superior plants.



The effects of some silvicultural practices on the variety and richness of fungal production remain largely unknown.

In general terms, the popularity of mushroom picking has grown dramatically in the



Forests have many different resources that can be utilised.

last few years due to the growing interest in mycology and in the utilisation of forest resources.

Therefore, regulations are being set up in order to control collection and sustainably manage the resource, so as to preserve it for future generations.

On the other hand, a new concept is starting to be used: the so-called "mushroom reserves", that is, specific areas of interest where the inhabitants of nearby villages can collect fungi.

In producer areas, this resource is being used as a source of income and therefore occasional mushroom pickers must become aware and respect the new regulations.





2. IMPORTANCE AND IMPACT OF THE RESOURCE.

2.1. Current situation and impact of the resource.

a) Current situation of the resource.

The production of fungi has become one of the most profitable activities in rural European areas. The most common activity is the collection of wild fungi in the ecosystems where they usually grow. Most of the production is sold fresh.

At present there are some enterprises that process, can and market mushrooms.

In Spain and other European countries, many people are involved in mushroom picking in forests and pastures. Nevertheless, mushroom farms are very scarce, especially those that produce less widely known fungi.



Amanita rubescens.





b) Principles of mycological resources management.

The management of the mycological potential of certain areas must be based on clear principles defining the activities that are going to be planned:

1. Mycorrhizal edible fungi are obligate symbionts of vascular plants such as pines, chestnut trees, beeches, cork trees, holm oaks, rockroses, etc. If the plant disappears, the symbiosis disappears too.
2. Mycorrhizal edible fungi associate with very specific partner plants: *Lactarius deliciosus*, *Tricholoma terreum* and *Boletus pinophilus* normally grow near pines; *Tuber melanosporum*, *Boletus aereus* and *Amanita caesarea* grow near broadleaf species as those belonging to the genus *Quercus*, *Castanea*; and *Terfezia arenaria* is associated with *Cistaceae* as *Tuberaria guttata*.
3. When the partner tree is young the mycological flora is different (to some extent) from the one found by older trees.
4. Some fungi are able to form mycorrhizae with some species but produce fruiting bodies if they associate with only with a few of these species. This is the case of *Tuber melanosporum*: this fungus can associate with pines but does not produce any carpophores. Therefore, even in the presence of mycorrhizae, it does not produce any truffles. On the other hand, if holm oaks or Portuguese oaks were planted in the same pine forests, truffles would proliferate.
5. Each tree species can associate with hundreds or thousands of species but only some of these are of economic interest.
6. In mixed forests, where different tree species live, there are more fungal species, and thus more diverse productions.





7. Ectomycorrhizal fungi are able to use organic nitrogen thanks to their pectolytic and cellulolytic activity, and therefore it is advisable to use organic fertilised containing manure and urea.

8. The removal of bushy vegetation in forests can seriously damage fungal production.

9. Tilling is not advised, as many superficial roots, usually mycorrhizae, may break.

10. In chestnut groves, coppice is preferable to high forest systems because of chestnut ink disease. High forests are more productive, and would be preferable if this serious disease did not exist.

11. The phytocides used to control undergrowth in forests are very harmful, as they attack woody vegetation on the one hand, and mycelium and mycorrhizae on the other. As a consequence, the symbiosis breaks down.



Some fungi are very similar to truffles.

12. Draining swampy areas can improve the quality and quantity of fungal production, provided drainage is not excessive and makes soils too dry.

13. The genetic improvement of mycorrhizae and mycorrhizal fungi in order to make them even more beneficial for trees would increase the commercial value of the latter.

14. Some very profitable fungi species may be introduced.





15. A balanced combination between the utilisation of fungi, timber, cork bark and pastures should be achieved. Forest thinning is intended to remove weak and dominated trees. In pine groves, dominant trees seem to produce more mycorrhizal fungi than dominated trees.



We must know beforehand the species that we collect.

16. In order to manage forests the following actions are necessary:

- a) To make a comprehensive inventory of mycoflora, including both poisonous and commercial ones, as well as those liable to be used in the future. Information on the productions of the last few years and the amounts of product that were marketed in the area is also important,
- b) To divide the relevant area in several parts, according to the quality and quantity of mycological production.
- c) Reserves should be created and production should be auctioned, always bearing in mind legal restrictions.
- d) As for possible improvements, new trees should be planted in the most suitable areas, irrigation of truffle plants, low thinning in dense forests, modification of felling, etc.





c) Techniques used in fungi processing.

Fungi are fragile delicacies. Most fungi decompose fast, due to fermentation and rotting caused by micro-organisms, and become unsuitable for consumption.

This fast decomposition can be prevented by stopping the agents causing decay.

Fungi are highly perishable and have a post-harvest life of 2-5 days at room temperature. This makes their stocking and conservation more difficult.

The appearance and quality of fungi are largely determined by a sound post-harvest handling, which conditions the conservation period.

Post harvest practices and techniques used in food conservation shows the importance of temperature, relative humidity and storage period in dehydration, rotting and oxidation of perishable products.

Among these post harvest techniques are:

- REFRIGERATION

Nowadays refrigeration is very common in the storage and preservation of fruits and vegetables.

It can be defined as the controlled removal of the natural heat of the products stored in a warehouse, by using several liquid, gas or solid cooling substances.

The removal of the heat of a given product, it changes phase (for instance, from liquid to gas), allowing the cooling of the product. Each species and variety requires a different critical storage temperature, below which the cold would damage the product.

Cold-storage rooms are normally between -1 and 2°C degrees, have an air speed of about 2-4 m/s and a relative humidity of 89-90%.

In general terms, bad preservation conditions cause the appearance of stains and make membranes more permeable, which make the product more sensitive to the attack of micro-organisms.





Raw, fresh mushrooms can be preserved for a few days at low temperatures, but there is a high risk of dehydration, and therefore they should be covered with foil. Nevertheless, boiled mushrooms can be preserved for more than 30 days.

Plastic films

The main aim of plastic films is to create a protective barrier against organisms, and to create a microclimate for the products being handled, stored and transported.

Thus, the product generates its own atmosphere and modifies it until it is a suitable atmosphere that slows down the ripeness and senescence of the fresh goods.

Low-density polyethylene has a relatively low permeability to steam.

This chemically inert, odourless and flavourless material has heat-sealing properties, and is tear and impact resistant. It is suitable for temperatures ranging from 50 to 70°C degrees approximately.

- **DEHYDRATION**

Dehydration consists of using drying ovens in order to remove water from the tissues of fungi. Fungi can also be air-dried at room temperature.

Food can be preserved indefinitely, as humidity is necessary for microbial activity.



Dehydrated mushrooms.

With this technique, the 90% of the water in fungi is evaporated, without altering their structure.

Technique (to be used for cut or entire mushrooms):

- Spread the mushrooms out in a tray.
- Let them dry under the sun or use a mushroom light dryer.
- Put them in jars or bags.





- **RADIATION PRESERVATION**

Ultraviolet radiation is used to reduce superficial contamination in some products. Some cold storage rooms are often equipped with germicidal lamps.

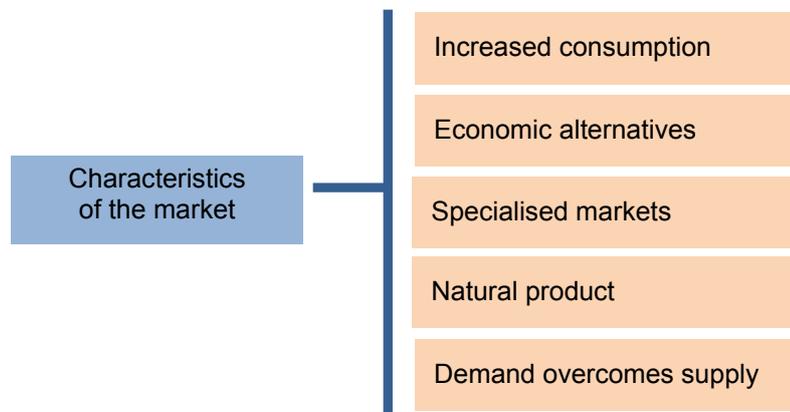
Canned and packed foodstuffs are sometimes sterilised by gamma radiation. This method is known as cold sterilisation, as it only rises the temperature of the products a few degrees.

d) Current situation of fungi marketing.

Most of the products derived from fungi are foodstuffs.

Nowadays the supply of this kind of products is not very large, as most of them are sold in foreign markets.

These products should be sold to consumers in the local, regional (mainly) and national (secondarily) markets, where they are scarce or too expensive.



- **GENERAL CHARACTERISTICS OF THE MARKET**

The number of fungi consumers increases every year.

The collection of wild and cultivated fungi is not enough as compared with other products. This means that production sells out fast.

Since fungi are preserved and canned, as they are highly perishable products, target markets are broader and fungi-based products are within the reach of all consumers.





The restaurant industry is a very important market, as many restaurants include fungi in their menus. However, fungi consumers are normally young people, with average purchasing power and higher education. Consumers like this product because of its qualities and organoleptic characteristics. Fungi can be both the central ingredient of a dish or part of the garnishing of many different dishes.



Dehydrated mushrooms.

Mycotourism is another important element. Tourists become interested in fungi after trying them in the traditional dishes of some areas.

- NATIONAL AND INTERNATIONAL MARKET VOLUME

There are no reliable data on the volume of national and international markets, as the mushroom market is quite opaque and it is very difficult to assess production volume.

We must bear in mind that this market is subject to fluctuation, as it depends on fungal production, which in its turn depends on climatic conditions that change from one year to the next.

Mushroom market is known to be growing due to the strong demand of products related to fungi, but there are no specific data on growth rates or global volume of sales.

In some cases, mushrooms are sold in local markets although there is no record of it. Therefore, it is very hard to gather reliable data.

On the other hand, people involved in this market are convinced that it will continue growing, both at national and European level.





2.2. Results and impact of the resource.

- PILOT EXPERIENCES

The Leonardo da Vinci project "MYKOS" addressed the sustainable development of mycological resources. This project had a great impact in the world of mycology both due to the innovative curricular design and one of the final products: the book "Fungi: manual and didactic guide", which is being very successful.

Some of these impacts are described below:

a) Collaboration among entities from the participating countries, aimed to establish closer and durable links that enable them to carry out joint activities; exchange technology and technical advice, promote their products etc.

b) Involvement of social partners, SMEs, social action groups, local institutions, associations, beneficiaries and trade unions that took part in the project and activities connected to it, as awareness raising campaigns and dissemination of results in all the territories covered by the project.

c) The entities involved have continued their collaboration after the end of the projects. They have shared experiences and worked together in experimental pilot centres (experimental pilot enterprises, cultivation and processing of products, nurseries, processing facilities).

The dissemination of the results of these activities has had a great impact in professionals and authorities connected to forestry and fungi resources. The publication of "Fungi: manual and didactic guide" has encouraged some specific actions to improve the sustainable management of mycological resources in forest ecosystems. We expect it to influence future sustainable forest management plans.





In addition to this, several courses on fungi cultivation, fungal silviculture and sustainable fungi collection were organised. These courses were very successful among people involved in the sector of fungi.

The informative seminars organised addressed people connected with forestry and mycology. The main target groups have been forest rangers, employees of forestry enterprises, mushroom pickers, processing and marketing enterprises, ecologist associations etc.

These activities have provided more detailed information on fungi and the economical benefits derived from them, which can be used as an instrument for rural development.

Among the initiatives carried out in the scope of the project are:

- The setting up of a tree nursery that produces mycorrhized forest plants. These nurseries are experimental and demonstration centres where training activities (talks, seminars, workshops) and dissemination activities are carried out. The most important impact of these nurseries is connected with mushroom pickers and growers and employees in forestry enterprises that have visited them and attended some of the information and demonstration activities carried out.
- The creation of several mycological associations that give advice on fungi and protect endangered species.
- The setting up of several small processing enterprises that have started working with fungi alone and then have included other natural products.

These initiatives have generated new jobs, although in some cases this is difficult to measure.





3. USE OF THE RESOURCE AS AN INSTRUMENT FOR RURAL DEVELOPMENT.

3.1. Possibilities and conditions needed for development.

a) Requirements for the development of fungal silviculture.



Inventories of the mycoflora, including all species, both edible and with no gastronomic possibilities. Special attention must be paid to rare species or species having special economic or ecological importance.

Description of the ecosystems having important productions of fungi.

Development of **mycological training programmes and environmental awareness raising**.

Forestry professionals, rural area managers, local population and visitors of rural areas with mycological interest must become involved in these activities.

Production estimates and quantification is another important issue. This task requires specific inventories covering enough surface and period of time to be representative of the study area.

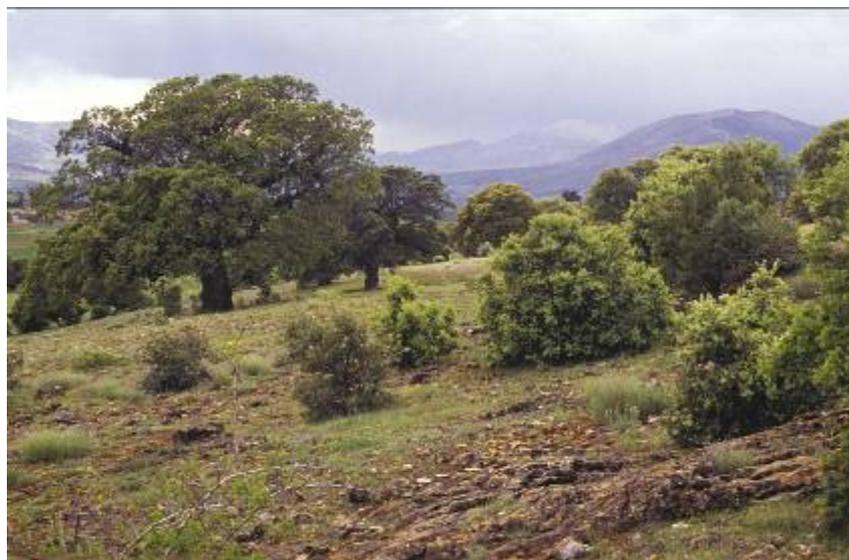
On the other hand, many environmental training actions are needed in order to support the sustainable use of forestry resources, such as fungi collection. There is a need for regulations in order to protect the resource from **excessive collection** in the medium and long terms.





Apart from the above-mentioned considerations, we must take into account the **lack of a general management plan and of specific regulations** governing the use of mycological resources, although there are some exceptions.

The lack of control over production and exploitation of the resource and over industrial and tourist activities connected with fungi is another issue that needs to be tackled before planning and carrying out sound silvicultural initiatives.



Holm oak ecosystem.

b) Basic principles for the development of fungal silviculture.

Principles for the development of fungal silviculture	
Inventory and research	Planning
Training in mycology intended for the forestry sector Mycoflora inventories Definition of the production Description of the most suitable habitat for each species Fungi collection yields Definition of the ecological succession over time Reforestation with fungi	Forestry policies Management and exploitation plans Planning of harvests and collection season
	Rural development
	Development of an adequate legal frame Support of rural tourism Inclusion of the canning industries in the forestry sector Marketing and trade channels





It is always necessary to study the importance and diversity of fungal resources and their relationship with the existing natural environment. However, in general terms, all initiatives intended to increase the diversity of fungal species and their productions are positive.

Although there are not many studies on the results of the initiatives carried out in the forestry ecosystems, promising improvements have been made, especially as regards the basic silvicultural principles.

Some of these principles, already widespread, are:

Clear fellings using axes or chain saws (i.e. removal of all arboreal vegetation) are not advisable in pine groves or in the period of regeneration fellings.

Tilling and **stump removal** in felling areas are not advised, as they may damage the roots that are liable to come into contact with mycorrhizal fungi.

The **removal of bushy vegetation** should only be carried out in case it is too dense and prevents collection. If we have to remove the undergrowth in order to prevent forest fires, we should use mechanical methods rather than chemical products, which may have negative effects on fungi.

Both thinning and regeneration fellings generate **waste wood and slash** that need to be dealt with appropriately.

Tree felling, roadside stacking of logs of a diameter of more than 8 cm, and shredding of wooden waste is very beneficial as it prevents forest fires and pests, and makes collection easier.

Pruning improves the quality of wood and also the access to the forest. It prevents forest fires and also creates a microclimate favourable for fungi that need sunlight (better sun exposure of the soil, humidity and ventilation).

As for the **distribution of the trees** of different ages and sizes, an **irregular configuration** in clumps is advised. Thus, we will obtain a representative sample of all ages and species, and of the distribution of production over the year.

Thus, milk caps will grow by pine trees, and porcini will grow by older trees. There must always be large trees in the most productive areas.

The spacing of the actions in the relevant areas must depend on the time of recovery of the mycelium.

Any action intended to obtain mixed forests will increase fungal diversity. Thus, production will be larger and more stable over the years. The mycoflora of mixed forests of conifers and broadleaf trees is more diverse than that of





monospecific forests. The soils of mixed forests are richer than those of conifer forests and production is also larger.

As for forest regeneration, mycorrhization is more and more usual in the periodic reforestations of potentially productive areas.

By using this technique, we encourage the proliferation of the most interesting fungi both in economic and ecological terms.

Choosing high quality plants is all-important. Plants should be mycorrhized and should be suitable for the specific reforestation area.

We should also choose an inoculation method that meets the needs of the relevant species and area.

Using spore solution is advisable. This system is more effective than inoculated soil, and eliminates the risk of pathogenic fungi.



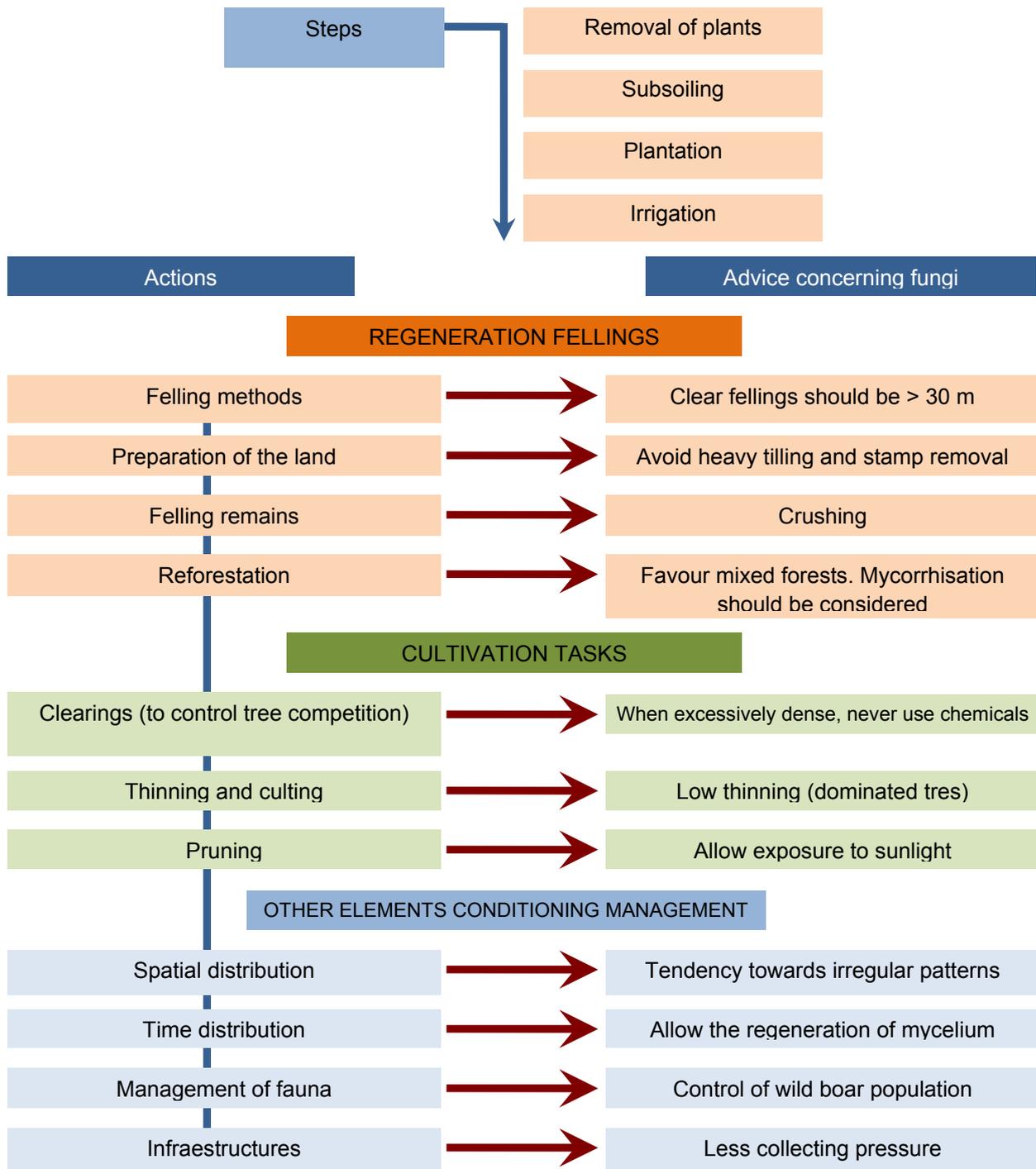
In chestnut ecosystems fungal associations are very common.

These methods are not only suitable for forests. They can also be used in the reforestation of abandoned farms; this type of soil is normally quite deep and free of unwanted ectomycorrhizal propagules, and therefore is suitable for the colonisation of the chosen mycorrhizal fungus. The introduction of these fungi will provide an added value to the soil and encourage the growth of the seeding.

This kind of reforestations improves the development and durability of forests. Therefore, these practices contribute to the conservation of the environment and improve the economic profits of forests.

The most usual species are *Quercus ilex* inoculated with *Tuber melanosporum*, *Pinus nigra* inoculated with *Lactarius deliciosus*, *Lactarius sanguifluus* or *Lactarius semesanglifluus*.



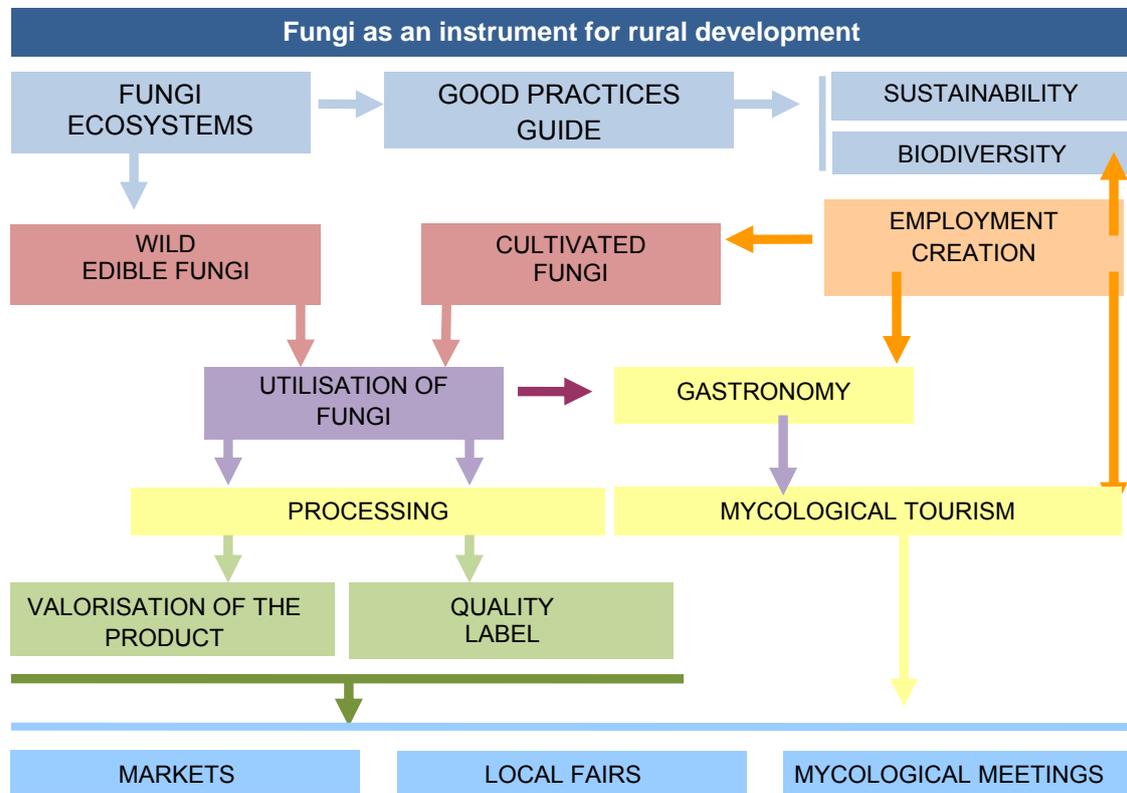


With the support of the Lifelong Learning Programme of the European Union





c) Mycology and rural development.



With the support of the Lifelong Learning Programme of the European Union

In view of the growing interest on fungi and mycology itself, managers, researchers and owners are starting to pay attention to the collection of edible fungi in forests and scrublands in addition to the rest of recreational activities connected to forests.

Due to its importance for the landscape and the social and economical structure of many rural areas, mycology is being more and more associated to rural development.

Society is gradually changing its attitude towards nature and feels more inclined to discover the rural world and start to consider it as a space for leisure and amusement.

Tourism as a social activity is constantly growing, and it is focusing more and more in activities connected with natural and local resources, that is, the so-





called rural tourism. Landscapes, natural values, animal and vegetable species and new hobbies are the main elements sought by rural tourists.

Mushroom picking is becoming very popular. There are more and more people that pick mushrooms for fun, for gastronomic purposes or for economic reasons. This emerging hobby is called **Mycotourism**. Mycotourism entails other activities that are boosting the economy and the entrepreneurial activity in many villages: country lodges, lodging houses, restaurants, shops that sell traditional local products, guides, complementary recreational activities...etc.

Mycotourism is seasonal, and depends on mushroom seasons. However, many tourists get to know new places that they may want to visit again at other times of the year, and therefore the tourist activity can last longer.

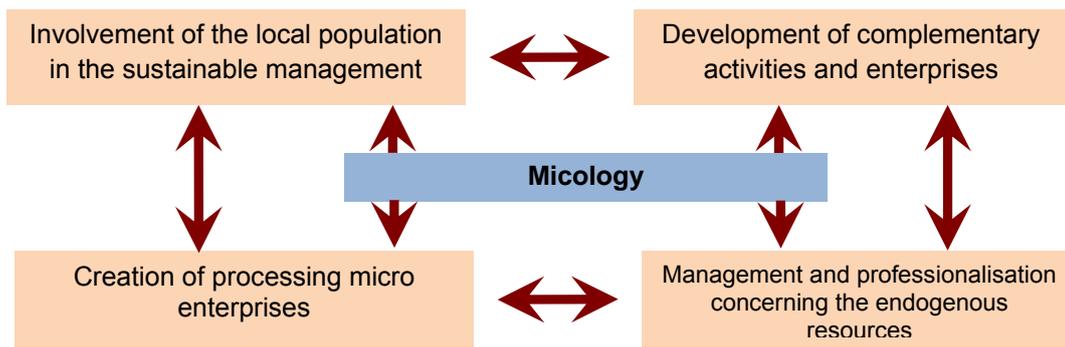
The use of fungi resources must be managed so as to make the most of the synergies created.



There is an EU-level network of activities connected with mycotourism and silviculture which is becoming quite important and that gathers a varied range of people and institutions: producers, mushroom pickers, mycology associations, industries involved in preservation, processing and marketing... etc.

In order to manage this resource in a sustainable way, there is a need for experts with specific training who are liable to transmit their knowledge in an educative way, and carry out dissemination and information campaigns together with the authorities involved in forestry.





d) Mycotourism, sustainability and development.

All activities connected to mycology boost rural development provided that they promote the sustainable exploitation of resources, a better land distribution, as well as other activities related to fungi, while preserving local identity and culture.

This approach to fungi exploitation permits:

- A better quality of life in rural communities.
- The conservation and sustainable management of fungi resources.
- The revaluation of local products in producer areas.
- Addressing the demand for more sustainable tourist offers on the part of consumers.
- The improvement of the local business sector.
- Attracting the attention of a growing number of people.

Sustainable management

Sustainability	Needs
Reasonable utilisation of the resource	Good Practices guide on fungi collection
Conservation of the habitat	Prevention of agents causing pollution
Conservation of biodiversity	European Red Data List of threatened fungi (ECCF)
Planning	Creation of sound management plans
Support of local economy	Inclusion in economic development strategies
Involvement of local population	Creation of processing industries and service provider enterprises
Professionalisation of the sector	Specific training
Tourist promotion	Adequate promotion
Encouragement of research	Silvicultural applications





Initiatives connected with sustainability and mycotourism:

- REASONABLE UTILISATION OF THE RESOURCE

The ecological impact of the exploitation of forest products other than timber must be assessed.

It is not recommended to use products or harvesting methods that:

Cause alterations or imbalance in the source (in this case, the mycelium of fungi).

Affect the productivity or growth of the species being used.

Damage the nutrient cycle.

Damage wildlife.

The utilisation of mycological resources must be reasonable. Thus, it is important to observe good practices when picking mushrooms.

- CONSERVATION OF THE HABITAT

Good practices must be observed in order to have stable fungi productions while preserving the characteristics of the habitat.

For instance, the removal of undergrowth in forests has negative effects on fungal production. We must bear in mind that there is a close relationship between fungal species and plants.

If vegetation disappears, the fungi that are associated to it disappear too. Therefore, tilling is not advisable, as superficial roots, many of them mycorrhizae, can be damaged.

In addition to this, the phytocides used to control undergrowth in forests are very harmful, as they attack woody vegetation and destroy mycelia and mycorrhizae. Therefore the symbiosis breaks down. These effects have been verified in Finland.





- CONSERVATION OF BIODIVERSITY

Biodiversity conservation includes all the species that live in a given territory. Endangered species must be detected in order to protect them against excessive pressure.

Therefore, the European Council for the Conservation of Fungi (ECCF) has created a *European Red Data List of threatened fungi*.

- PLANNING

There must be a Plan that ensures the sustainability of the collection system.

Objectives of a Sustainable Plan of Fungi Exploitation:

Use fungal resources without damaging the balance of their natural habitat or any other species in the territory.

Justify the exploitation activity by proving that collection contributes to the maintenance and conservation of natural areas.

Establish a set of criteria to be followed in mushroom collection. Such criteria should take into consideration the conservation of the species being collected and should ensure the sustainable use of the resource.

To delimit the collection areas by drawing up maps describing such areas.

To define the responsibilities of those that take part in mushroom collection and determine the requirements that must be met in order to carry out the activity.

- SUPPORT LOCAL ECONOMY

Mushroom growers, pickers and small fungi processing enterprises would form a small network that would improve the economy at local level. This impact should also encourage the creation of more lodgings, restaurants, cultural and ecological tourism offer, etc.

These impacts are liable to create employment, and therefore rural areas may become more dynamic and allow younger people to stay in them.





- **INVOLVEMENT OF LOCAL POPULATION**

One of the main objectives of development plans is the involvement of the local population that is going to benefit from the results of the initiative. Local population must be a pillar of mycotourist activities.

They must become involved in the development of the infrastructures of sustainable development and in the professional, cultural, gastronomic and social opportunities that may arise.

- **PROFESSIONALISATION OF THE SECTOR**

This sector needs specific training programmes that provide professional qualifications in order to solve the existing problems and improve work conditions.

All the activities carried out by the specialists in the field must be taken into consideration; they may provide guidance to users and help them identify the mushrooms they have collected, as part of a group of services intended to make their stay more pleasant.

- **TOURIST PROMOTION**

Tourist promotion is another important aspect. There is a need for a promotion strategy that allows users to discover the values of the area, the services available and the different aspects that make it worth visiting (tourist, ecologic, cultural, gastronomic, social etc.).

It is not a matter of promoting the place alone, but also the products that are produced and processed locally, as another key element that visitors can find in the territory.

Tourist guides, web pages, tour operators and brochures are useful mechanisms for the promotion of the area and its local products.





• ENCOURAGEMENT OF RESEARCH

The techniques used in mycological activities are evolving very fast, which requires an extra effort for those that want to know the state of the art and take advantage of new possibilities.

For instance, the mycorrhization techniques allow for faster plant growth and better plant adaptability.

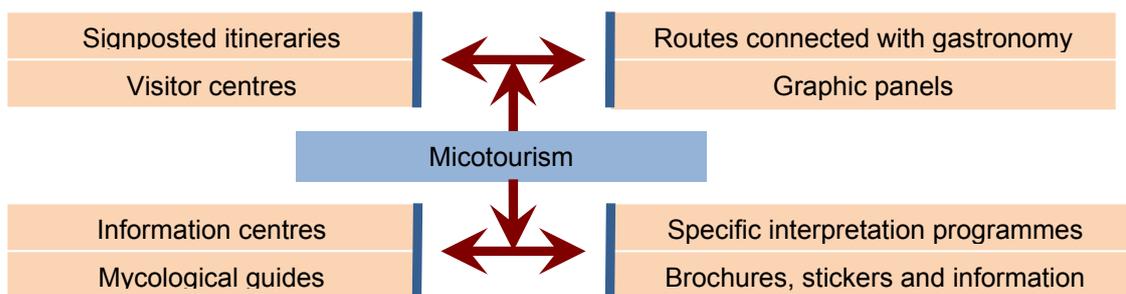
Specific mycorrhizae are being used in order to obtain certain selected fungi.

Different approaches are used in order to obtain edible fungi with commercial value.

Another promising field of research deals with the development of new species that can be used to obtain pharmacological substances.

e) Mycological tourism as an instrument for rural development.

Mycological tourism requires specific planning and structures enabling visitors to become aware of the things they can see and do, what they can eat and buy... etc. As regards fungi, the following structures are needed:



These instruments will enable visitors to become aware of the advantages of staying in that given place and suggest different ways to spend their time there. Visitors will have all the necessary information on the habitat and fungi species available, and how to find them. They will also become aware of the



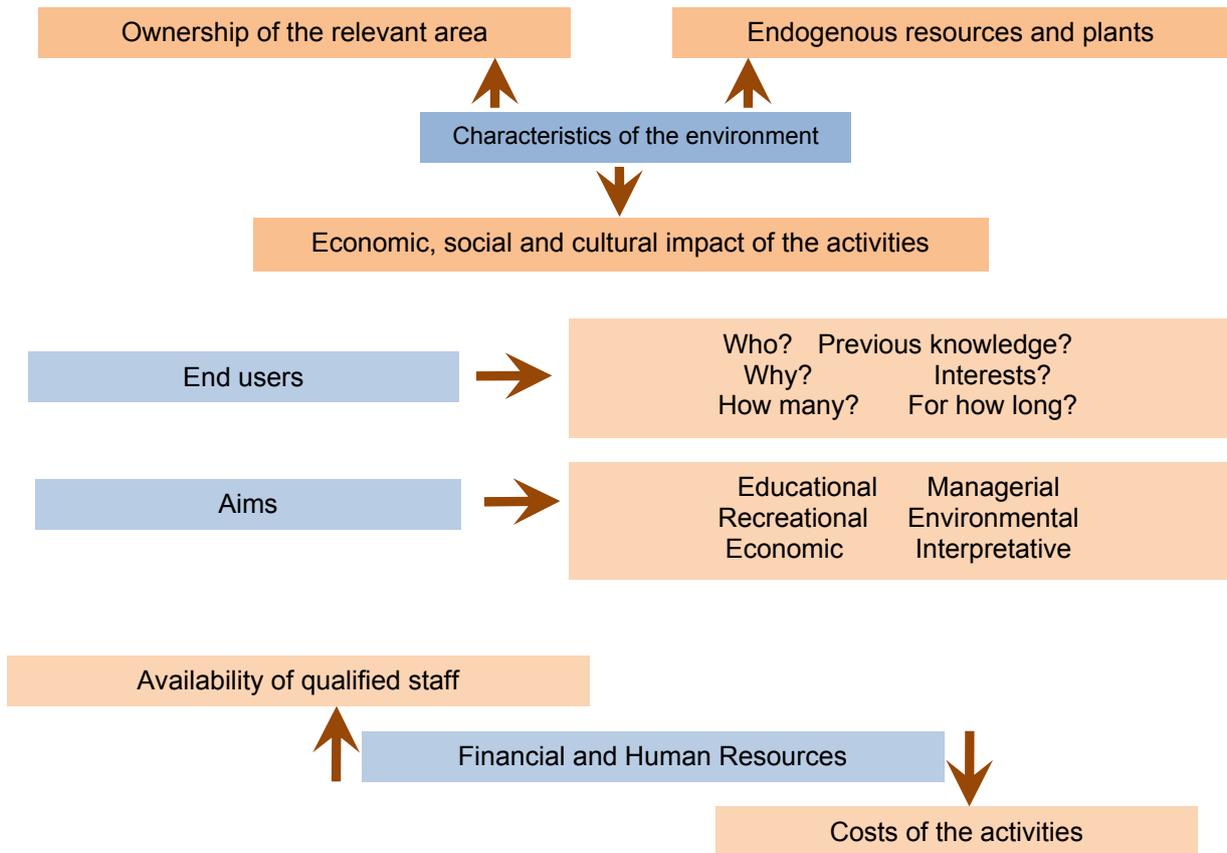


rules that they have to observe in order to protect ecosystems and fungal species. A good field guide would be an excellent tool to provide all this information.

Thus, an excessive exploitation and mismanagement of the resource can be avoided. A sound planning and control of activities can prevent negative impacts.

Mycological tourism as an instrument for rural development requires previous planning. In addition to this, some facts must be born in mind:

- Characteristics of the environment.
- Final users.
- Aims.
- Financial and human resources.





Some advantages and disadvantages of the elements that need to be implemented:

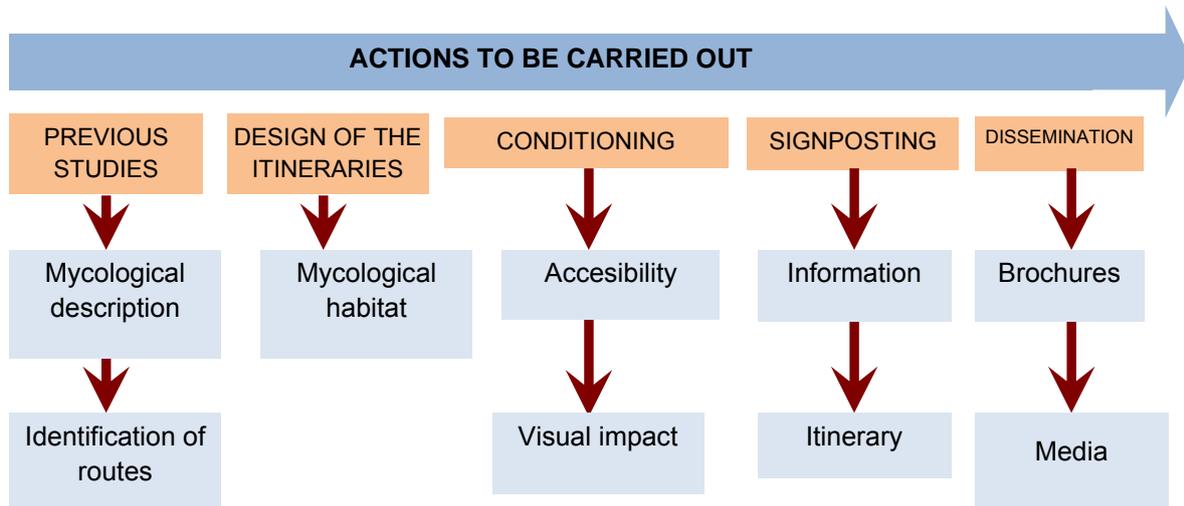
	SIGNPOSTED ITINERARIES	INFORMATION CENTRES
↑	<ul style="list-style-type: none"> They help orientation. They are available to many users. They require maintenance. They mark interesting spots. They prevent people from getting lost. 	<ul style="list-style-type: none"> They provide technical information. Brochures and good practices guides can be made available. They help people with the classification of fungal species They provide multilingual information. They provide information on the different amenities in the area.
↓	<ul style="list-style-type: none"> They provide little information They may be subject to vandalism 	<ul style="list-style-type: none"> They may be difficult to access. They are subject to seasons.
	VISITOR CENTRES	MYCOLOGICAL GUIDES
↑	<ul style="list-style-type: none"> They are attractive and encourage participation They allow for the use of combined formats (images, text and sound) Can organise courses and exhibitions 	<ul style="list-style-type: none"> They provide direct and effective customer services. They provide information and advice. They promote mycology. They promote environmental education.
↓	<ul style="list-style-type: none"> They are expensive (building, management, maintenance). They provide seasonal employment. 	<ul style="list-style-type: none"> They are suitable for small groups. They require specialised staff. They provide seasonal employment.
	GRAPHIC PANELS	SPECIFIC INTERPRETATION PROGRAMMES
↑	<ul style="list-style-type: none"> They require little maintenance They allow for the combination of text and pictures They are available to all visitors They provide information constantly 	<ul style="list-style-type: none"> They encourage direct contact with the resource. They allow for the combination of several instruments. It is possible to organise thematic weeks.
↓	<ul style="list-style-type: none"> Sometimes they are not noticed. Negative visual impact. They are subject to vandalism. 	<ul style="list-style-type: none"> Complex development. Specialised staff is required.





f) Stages in the design of mycological routes.

Itinerary for the design of mycological routes.



PREVIOUS STUDIES

Analysis of the ecological features and the access to the area, measurement of the safety status.

Quantitative and qualitative analysis of the existing mycological resources, the endangered species, and the most common species.

Design of the route, location, key spots, orientation, etc.

DESIGN OF THE ITINERARIES

Drawing of the route:

Layout (it could be circular, to avoid passing by the same places twice).

The length of the route should take the different types of visitors into account.

Smooth slopes at the beginning of the route encourage visitors to go on.

Estimates of the grade of difficulty of the route and of the time it takes to complete it.

Identification of the mycological species of interest and habitat associated to them.

Other elements that may be interesting to users.





CONDITIONING OF THE ROUTES

Improving the access by removing all existing barriers.

Cleaning

Infrastructures and maintenance plan.

Adaptation of the route to the environment in order to minimise its impact.

SIGNPOSTING

Erecting signposts.

Signalling of the route in order to help users find their way.

The contents of the panels must be easy to read and must contain the necessary information on routes, interesting sites and environmental care.

DISSEMINATION

Edition of brochures, stickers, posters, videos, etc. that illustrate the mycological and environmental values of the area.

Organisation of thematic weeks, conferences, seminars, workshops and local fairs.

Guided visits for the identification and collection of mushrooms.

Use of the media: press, radio, television and Internet.

g) Mycological gastronomy.

Rural tourism is closely related to traditional gastronomy. Many visitors are interested in the quality of local products and gastronomy. We must take into consideration the gastronomic possibilities of fungi. There are many easy ways to cook fungi; they can become easy and delicious dishes.

It is important to establish a connection between a given product and the area it comes from. Thus, that particular place will not only be known for its specific location or name but also due to its gastronomic traditions.

Mycological gastronomy has positive cultural and economic impacts. The organisation of local gastronomic journeys, recipe contests or tastings of typical products may attract people, especially in mushroom seasons.





The preservation, processing and marketing of fungi in producer areas creates new jobs and favours endogenous development. The marketing of mushroom processed products is also a dissemination tool liable to increase the interest on a given place and its local products.

This type of initiatives will put new energy into the mycological tourist sector. Products must be advertised in order to increase their value in the market, for instance, by using quality labels, designation of origin, organic certification or specific labels indicating the producer areas.

Thus, a network for the distribution of mushroom products and the promotion of the landscape, culture, art and environmental values of a given area, may be created.

Activities liable to promote mycological gastronomy:

Local gastronomic journeys.

Recipe contests.

Gastronomic routes

Distinctive labelling: quality labels, organic certification, etc.

Tastings of traditional dishes.

Special offers in local restaurants and lodgings.

Sale of home crafted processed products.

Organisation of district fairs.





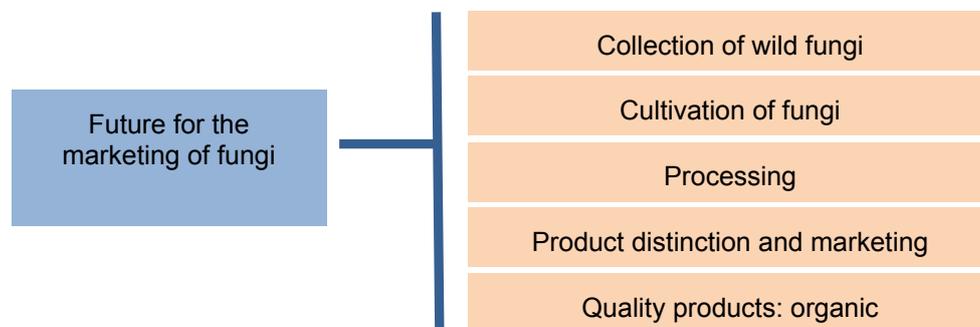
3.2. Employment creation potential of the resource.

The New Sources of Employment connected with mushroom growing and picking are related to:

- Sustainable collection of marketable fungal resources.
- Cultivation of fungal species valued in the market.

These activities will improve the economic situation of many people involved in the mushroom sector.

Sustainable collection will allow for mushroom producing areas to continue to be productive for a long time, while sustainably using their endogenous resources.



The creation of small processing, canning and marketing enterprises are liable to form a small network of enterprises that improve local economy and create employment. Thus, rural areas may become more dynamic and allow younger people to stay in them.

The creation of Mycological Learning Centres will contribute to the promotion of the activities connected with fungi: ecosystem, flora and fauna, cultivation, cultural and gastronomic activities (traditions, tools used locally, ethnography...etc).

Summing up, fungi are to be considered an important resource for rural emerging professions with employment creation potential:

- Forestry sector:
 - Collection of wild fungi (Wild fungi sustainable exploitation Specialist).





- Enterprises that deal with environmental conservation and protection of endangered species (Forestry, natural conservation and mycological resources Specialist).
- Enterprises connected with the mycorrhization and production of mycorrhizae (Fungal silviculture Specialist).
- Business sector:
 - Preparation of substrates and inocula for the cultivation of fungi.
 - Mushroom growing (Edible and Medicinal mushroom growing Specialist).
 - Processing and marketing of fungi (Post-harvest Specialist).
 - Plant mycorrhization (Plant mycorrhization Specialist).
- Agri-food sector:
 - Use of fungi in recipes (Mushroom-based gastronomy Expert).
- Environmental and rural tourism sector:
 - Activities connected with the environment and with mycological tourism (Mycological guides).
 - Nature Learning Centres (Specialist on fungi and their habitat).



Cantharellus cibarius.





3.5.2.2 ORGANIC FARMING

1. GENERAL DESCRIPTION.

1.1. Description of the resource.

1.1.1. What does organic farming (OF) mean?

Organic farming is an agrarian system management model whose main aim is to obtain high quality food while preserving the fertility of the soil and respecting the environment. Organic farming is also known as biological, ecological or biodynamic agriculture.

The *Codex Alimentarius* Commission defines organic farming as a “holistic production management system - for crops and livestock- emphasising the use of management practices in preference to the use of off-farm inputs”.

The *Codex Alimentarius* (Latin for "food code") is an internationally accepted collection of standards, practices, guidelines and recommendations concerning food, food production and food safety that aims to protect consumers. Officially, this code is updated by the *Codex Alimentarius* Commission which depends of the Food and Agriculture Organization (FAO), an entity that belongs to the United Nations and the World Health Organisation (WHO). Since its creation in 1963, its aim has been to protect the health of consumers and to ensure good practices in the international transportation of food.

The agrarian management model of organic farming is different from the one of industrial farming, which exhausts the soil. It also differs from the model used by traditional agriculture.



Organic agriculture respect plant cycles.





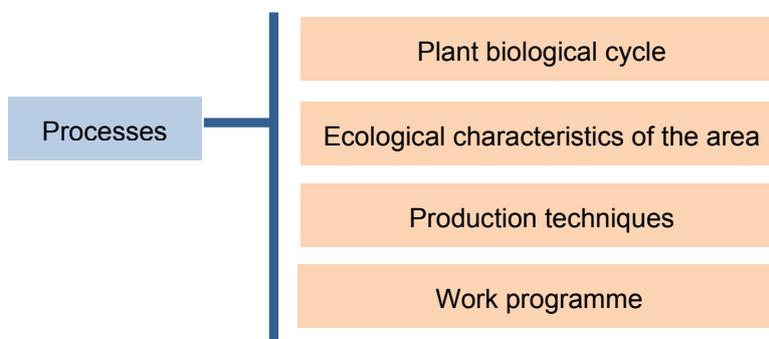
Organic farming is a creative and modern approach that solves many serious health, social and environmental problems caused by the unbalance brought about by the disappearance of genuine agriculture and farmers.

This production model uses alternative and durable farming methods based on traditional knowledge and agroecology. No synthetic chemical products or genetically modified organisms (GMO) are used. This model intends to make an optimal use of natural resources.

Biological agriculture deals with the design of production models based on an environmentally and socially friendly approach. It seeks a balance between needs, production media, environmental concerns and the quality of life of farmers. All in all, it is a way of thinking that requires open mindedness, as it covers all the aspects and processes involved in agricultural production.



Thus, it requires a holistic thought which conveys all the farming processes.



1.1.2. Agroecology.

Organic farming is based on the so-called agroecology: science that incorporates the scientific concepts of Ecology with those of Agronomy.

This new science studies the functioning of agricultural systems, agricultural production and the dynamics of endogenous rural development. The theoretical and methodological approach of Agroecology is based on three elements: environment, economy and society.





According to Agroecology, each farm is a unit, a farming ecosystem. Thus the farm is the unit used for management and analysis, and has physical boundaries within which an agrosystem is established. An agrosystem is the result of the action of men in a given ecosystem for production purposes. Several management models can be used, which correspond to different cultural, technical and environmental approaches.

In the past few years agroecology has become an essential tool in the design of rural development plans that are compatible with nature conservation.

- **Agronomy:** Knowledge compendium belonging to the fields of exact sciences, physical science and economics, which are applicable to land cultivation.
- **Ecology:** Science studying the relationships among living organisms and between them and their environment.

1.1.3. Characteristics of Organic Farming.

There is not just one definition of organic farming, but there is a set of international principles governing organic farming. These rules have been included in the IFOAM Organic Principles (International Federation of Organic Agriculture Movements):

- To produce food of high nutritional quality taking care over the production process and the ingredients used.
- To interact with ecosystems rather than trying to rule over them.
- To respect and encourage the biological cycles within the farming system involving plants, animals, micro-organisms, flora, fauna and soil.



Organic fruit trees.





- To maintain and increase long-term fertility of soils by managing organic matter correctly.
- To use, as far as possible, local renewable sources.
- To give all livestock conditions of life which allow them to perform basic aspects of their innate behaviour.
- To avoid all forms of pollution that may result from agricultural practice (by avoiding fertilisers and synthetic pesticides and reducing the use of fossil energy and in production and transportation of food and by making a sustainable use of water).
- To maintain the genetic diversity of the agricultural system and its surroundings, including the protection of plant and wildlife habitats.
- To provide workers an adequate return and satisfaction from their work in a safe working environment.
- To consider the wider social and ecological impact of the farming system.
- To promote the creation of links between producers and consumers.

Organic production methods encourage crop variety. The wide range of cultivated plants improves the soil and protects crops. This implies using organic fertilizers and mineral amendments instead of fertilisers and pesticides that damage the environment.



Choosing the right crops is important.

Moreover, wild animal and plant species that grow near the farmed land must be respected. Thus, we will avoid pollution and improve the health of producers and consumers and obtain high quality

food. We will spare the costs of fertilisers and phytosanitary products, and also of machinery and fuel.

Organic production greatly contributes to boosting European agriculture, as it provides healthy and high quality food and considerably reduces environmental pollution. It contributes to the conservation of biodiversity and farmed land, and to maintain and improve employment.





1.1.4. Conversion to organic farming: the process of conversion from conventional agriculture to organic farming.

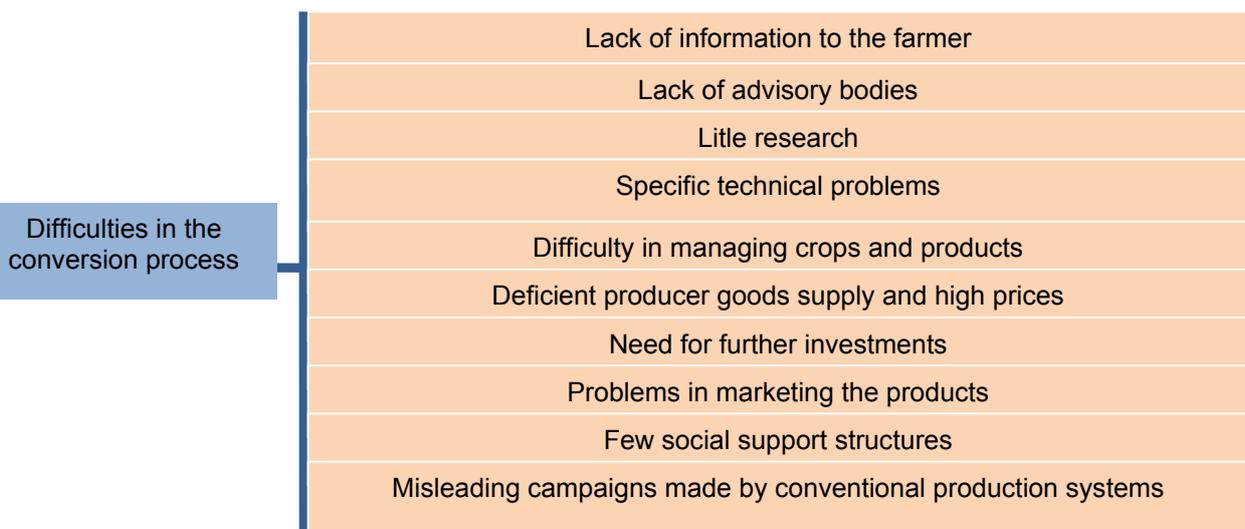
The transition to organic farming or conversion implies changing highly pollutant and capital-dependant farming techniques and adopting other techniques that have less impact and are more accessible at local level.

These techniques allow for biological readjustments to take place and for more functional agrosystems.

The conversion to organic farming can be defined as the transitory adaptation period in which conventional farming turns into organic farming.

In this period, the practices of organic farming are progressively implemented according to a plan, and the mistakes caused by bad previous practices are amended.

This transition process implies a change in the farmer's views and attitude. It implies rather radical changes in farms and in the way they are managed, which greatly differs from previous practices. These changes require some technical knowledge that will allow farmers to be aware of the implications of their actions and whether these actions contribute to their objectives or not.





In addition to this, the conversion to organic farming requires a thorough study of the situation of the farm in order to predict what major problems will have to be faced in the process and in order to design a fully biological production system.

The analysis of the previous situation must provide information on several aspects connected with the farm and its characteristics. This information will help us decide how to deal with such aspects with a new approach.

The analysis will show what will be the pace of the conversion and will give a previous idea of the changes that will be necessary and their extent.

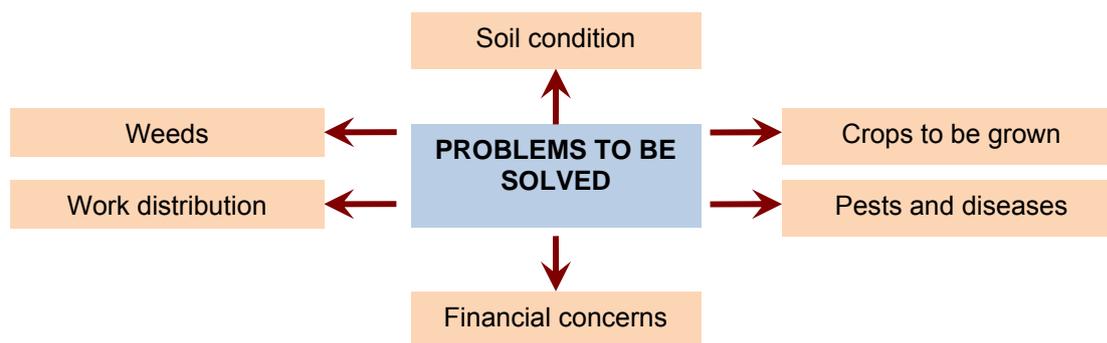
Some of the aspects that must be taken into consideration when analysing the previous situation are:

- **Characteristics of the farm:** Size, distribution of plots and of crops, whether it is an agricultural farm only or there are animals and of what kind etc.
- **Analysis of the soil:** Situation of soil in terms of structure, nutrients, organic matter content, erosion, pollution, etc.
- **Climate:** Pluviometry and average yearly rainfall distribution, average temperatures, minimum and maximum temperatures, periods in which frosts are to be expected etc.
- **Management of organic matter** in general, and of manure in particular.
- **Premises for livestock and machinery:** Workshops, cowsheds, pens and other livestock premises.





- **Potentially restricting factors such as:** Labour force and machinery availability during the activity peaks in the farm; capital to be invested in the farm in order to make the necessary changes, etc.
- **Which marketing channels are going to be used,** that is, how is the product going to be advertised, what markets are being addressed and how?. This is an important aspect, as the farm's solvency depends on it. Nowadays there is a demand of organic food in certain market sectors. We have to decide whether it is worth entering those markets, usually located far away from the production areas, or it is better to progressively enter local markets, where distribution is easier, and advertise the product among local consumers. The market determines the transportation costs and the final price the consumer pays for the product.



One of the main problems is to get to know the actual soil conditions and how have previous practices and chemical manure affected them. It may be the case that the soil is exhausted and in very bad conditions.

On the other hand, the land may have been used as pasture or it may not have been cultivated for years. In all cases, we must establish a working schedule in order to restore the soil as much as possible and turn it into a stable soil by adding the required elements. Once the soil is balanced, it will cause fewer problems in the sense of production and also of pest and diseases control. We must bear in mind that soil fertility depends on the micro-organisms that feed from it and therefore all actions taken must try to improve their conditions and ensure their continuity.





Another major issue is the definition of a weed control strategy. Weeds can invade the farm right after abandoning herbicides in the conversion process due to the initial unbalance of the soil caused by the absence of synthetic manure.

Organic farming uses mechanical weed control methods complemented with adequate farming methods, rotations and companion planting.

In order to use mechanical weed control methods we must have the necessary machinery and farm equipment.

There are other methods but they are more expensive. In any case, we must decide what is going to be our action plan to solve this problem.

This new approach to pest and disease control implies an important change. This problem has to be taken into consideration, and preventive measures must be devised and implemented if need be. The first step is improving soil conditions. In spite of this, it is advisable to establish a preventive pest and disease control system in order to fight the most common diseases that may affect the crops. This is a medium or long-term measure. We must bear in mind that the more balanced the farming system is, the easier to solve the problems caused by parasites. In some cases the starting point may not be that far from the conditions sought, in which case it is much easier to solve eventual problems.

Another important aspect that has to be born in mind is work distribution. The work systems used in organic farming imply different approaches for tasks such as manuring, parasite control methods, etc.

This means that at some point of the season there will be more work than in other moments. The schedule should determine at what point will extra labour be needed, in order to cope with it.





Plant and animal cycles are respected.

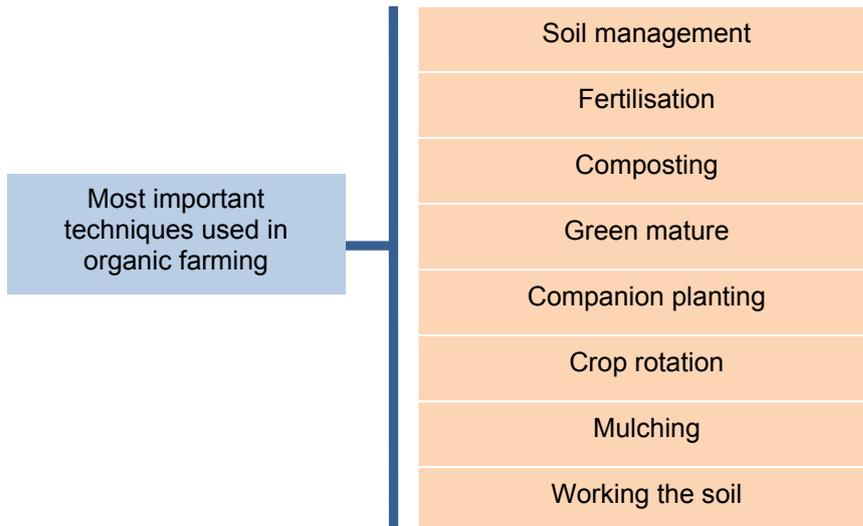
Finally, we must bear in mind from the very beginning that there may be financial difficulties and management problems when creating a new organic system. Initially, production may decrease without the corresponding surcharges, which may cause important financial problems.

1.1.5. Organic farming work methods.

In agronomy there is never just one way to solve a problem. Different approaches may lead to the same result. Organic farming advocates for the diversity of the farming system by means of enriching and stabilising the system.

Organic farming implies knowing some techniques that allow us to control the environment and boost natural processes.





Again, there are very different ways to solve problems. It could be argued that each farmer can devise his or her own work system according to particular circumstances. Such variety improves both the person and the method.



There is no need to use pesticides in order to have healthy plants.

Scientists and technicians worldwide have been studying and working to improve agronomic techniques and organic farming for more than 40 years. The different existing cultivation techniques and trends share features as not using synthetic





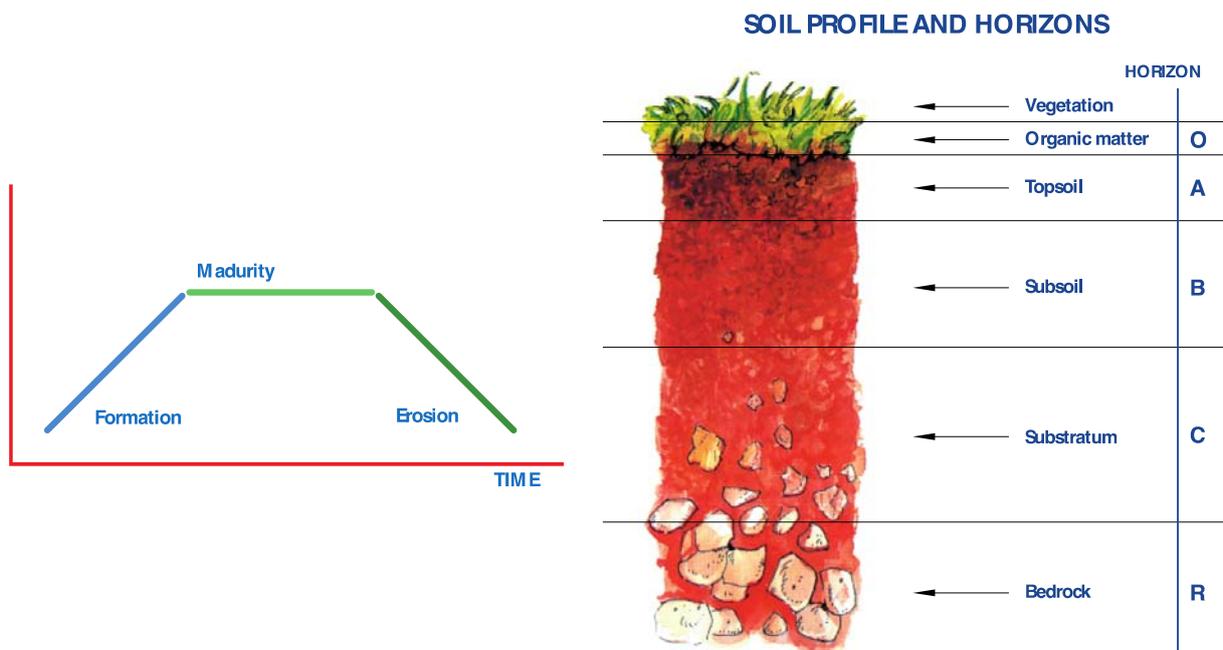
chemical products and understanding the soil as a living organ, or promoting the fertility of soil and the balance of the ecosystem.

a) Soil management.

The soil is one of the main elements in production. The soil remains largely unknown.

Knowing how the soil works and being aware of the different processes that take place within it is no easy task, but this is the key to achieve a balanced agrarian system.

The soil can be defined as the outermost layer of the earth's crust, where life takes place.



The evolution of soil.

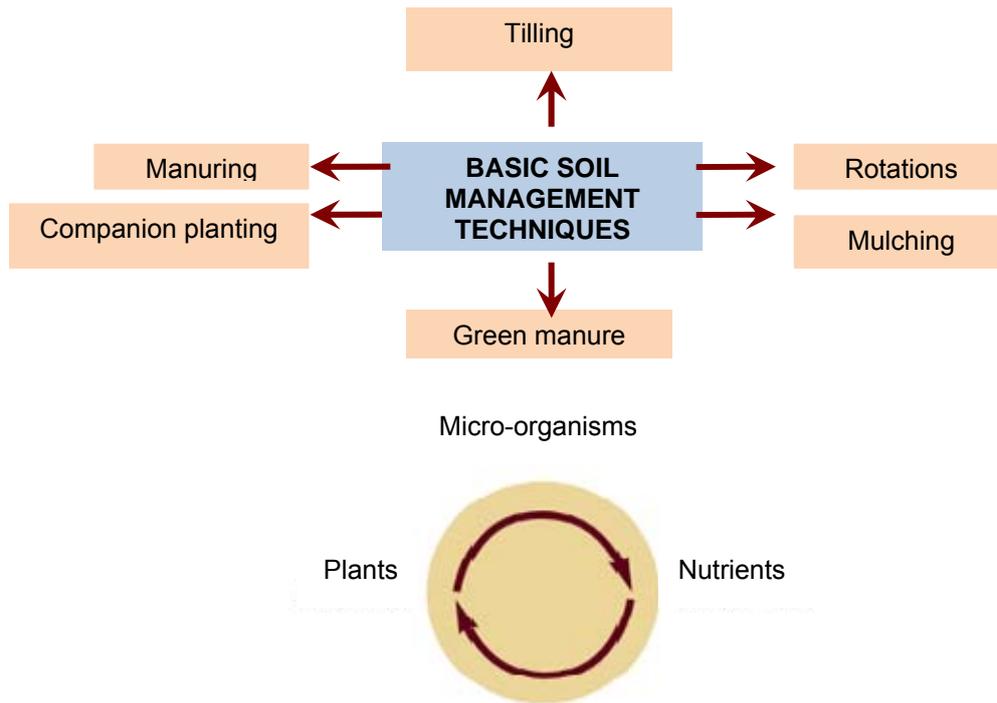
With the support of the Lifelong Learning Programme of the European Union





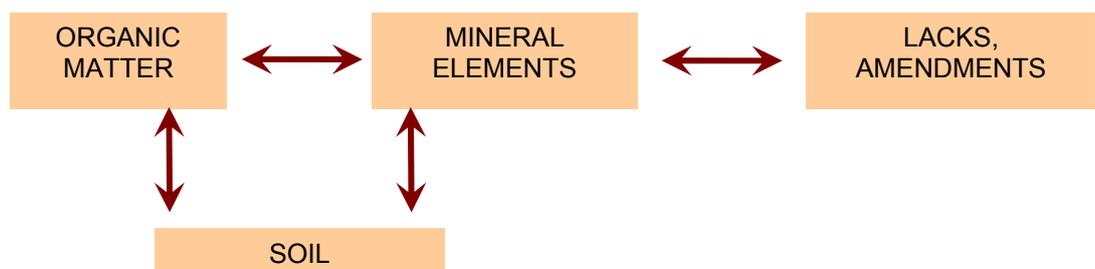
b) Soil fertilisation.

Soil fertility depends on its capacity to preserve life in time (ecological niche) and on its balance (the greater the diversity of living organs, the greater the quality and stability of the soil). It favours the proliferation of micro-organisms, the real protagonists of the soil.



Fertilisation is a powerful method to maintain the fertility of the soil. It consists of providing the nutrients that have been exhausted and at the same time maintaining the holding capacity so that plants can absorb the nutrients whenever they need them. Moreover, it also helps maintaining soil structure.

Manuring consists of using organic matter (animal manure) and natural mineral elements.





c) Composting.

Compost is highly advisable for manuring. It is a stable substance that improves soil conditions and favours biodiversity. It may be used immediately by plants and has no polluting effects on aquifers.

d) Green manure.

Green manure is sown and reaped in order to add it to the same soil where it has been grown.

Green manure has several advantages:

It limits the proliferation of weeds as it occupies the soil.

It increases the fertility of agrosystems as it provides organic matter and contributes to the proliferation of micro-organisms in the soil.

It prevents the washing out of the nutrients fixed by plants.

Its roots improve soil structure.

They prevent soil erosion.

If they are leguminous plants, they provide nitrogen to the soil.

They stimulate the soil mineralising microflora, which will in its turn decompose organic matter.

It provides nutrients for the next plants that will be grown.

It improves the circulation of air and water in the soil.

Green manure is intended to have the following effects in the soil:

Increase the nutrients in the soil.

Improve the properties of the soil.

Increase microbial activity.

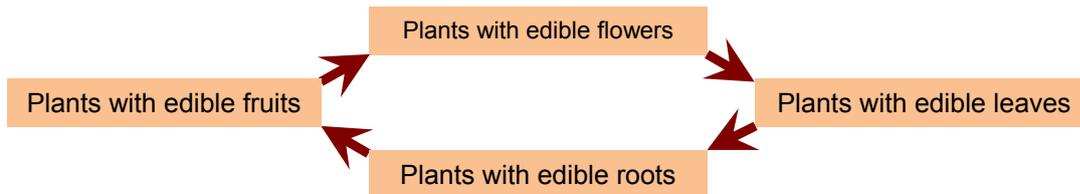
Cover the soil in seasons when no other crop can be grown.





e) Rotations.

Crop rotation can be defined as the practices of growing a sequence of different types of crops in the same space for a given period of time.



Some advantages of crop rotation:

It improves humus reserves and the intake of nutrients.

It stimulates the activity of the micro-organisms of the soil.

It limits the growth of adventitious weeds, parasites and diseases.

It contributes to the diversity and balance of the system.

It allows for demanding crops and for non-demanding crops.

f) Companion planting.

Companion planting in organic farming increases diversity, which is very important for crops. Diversity provides a balanced system: the more diverse, the more balanced. Many studies show that companion planting provides better returns than monoculture farming, due to the joint action of a series of factors.





Advantages:	Disadvantages:
A better use of the soil and of water.	There may be bad companion plants.
A greater soil protection, with less erosion.	Negative influence of allelopathic secretions.
The benefits of the microclimate that it creates.	
A reduction in the risk of bad harvests.	
Nutrient synergies.	
An increase of the quality of production.	
Less weed problems.	
Less parasite problems.	
An increase in the yield per hectare.	
It may result in the better quality, aroma and taste of some crops.	

g) Mulching.

As we have previously mentioned, the soil is unstable and needs being protected. In order to do so, we should never leave the soil uncovered. Mulching allows us to protect it, and also serves other purposes.



We mulch after watering the plants.

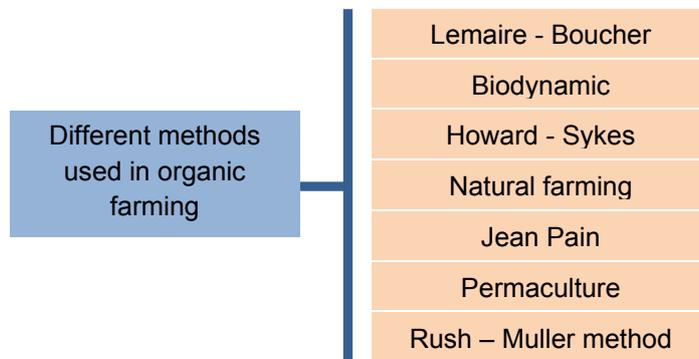
Mulching consists of covering the soil with organic material in order to:
Protect the land and the micro-organism from the rigours of the climate: sunburns, rain, sharp temperature changes... etc.
Feed micro-organisms living in the soil, as with the passing of time, the organic matter used ends up decomposing and working itself into the soil.
Prevent excessive evaporation and improve soil moisture conditions.
Weed control: Many weeds drown or never get to grow. Others may grow but weakened, and therefore are easily pulled up.
Improve the amount of humus and fertilizers. It depends on the type of material we use for mulching.
Increase biological activity due to the increase of the microbial population and of its activity.



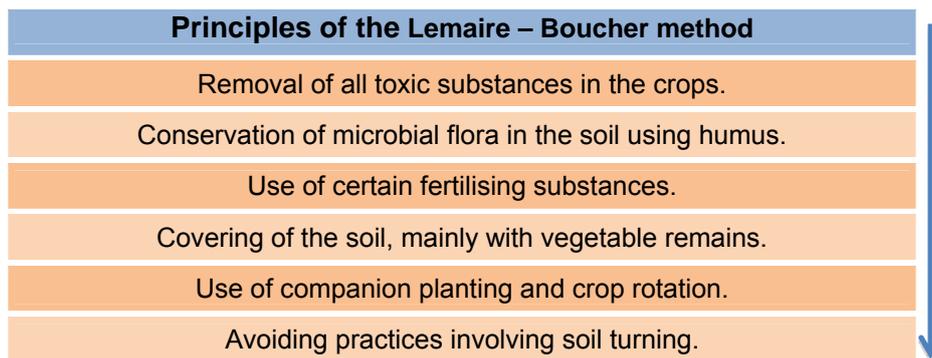


h) Working the soil.

We will now describe several organic farming work methods:



• LEMAIRE-BOUCHER METHOD



This method aims to achieve the self-sufficiency of the farmer, who produces the products he needs and no longer has to rely on external products.

This method seeks the balance between cultivated areas, and dedicates about the 45% of the farm to crops, the 35% to pastures and the 20% to forests.

The manuring systems normally used include two types of products with special properties:

- Lithothamnium calcareum, which is a seaweed that is included in manure, due to its high contents of magnesium and other fertilising microelements. It is also used as cattle feed and has anti-infective properties that protect it from Foot-and-mouth-disease, TB etc.





- Aromatherapy, that is, the use of essences and aromatic plants as disinfectant, healing and invigorating agents.

- **BIODYNAMIC METHOD**

Biodynamic agriculture focuses on processes rather than on substances.

This organic farming method was first used in Germany, Rudolf Steiner being its main promoter. It is based on the understanding the processes involving the life forces, life-creating forces, the origin of the materialisation of substances and the influence of stars on biological processes. It uses specific preparations with specific preparation processes and taking yearly cycles into account.

Biodynamic agriculture aims to:

Exalt energies and natural life forces, such as soil fertility.

The quality of the product.

Human health is connected to the above.

The biodynamic preparations are obtained from certain medicinal or aromatic plants, often rich in volatile oils, and having an invigorating effect. There are eight biodynamic preparations, numbered from 501 to 508, based mainly on vegetable matter but also on animal and mineral elements. The analysis indicates that these preparations are extremely rich in aerobic bacteria and microelements.

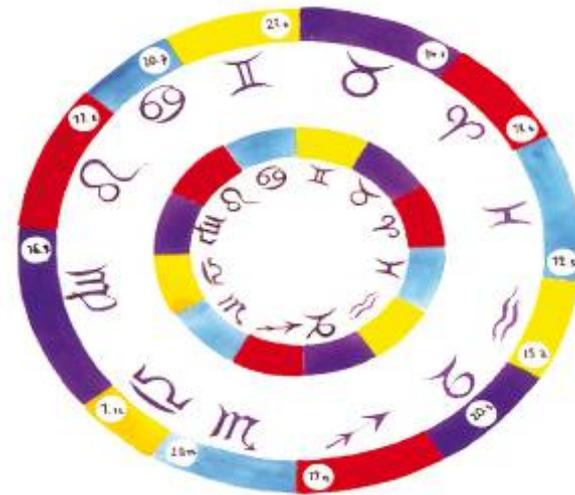
The method used by biodynamic agriculture consists of elaborating these preparations by linking agricultural cycles with those of nature and with the Star signs.

Farm tasks are connected with the astronomical calendar, which shows the influence of the moon as it moves into the different the star signs and transmit its energies, both positive and negative ones, to the soil and the plants.





These strengths allow crops to grow normally and help weed, diseases and pest control, which result on better products.



Biodynamic farming technique.

• HOWARD-SYKES METHOD

This method is the result of tens of years' work of Howard in the East Indies. It's also known as the Indore process due to the fact that it was tested in a region of East Indies.

It consists of maintaining the soil's fertility by producing humus from plant and animal waste.

The techniques used may be summarised as follows:

- Companion planting, which stimulates crops, especially by including leguminous plants in the rotation.
- Maintaining soil layers by using tillage but not turning the soil.
- Manuring with manure from the farm.





- Incorporating organic matter into the soil in a continuous and balanced way.
- The resulting humus has the following characteristics:
 - o It is composed of 55% carbon and 3 to 6% nitrogen (more than plants and animals themselves).
 - o It undergoes a constant transformation process, due to the micro-organisms that live in it.
 - o It contributes to the conservation of soil structure and to its water holding capacity, and it allows for the circulation of air.
 - o It prevents infections in plants and animals.

- **NATURAL FARMING**

This method was first used in the 1940's by the Japanese researcher Masanobu Fukuoka.

It works on the following principle: "Work with the land, not against it". This is why it is also called "do-nothing method".



Weeds protect the soil against erosion.

It is based on four different assumptions:

- No tilling.
- No weed control.
- No action against pests and diseases.
- No composting.





JEAN PAIN METHOD

Jean Pain devised this method in the dry lands of Southern France.

It is based on making compost with undergrowth recently cut in order to keep the soil fertile. The resulting humus is very balanced and provides the nutrients that plants need.

This kind of humus is also suitable to improve the physical and chemical conditions of the soil.

The matter used in this composting process is natural and comes from the farm. This type of compost, to provide nutrients to plants and contribute to the improvement of the land, must have a balanced proportion of carbonated and nitrogenated matter; the C:N ratio must evolve from initial values of about 33:1 to final values that may reach, when appropriate, 12:1.

When the mixture looks brownish, has been properly fragmented and smells like humus should, the compost is ready to use.

Apart from having an adequate C:N ratio, it is rich in bacteria and beneficial micro-organisms without any pathogens.

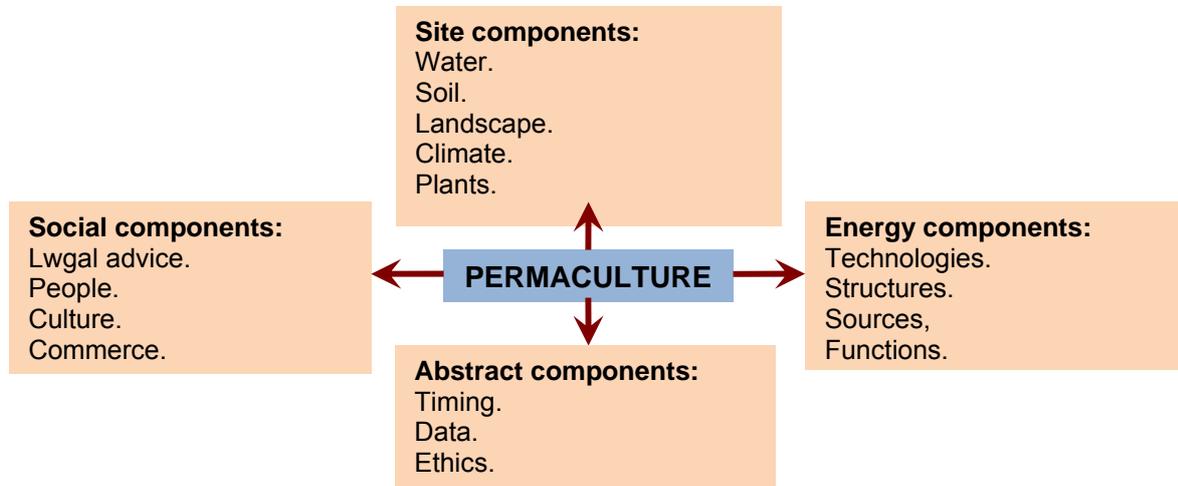
This technique yields very good results in the Mediterranean Basin, where there is a high desertification risk due to climate conditions and forest fires. Fertile soils allow plants to grow faster and with less health problems, as it has all the necessary nutrients and in a friendly environment.

- **PERMACULTURE METHOD**

This method is also known as permanent agriculture. It was devised by Bill Mollison and David Holmgren in Australia.

It is a design for the creation of sustainable environments. Spaces are planned as if they were natural ecosystems. They work with plants, animals, buildings and infrastructures. The method is based on the relationships that may be created among all these elements according to their relative position in the landscape. This technique is based mainly in observing natural landscapes.





Source: Introduction to permaculture, 1998.

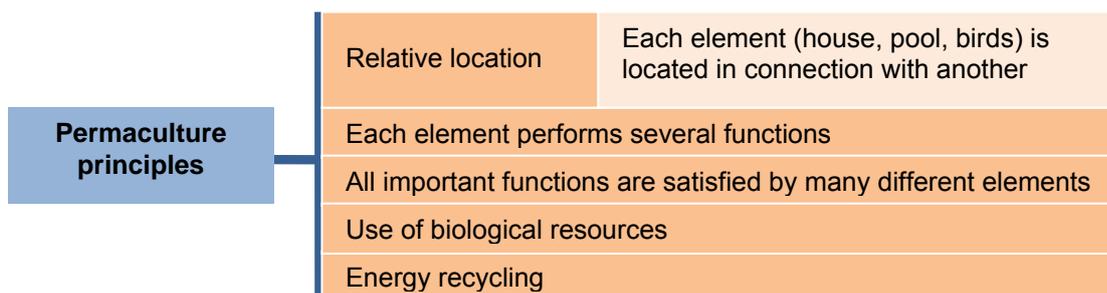
Principles of permaculture:

- **Relative location:** One of the main key points in permaculture is the design, understood as a connection among things. When creating an element for the design (a house, a forest, a bush...,etc.) we must place in the right location if we want it to be efficient (for instance: the vegetable garden must be between the house and the pen, in this way, wastes from the garden can go to the pen and manure from the pen can go to the garden). Thus, we must remember that the needs of one element can be covered by other element of the system. The wastes generated by one element can be used by another element.
- **Each element performs many functions:** Each element has to be chosen and located in a way that it fulfils as many functions as possible. A pond, for instance, can serve different purposes: watering, water supply for animals, aquaculture, fire control, water birds... etc.
- **Each important function is supported by many elements:** Basic needs as water supply, food and energy must be satisfied in two or more different ways.





- **Sustainable use of biological resources:** In permaculture, whenever it is possible, biological resources are used in order to save energy and to carry out farm tasks. There is a tendency to substitute non-biological resources with biological ones. Efficient energy planning. The work premises (greenhouse, pen, vegetable garden) used daily will be placed close together; the premises used only sporadically (orchard, pastures, forests) will be located further away. The golden rule in permaculture is first developing the nearby areas in the centre and once they are under control, expanding the borders.
- **Energy recycling:** Communities managed with permaculture methods are independent from markets and distribution channels and guarantee a varied diet with all the required nutrients without diminishing quality or destroying the Earth.



• **RUSCH-MÜLLER METHOD OR SURFACE COMPOSTING**

This method consists of maintaining and stimulating the life of the soil. It is based on surface composting. In order to do this, the soil must be constantly covered by organic matter. Most often it is plant and animal waste that cover the surface instead of being buried. Thus, there is a continuous humus creating process, which improves the nutrient reserves in the soil.

The soil is protected from heat in the summer, from cold in the winter, from wind and erosion and from the compression caused by torrential rain. It is like a coat for the soil, which is very sensitive to the rigours of the climate. Moreover, given that this protective layer is organic, it also provides nutrients





to the symbiotic organisms in the soil that take part in a process of transformation, destruction and reconstruction that should not be altered.

The main organisms involved in the process are:

Macro-organisms, that transport and mix different elements: insects, arachnids, myriapoda etc. feed from vegetables and after digesting them, they restore them to the natural cycle.

Micro-organisms of all sorts that take part in the transformation process, as:

Nematodes, these small worms are in millions in each square metre of soil.

Surface algae.

Fungi as actinomycetes, which degrade organic matter.

Bacteria, which can be found in millions per gram of soil. Among these bacteria, the most beneficial ones are the ones that can fix atmospheric nitrogen.

Earthworms are widely known and easy to see organisms that contribute to soil fertility. They play an important role in the ventilation of soil. They dig the land making galleries and contribute to the creation of the lumpy structure that characterises fertile soils.

1.1.6. Biological control techniques.

In organic farming, parasite control does not rest on the use of products, but on the use of techniques that aid the balance of the system and makes it more stable and improve the strength of plants. This requires an adequate approach including aspects as balanced crop rotation, companion planting and organic manuring, as well as the use of resistant plants. It also implies cultivation, sowing, covering the soil, favouring the existence of natural predators of pests in general, etc.

Biological control techniques are based on prevention, so as to minimise problems, both in terms of quantity and intensity. The aim is to achieve a balanced biosystem

Balance in physical terms, through the crop systems used.

Balanced in biological terms, through diversification and through biological control methods.

Balanced through the selection of resistant varieties of plants and invigorating substances.



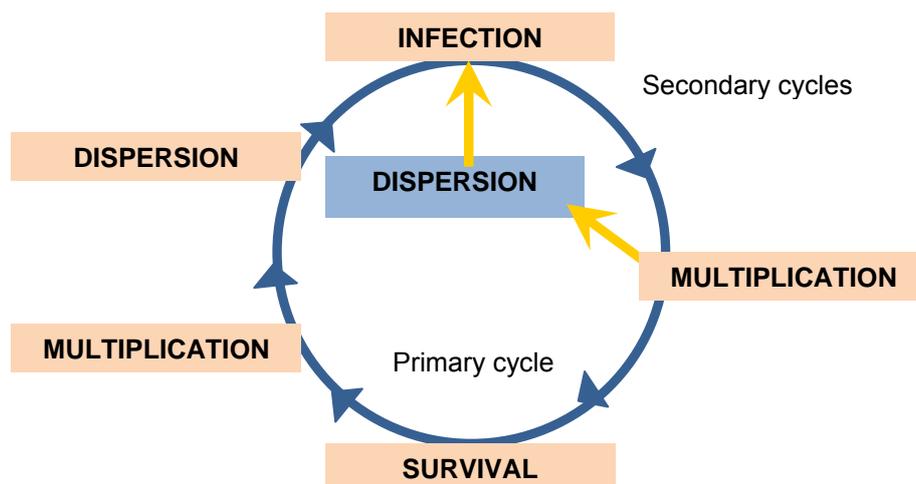


a) Methods for fighting fungi.

Most plant diseases are caused by parasite fungi that feed from them. There are two stages in the life of parasite fungi: a vegetative stage in which they assimilate nutrients and a reproductive stage. However, both stages take place at the same time in some species.

As fungi and plants are concerned, there are two different stages:

- a stage in which there is no association between the plant and the fungus and they are independent from each other,
- and an associative stage in which they come into contact and the fungus invades the plant's tissue, causing the infection.



Pathogenic fungi cause infections due to four different mechanisms that may act jointly or separately:

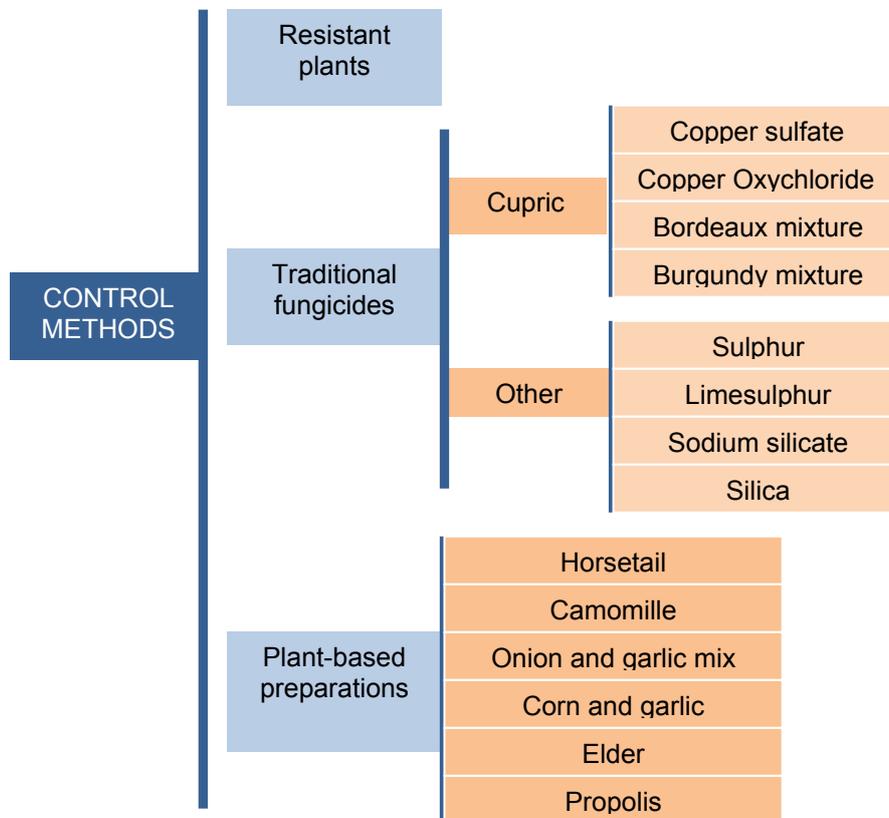
Production and release of enzymes that damage the cell wall.

Production of substances that interfere with the metabolism or affect the normal structure of the protoplasm of vegetable cells.

Release of substances that interfere with the growth and evolution of the plant.

Interferences with the normal circulation of water, nutrients and metabolites.





b) Pest control methods.

For an animal species to be considered a pest, there needs to be an invasion from a large number of specimens from that species. A given species cannot be considered a pest if there are small groups with a few specimens that do not cause remarkable damages to crops. The animals that cause crop pests are mainly: insects, mites and nematodes, and to a lesser extent, certain molluscs (snails and slugs) birds (crows) and rodents (mice and moles).



Some plants have beneficial properties.

The damages that a pest can cause depend on two main factors: the biotic potential of the parasite and resistance of the environment. The biotic potential





is the capacity that a parasite has to multiply without any element blocking or diminishing their multiplication power.

The biotic potential depends on the parasite's multiplication speed and the existing gender proportion in each generation. The resistance of an environment in a given ecosystem depends on several factors that diminish the multiplication rate of the parasite and hinder the growth of the parasitic population.

To a greater or lesser extent, pests are connected to:

The environmental conditions that may favour or hinder the development of their biological cycle.

The degree of plant development, which makes it more or less attractive to pests.

The resistance of the plant, which normally depends on the release of repellent substances.

Crop frequency can cause the pest to settle in the farm or it may cause it to leave when the crop changes.

Pest control is based on methods that help reducing the damages caused by the insects.

There are several methods that may be implemented in order to fight plagues:

Preventive method: Intended to prevent the pest from invading the farm.

Control method: It is based on the reduction of parasitic populations, so as to prevent major damage.

No action method: Especially used with pests that do not provoke serious damages and live in balance with plants, causing very little harm to them.

Natural control or natural balance concerning pests is achieved when natural factors maintain the number of parasites in acceptable levels and they do not cause any economic harm. When the natural factors are not enough to control a pest, direct action is needed once the situation has been assessed.





Direct action methods:	
Physical methods:	Biological methods:
Mechanical methods. Caloric method. Ultrasound.	Microbiological control. Bringing in predators or parasites affecting the plague. Use of biopreparations. Biofumigation.
Chemical stimuli:	Cultivation methods:
Pheromones. With arousing effects. With repelling effects.	Choosing resistant strains. Manuring and tilling. Companion planting and crop rotation.

c) Weed control.

The most common weeds are those that have best adapted to the crop cycles and farming tasks. In addition to this, they have some advantages over crops:

- They live in communities rather than in monocultures, which allows them to use efficiently all the resources available.
- They adapt to many different kinds of soils and climates, even to extreme conditions.
- Competition causes changes in the community and among specimens of the same species, which means that if we try to control a particular weed, we may be helping other species to become dominant.
- They have very high genetic variation, which allows them to adapt to hostile conditions easily.
- Many weeds grow very fast and generate large amounts of seeds or perennial parts, which gives them a great capacity to regenerate.
- Often, the seeds have organs that help their spreading and many remain fertile for long periods, even after being buried.
- Germination takes place in different stages, which makes it hard to destroy them at once.





- Generally speaking, they are more resistant to diseases, and therefore more fit to compete with highly selected crops.

Weed control methods are based on the control of several factors that help their spreading:



Adventitious weeds play a role within the agrosystem.

1. Control of the spreading of seeds from weeds:

- An adequate use of organic fertilizers and slurry allows for the deactivation of the seed in the soil by raising the temperature.
- Mowing around plots prevent the contamination of the crops and the seedbed. Boundaries and borders around the plot must be cleaned.
- Irrigation water must be monitored as it may carry large amounts of seeds with it. Irrigation channels and ditches must be free from weeds.
- By performing all these tasks it is possible to stabilise and diminish the soil seed bank.

2. Physical weed control methods:

The periods of time in which the existence of weeds cause a reduction in returns is critical. This is the right period for hoeing.

Weeds interfere with crops mainly due to the competition for light, space, water, air and nutrients, that is, the elements involved in the growth process.

The following chart describes the different physical methods that may be used in weed control, once they are already in the plot:





PHYSICAL METHODS	Manual & mechanical	Most common methods for all types of crop.
	Use of fire	Used in extensive cultivations and fodder crops.
	Mulching	Organic and vegetable remains can be used, as well as plastic.
	Heat methods	Localised burning, infrared radiation, microwave-based systems, or steam.
	Flooding	Especially used with rice.
	Cultivation methods	Several techniques are used both in intensive and extensive cultivation.

3. Crop diversification: rotations and companion planting.

The types of weeds we may get depend on the weather and the relationship between the characteristics of the soil and its use. The weed's adaptability to the environment is also important.

Periodic changes of plants, companion planting and mixed farming create positive synergies between the different types of plants. Thus, we can avoid competition for nutrients and favour mutual protection as one plant may release substances that keep off the parasites of the other. Thus, one plant has a direct effect on the other thanks to the chemical compounds it produces and releases, to the washing off of leaves with rain, root exudation, the volatilisation of leaves, etc.





1.2. Evolution in the use of the resource.

1.2.1. Origins and development of Organic Farming.

Organic farming is a production technique that has been practiced since the beginning of the 20th century. Nevertheless, the techniques currently used in organic farming are based on an ideological model that reacts against problems and excesses caused by the intensification and industrialisation of agriculture and fishing, which threaten public health, environment and society.

In the fifties, the main aim of European agriculture was to cope with the need for food and to improve self-sufficiency by increasing productivity.

By the end of the sixties, especially in the seventies, there is a general realization of the need to protect the environment.

In the eighties, once self-sufficient production had been achieved, and agricultural surplus started to cause problems, Europe became interested on organic production.

In the early nineties, the process of official recognition of organic farming in several countries, resulted in the approval of the Regulation (EEC) no. 2092/91 by the European Council.

This meant the creation of a Community framework for the regulation and setting up of standards that all organic foodstuff and products had to comply with, in order to be considered and labelled as organic.

Thus, organic farming became officially recognised, and all products that were made in accordance with a given set of rules started to be defined as “organic”. Regulation (CEE) no. 2092/91 is based on the promotion of production and on marketing control standards that had already been put forward by the relevant associations of organic farmers.



Preserving genetic diversity is very important.





From 1992 onwards, with the CAP reform, the European Union started to foster organic farming through the agricultural and environmental policy framework.

In 2007, the Council Regulation (CE) n° 834/2007, about the production and labelling of organic products, was established. Such Regulation (that came into force in January 2009), revokes the previous Regulation (CEE) n° 2092/91.

1.2.2. Creation and implementation of Rules for Organic Production.

Organic rules do not define the quality standards affecting the final product but the production process.

At an international level, the most important organic rules are the basic rules set by the International Federation of Organic Agriculture Movements. (I.F.O.A.M.) These rules are revised regularly so as to reflect the actual situation of organic farming worldwide. Apart from the minimum requirements, these rules describe the principles of organic agriculture and give advice on how to meet the requirements.

There are other organic criteria at private, national and international level.

The basic rules set by IFOAM are the framework for certification processes and for the control bodies around the world to be able to establish control and certification processes that may be used worldwide.

Local certification control can meet or even go beyond the basic principles of IFOAM, but have to observe the local specific conditions and include specific requirements.

At EU level, all foodstuff of vegetable or animal origin, whether processed or not, that comply with the premises of Regulation (CE) n° 834/2007, will be considered to be ecological, organic, biological, biodynamic or biological-dynamic.



Biological products must comply with the regulations.





The following products are liable to be defined as produced with organic production methods according to the European regulations on organic farming:

- Unprocessed agricultural crop products, animals and unprocessed animal products to the extent that organic farming requirements are met.
- Processed agricultural and animal products intended for human consumption composed essentially of one or more ingredients of plant or animal origin.
- Products intended for animal consumption, prepared feed and animal feeding composed according to the principles of organic farming.

Therefore a product makes reference to the organic production method when the labels, advertisements or marketing information indicates that the product, its ingredients or the raw materials used for animal feeding have been obtained according to the principles of organic farming.

The products authorised for the organic production system shall meet the following requirements:

They must be essential for the control of an organism or a particular disease, when there are no other biological, physical alternatives or selection and cultivation alternatives available.

The conditions for its use must exclude any direct contact with seeds, vegetables, products of vegetable or animal origin or the products derived from them. Nevertheless, concerning perennial vegetables, direct contact is allowed except during the growth of edible parts, that is, fruits, and provided that the application of the product does not imply direct or indirect presence of remains of the product in the edible parts of plants.

The use shall not have any unacceptable effect in the environment and shall not pollute it.

As for the minerals and micro elements used in animal feeding, other elements may be used as a complement to these products, provided they are natural, or synthetic in imitation of the natural products.

As animal production is concerned, Member States may apply more restrictive regulations to livestock and animal production within their territories, provided these regulations comply with Community regulations and do not ban or restrict



The products of certain crops are exported.





the marketing of other animals and products of animal origin that meet the requirements.

The importation and marketing of organic products from third countries is subject to the evaluation on the part of the Commission in order to ensure that they meet equivalent standards.

If a third country has regulations that can be considered equivalent to European ones, it enters a list of authorised countries and its products can be imported and circulated within the EU conveniently accompanied by a control certificate by the competent institutions in that third country. Currently, those authorised third countries are Argentina, Australia, Israel, Switzerland, New Zealand, Costa Rica, India, Tunisia and Japan.

1.2.3. Evolution in the processing and marketing of organic products: Certification and organic labelling.

Organic agriculture is the response to the actual need to regenerate the environment and to obtain high quality, healthy and non-polluted food.

At that point, small producers start to realise how important organic agriculture will be in the future, and a new market is thus created.

The processing industry connected with organic farming is getting more and more important in the production of healthy and nutritious products.

The organic processing industry does not use any synthetic additives in any moment of the process. The organic processing industry is at the service of consumers and it cooperates with farmers. Not too big, not too far away from producers or consumers, not too sophisticated. Designed to recycle and not to pollute.

At first, there were no specific regulations and producers and consumers met through different means: producers' associations, cooperatives, consumers' associations etc.



Certification guarantees the quality of the product.





Then the organic certification system was created to ensure consumers that food has been produced according to organic standards. The certification of organic products was initially carried out by private entities that took into consideration a series of specifications that they had established.

When the organic production and marketing sectors grew bigger, some problems concerning frauds and different ways of understanding the meaning of organic arose. In order to avoid frauds and to protect the consumers' interests, a set of general regulations had to be established.

Nowadays the organic certification is issued both by public entities and private certified entities registered to EN-45011.

In both cases, organic certification is understood as a quality control system based on the fulfilment of rules, inspections, certification and accreditation of products.

- Organic certification is intended to restore the confidence of consumers and organic farmers.
- Organic rules are minimum requirements for organic production.
- The inspections of organic farms comprise all farming procedures, and lab tests are conducted, among other measures.
- Endogenous certification programmes are important for the development of home organic markets, and they also reduce inspection expenses.

In order to demonstrate that a given product has been certified as organic, certification labels and marks are used. These labels are registered and kept so that only certified producers and processors can use them. Registered producers and processors gain the right to use the labels by signing a contract. Such permission is a confirmation that the product has actually been produced according to specific organic rules.



Soil management is one of the basic aspects of organic farming.

Certification labels and marks enable consumers to easily recognise reliable organic products. Thus, these labels are important marketing elements that allow for higher prices than those of ordinary products.





2. IMPORTANCE AND IMPACT OF THE RESOURCE.

2.1. Current situation and importance of the resource.

2.1.1. Current situation of conventional farming. Analysis of farming areas.

The so-called conventional agriculture is less and less popular and the number of farmers that practice it is constantly decreasing.

Nowadays, farming areas are facing the following social and economic circumstances, analysed according to the SWOT analysis: Strengths, Weaknesses, Opportunities and Threats.

Weaknesses:
Population loss, scattering and ageing, which results in the progressive abandonment of rural areas.
Little economic diversification and low innovation capacity.
Failure to adapt to the changes that are taking place in the rural areas.
Little entrepreneurial spirit.
Difficulties in the professionalisation of rural economic activities in farming and agri-food sectors.
Insufficient use of natural resources as traditional agriculture, landscape, traditions...etc, and lack of the necessary resources for the processing of their own products.

Threats:
The backwardness in alternative development instruments such as the industrial or traditional processing of farming products.
Insufficient development of networks of associations and of a support scheme that encourages the production and managerial capacity and that fosters new development and entrepreneurial initiatives at local level.
The training offer does not answer the needs of rural areas and does not make an extensive use of NICT.
Loose application of quality criteria of activities concerning agri-food, environment and tourism.





Strengths:

There are high quality agri-food products providing an added value (agricultural products, cattle, chestnuts, fungi, crafts etc.)

There is an outstanding historical, cultural and environmental heritage with a great potential for tourism.

The increasing diversification of agricultural activities thanks to endogenous resources (fungi).

The organisation of social partners thanks to the Local Action Groups intended to promote local entrepreneurial initiatives.

Opportunities:

Agriculture understood as the keystone of the agri-food sector. Increasing the added value of agricultural products by processing and canning them locally.

Greater capacity to attract tourist interested in rural tourism, sports, culture and nature, thanks to a more organised and integrated offer that cover the increase in leisure time and the demand of quality tourism.

Many farmers worldwide are changing the way they manage their farms and shifting to organic farming and livestock production.

Organic farming is a hope for the future for many rural areas. The organic market is growing at a rate of 25% per year. Thus, it can be considered an instrument to:

- Improve employment creation and vocational integration.
- Improve the social and economic conditions in rural areas.
- Fix population in those areas where it is decreasing.

This agricultural method improves the returns of farms significantly.

It also diminishes the environmental impact and improves the quality of the production.

2.1.2. Current situation of organic farming.

In the last few years, organic farming has developed greatly. Nowadays it is being taken up and regulated in more than 160 countries. There are more than 37.2 million hectares of organic crops scattered among the five continents.





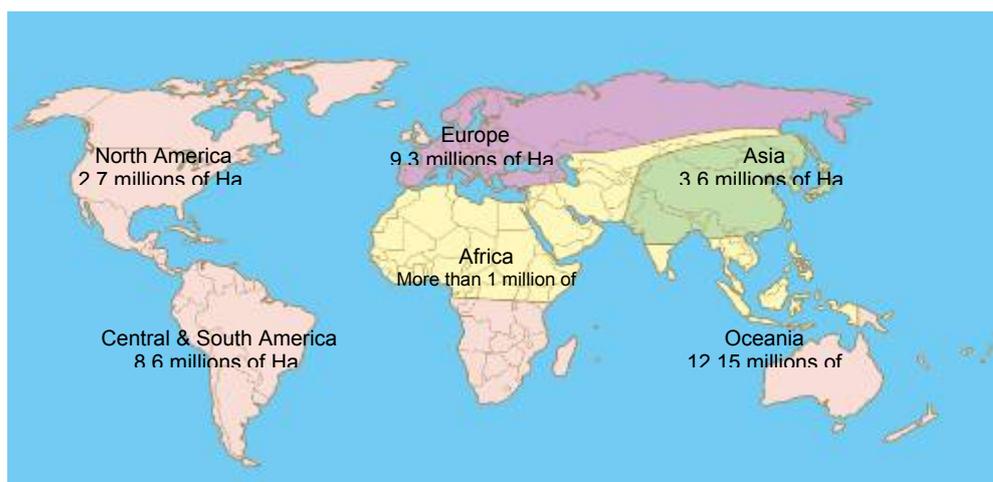
Organic farming encourages the study and research of agrosystems.

“The World of Organic Agriculture. Statistics & Emerging Trends 2011” is the yearly study by IFOAM (International Federation of Organic Agriculture Movements) and FiBL (Research Institute of Organic Agriculture). This report gathers information on the surface and number of organic farms, etc. that currently exist in the world.

This study estimates that places with the largest geographical areas of organic farming have been Oceania (12.2 millions of hectares in 2009), Europe (9.3 millions of hectares) and Latin America (8.6 millions of hectares).

Regarding the countries, the ones having largest areas with organic farming crops were Australia (12 millions of hectares), Argentina (4.4 millions of hectares) and the United States of America (1.9 millions of hectares).

This study also estimates that the worldwide returns of organic products amount to 54.9 millions of dollars in 2009, which is the last year with available data.

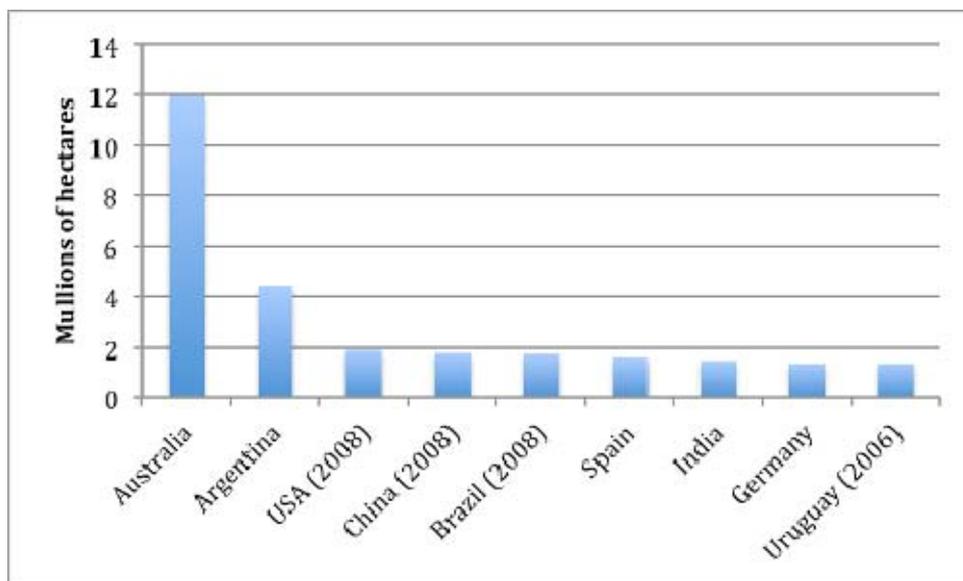


Worldwide surface. Source: FiBL & IFOAM Survey, 2011.





Apart from the surface and number of farms known, the survey assumes that there is an equivalent amount of organic production that is not certified and that would increase the total figures, especially in Africa and Asia.



The nine countries with higher surface of organic farming in 2009.

Source: IFOAM-FiBL Survey, 2011.

2.1.3. Current situation of Organic Farming in the European context.

From the beginning of the 90's, organic production has evolved fast in most European countries, as a result of the common legal framework and the aid schemes that have encouraged the conversion of many farms.

In 1985, the amount of land devoted to organic farming in Europe amounted to 100,000 hectares distributed in some 6,000 farms.

In 2004, there were 6.5 millions of organic crop hectares in Europe, distributed in 167,000 farms, which represents the 3.5% of the total agricultural area (UAA: Usable Agricultural Area). In 2011, the surface devoted to organic crops has been increased until 9.3 millions of hectares.





a) EU support to organic production.

In 1992 the agricultural policy of the European Union underwent a reform that brought about the inclusion of environmental issues and funding measures.

Thus new aid schemes for organic farming were provided for and included in the new environmental programmes.

These environmental programmes consisted on 5-year contracts between farmers and the administration, according to which farmers would commit to implement a series of agri-environmental practices in their farms, in return for a bonus that would compensate the decrease of returns resulting from the changes implemented. Aids for organic production were included within this scheme.



The number of organic farmers increases every year.

Agri-environmental schemes have boosted the development of the organic sector, especially in those countries that adopted these schemes already in 1992, in a yearly basis and using the maximum amounts made provision for in the European regulations. These measures have also been very effective when combined with an efficient marketing of organic products.

b) European Action Plan and new proposal of European organic farming framework.

In order to promote organic markets and products a working paper, which includes a context analysis and a description of the proposal, has been created and a European Action Plan has been adopted.

The Action Plan lays down 21 measures intended to improve the quality, efficiency, transparency and confidence of consumers. This Action Plan is the basis for the evolution expected in the organic markets in the next few years.

The 21 measures are included in the following three main axes:





- Information-led development of the organic food market by increasing consumer awareness.
- Making public support for organic farming more effective.
- Improving and reinforcing of the Community's organic farming standards, import and inspection requirements (trade in organic products is hampered by widely differing standards).

Then, in February 2005, the plan was reviewed and the European Parliament issued a report questioning some aspects:

Conclusions: Making organic farming the spearhead of sustainable agriculture, instead of a sectoral niche with limited aims.

"This European Action Plan has been long awaited, and the least one can say about it is that the disappointment is commensurate with the wait. The plan is notable for a distinct absence of practical measures, and still more of binding ones, and, above all, a total lack of ambition"

"It illustrates quite well the European Commission's mixed message on the subject of organic farming. On the one hand, it never stops praising the virtues of this type of farming, but on the other it takes no concrete steps to promote its development, while the organisation of the first pillar of the CAP also continues to be somewhat at odds with the organic approach."

So, in spite of some interesting ideas such as promoting the use of organic food in public canteens and the need to harmonise specifications, in absence of adequate financial and human resources and of any kind of timetable, what will be the real impact of most of these 21 actions?



Young farmers are interested in this type of production.

The texts in the chart above correspond to paragraphs from: Report "*on the European Action Plan for organic food and farming*"; intended to review the Action Plan.

Organic production still has to overcome many obstacles to prevail, especially in connection with the marketing and distribution channels, which are the weakest points in the organic agri-food system. There is a need for political commitment in order to meet the expectations of consumers and producers.





2.2. Results and impact of the resource.

• PILOT EXPERIENCES

Pilot experiences carried out in the scope of the transnational cooperation of several European LEONARDO DA VINCI projects: The projects “IRIS” and “ECO-AGRO” have achieved a great impact in the fields of the organic production



In organic farming waste products are recycled.

sector where they have been working. Some of these impacts are:

- a) **Cooperation among entities from the countries that have taken part in the projects**, with the aim to establish more stable and durable links between them. This has resulted in joint activities, technological exchanges, technical advising, joint promotion of products, etc.
- b) **Involvement of different social partners**, SMEs, local action groups, local entities, associations, trade unions, the project’s beneficiary groups, etc. throughout the activities carried out in the scope of the project. They have also been involved in other initiatives as information activities, awareness raising and dissemination of results in all the territories covered by the partnership.
- c) **After the end of the projects, new work tools have been devised, and there have been new common experiences and “pilot centres”** (pilot experimental enterprises, cultivation and processing of products).

The dissemination of results has resulted in a great impact among the professionals and institutions of the organic production sector. The book





“Agricultura Ecológica: Manual y Guía Didáctica” (“Organic Farming: Manual and didactic Guide”) has led to the implementation of specific actions to improve the phytosanitary conditions of crops in some regions.

The partners have conducted several courses on organic farming techniques, which have been very well received by the local population in the rural areas where they were taught.

In addition to this, the project included seminars intended to provide information to the general public.

The main target groups were young people, unemployed people, women and the general public.

These activities have been useful for the dissemination of the organic approach as a New Source of Employment that makes a sustainable use of the natural resources available.

Awareness raising activities have been very successful and led to some self-employment initiatives.

Several organic farms have been set up in the areas where the training initiatives had taken place.

Self-employment initiatives were also encouraged by training actions (talks, seminars and workshops).

d) Creation of several organic farms and organic farmers’ associations.

Thus, intermediaries can be avoided and product prices can be improved.

These initiatives are also influencing production directly, and as a result they are having an impact in the economy of many people, as they are getting an extra income thanks to organic farming.

e) Creation of small processing enterprises.

New jobs have been created as a result of these experiences in many of the spheres of activity covered, although, in some cases, employment creation is a difficult thing to measure.





3. USE OF THE RESOURCE AS AN INSTRUMENT FOR RURAL DEVELOPMENT.

3.1. Prospects and conditions needed for development.

Organic farming provides for economically feasible production models that combine economic growth and human development, with no environmental damage.

Organic farming production models are environmentally friendly and socially sensitive. This approach does not only focus on production, but also on the biological sustainability of the production system. It seeks a balance between needs, factors of production, environmental concerns and the quality of life of those that live on agriculture.

Thus, organic farming can be considered as an instrument for rural development.

The agri-environmental management seeks the balance between production and conservation through measures based on the following principles:

Reducing the use of energy and of the resource and regulate the use of producer goods in general.

Reducing the loss of nutrients, by reducing the washing out, leaching and erosion. This approach also aids the recycling of nutrients by using leguminous plants, organic fertilizers, companion planting and crop rotation.

Promoting local production of foodstuff, which adapt to the natural, social and economic context.

Producing only the amounts needed, and preserving natural resources.

Reducing costs and increasing returns and economical feasibility of medium to small agrosystems.

High quality production obtained using organic methods implies having specific knowledge of the local ecosystem. Organic production implies the diversification of rural economy. In addition to this, it encourages self-sufficiency at local level, as it is connected to the local context and favours the stability of the rural population that lives on agriculture.





Organic farming as an instrument for Rural Development:

It improves the standard of living of rural communities.

It allows nature conservation thanks to sustainable management of natural resources.

It increases the value of the products in the production areas and in nearby areas.

It develops a market with a large number of potential users.

It improves the local business networks and the economic situation.

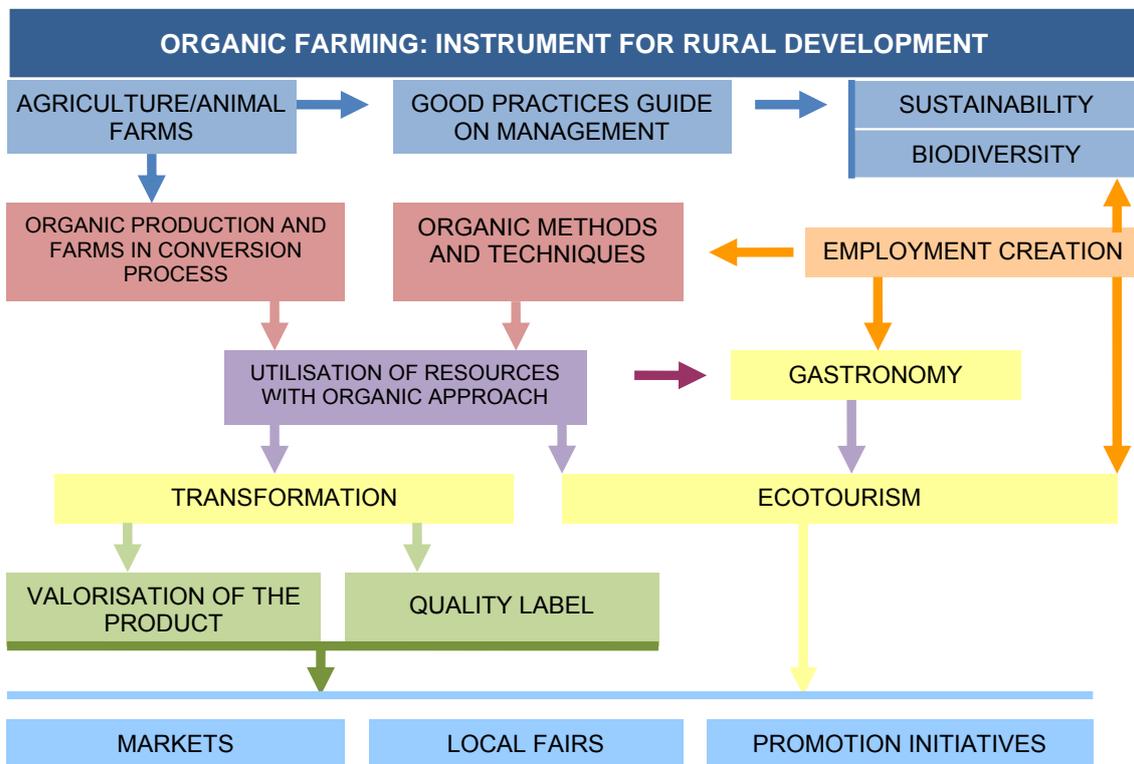
The need to find new agricultural management options, more in tune with sustainability and move away from the paradigm of the “Green Revolution” that praised intensive farming, is nowadays an issue for debate. Agroecology brought about the shift to the new paradigm. Agroecology is the science that provides the theoretical basis and the techniques used by Organic Farming.

The main goal is to find new approaches that foster sustainable agriculture, nature conservation and Rural Development.

Organic farming is committed to provide economically feasible product models liable to increase economic growth without causing environmental damage. In addition to this, these new models are more socially fair, as they imply a more balanced distribution of assets, skills and opportunities. These models are also fairer in terms of generational equity; as a sustainable use of natural resources enables future generations to use them.

In addition to this, organic farming is the driving force for rural development, as it promotes the survival of agriculture as a profitable economic activity in deprived rural areas, and articulates diverse local development models, being the main instrument for the sustainable development of rural areas.





In order to support economic and rural development, organic farming activities must make a sensible utilisation of natural resources, and a sound of land distribution. They must also encourage other complementary activities, so as to support local cultural identity too.

With the support of the Lifelong Learning Programme of the European Union

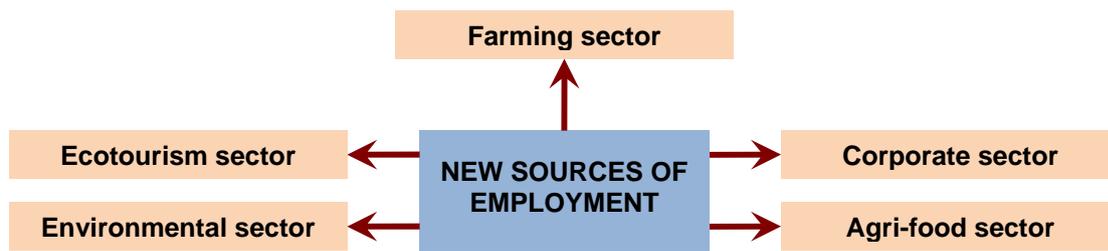




3.2. Employment creation potential of the resource.

3.2.1. The New Sources of Employment in the organic sector.

The New Sources of Employment connected with sustainable processing of ORGANIC PRODUCTS are to be found in the following sectors:



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ing sector.

Organic farming is an opportunity for family-run farms to continue to exist in spite of factory farming.

Difficulties in the production stage:

- Producers lack the adequate training.
- Lack of internal demand (home market).
- Agri-environmental schemes: insufficient funding.
- An increase in costs due to the lower yields and to the need to master the most difficult techniques, as well as the greater sensitivity to climate changes, more extensive breeding etc.

Employment creation potential:

- Agricultural activity based on organic farming techniques.
- Agricultural activity based on disease, pest and weed control.
- Advice on organic food production.





ADVICE AREAS CONCERNING ORGANIC PRODUCTION

Plant production

- Conversion.
- Rotations.
- Nutrient balance of the soil.
- Green manure.
- Composting methods.
- Weed control strategies.
- Control and management of diseases.
- Medicinal plants.
- Multiannual crops.

Animal production

- Appropriate feed so as to obtain good carcass quality.
- Animal disease control and prevention.
- Fodder: Advice will lead to better quality and lower costs.
- Autochthonous breeds. Production.
- Authorized food additives.
- Preparation of diets that suit local resources, especially growing and fattening diets.

b) Corporate and agri-food sectors.

• PROCESSING INDUSTRY AND MARKETING OF ORGANIC PRODUCTS.

Difficulties in the processing stage:

- Few food-processing enterprises use organic products. There are not enough meat freezing and meat processing industries, and especially not enough slaughterhouses (in particular, poultry slaughterhouses) using organic methods, as they have to meet very strict requirements and therefore it is not profitable to use organic processing methods, especially for small consignments.
- Processing SMES must comply with environmental regulations.
- Organic production processes involve some extra costs. The main factors causing the increase of costs are:
 - Raw material is more expensive, as production costs increase too, and also due to the small size of consignments processed and marketed.





- The use of technologies that choose quality over profitability.
- Mixed industries (those that have two production processes: the conventional one and the organic one) need to invest in specific production lines or else to switch between organic and ordinary methods. In both cases, there are additional costs implied.
- It implies paying the fees of the control and certification bodies (according to turnover). Many people concerned criticise this aspect and consider that it contradicts the environmental benefits of organic farming.

Employment creation potential:

- The organic processing industry is very diverse and has very different features and problems. There are some enterprises that simply can and label foodstuff made with one or more animal or vegetable components, intended for human consumption. Others produce feed intended for animal consumption.
- Agri-food enterprises may produce organic products exclusively, that is, only process certified products. They may also be mixed, if they produce conventional products too, provided they meet the requirements established by the regulations on the separation in time and/or space of the two processes.



Agriculture and cattle breeding are complementary activities.





- Small local processing, canning and marketing industries that provide an added value to the product and use different market channels are liable to create employment. These small enterprises are liable to create a small network of enterprises that improve local economy and create employment. Thus, rural areas may become more dynamic and allow younger people to stay in them.

The following chart shows the different types of processing industries, according to the EU classification:

1. Industries that produce products composed of a single ingredient of plant origin.

- Handling, canning and processing of crops.
- Handling, processing and canning of dried fruits.
- Production and bottling of wines, cava and sparkling wines.
- Handling and canning of fruits and vegetables.
- Production and bottling of oils and fats.
- Production of cider and other alcoholic drinks,.... etc.

2. Products composed of more than one ingredient of plant origin and/or of secondary processing.

- Production of food preparations.
- Production of homogenised food preparations and dietetic food preparations.
- Manufacturers of Cocoa and chocolate products.
- Manufacturers of bread and pastry.

3. Products of animal origin.

- Milk, cheese and dairy products.
- Bee products.
- Eggs.
- Meat (chicken, cow, lamb, etc.).

4. Animal feed.

- Feeding stuffs.
- Compound feeding stuffs.

Classification of processing industries according to UE regulations.

Source: "Libro Blanco de la Producción Agroalimentaria Ecológica en Cataluña"





Products composed of a single ingredient of plant origin: olives, cereals and vine growing products. Most processing industries are included in this category: farming co-ops, wine cellars and mills.

Products composed of more than one ingredient of plant origin and/or of secondary processing: this category includes all products used in vegetarian diets, as soy or wheat-derived products, as tofu, seitan, etc.

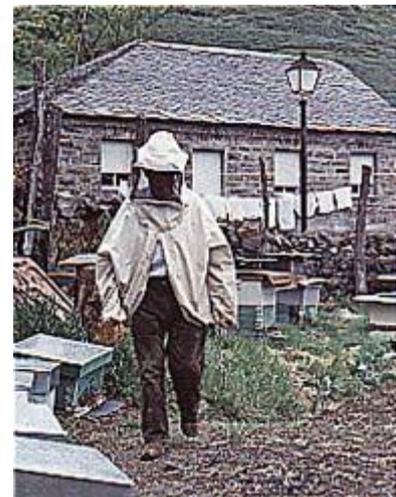
The industries in this category sell a wide range of products to supermarkets and small fair trade and health food shops, as well as vegetarian shops.

Products of animal origin: Organic meat production requires slaughterhouses and quartering plants to be certified as ecological.

It makes it easier to carry out the specific control of organic production and it specially helps small slaughterhouses to separate organic and non-organic production in time.

Nowadays it is still not profitable for big slaughterhouses to have specific production lines for organic products.

Animal feed: enterprises that produce feeding stuffs.



The diversification of production is important.

Eastern European Countries that have entered the EU in the last enlargement can produce animal feed at lower prices than the rest of member states.





- **SHOPS AND MARKETS FOR ORGANIC PRODUCTS.**

The restaurant industry is a new challenge for organic food. A wide range of different possibilities exist: local markets, restaurants, hotels, rural tourism centres, shops and small stores, distribution companies, gourmet food stores, in some cases large superstores, fairs, etc.

Difficulties in the distribution stage:

- Consumers have difficulties to find organic products (there are only few small shops that sell them, most of the products can only be found in large superstores).
- It is a vicious circle: the lack of supply hinders consumption, and no consumption prevents supply from growing.

Employment creation potential:

There is more and more acceptance and demand of organic products. Consumers are becoming aware of the benefits of organic food:

- Restaurants with organic food menus.
- Organic catering addressed to the general public, canteens, school cafeterias and public centres as hospitals.
- Small shops and small superstores specialised in health food and gourmet food.
- Supermarkets.
- Small-scale, local marketing: fairs, local markets, etc.

The greatest challenge of organic products marketing is the need to harmonise ideological components and competition, as these products have to compete with the rest.





There are several stages involved in the process of adaptation and creation of new marketing channels:

Identifying specific market supply and demand needs.

Becoming acquainted with market characteristics.

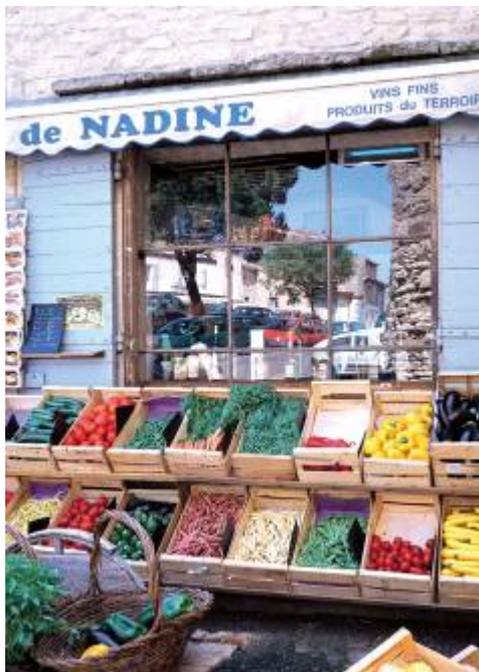
Providing the conditions required for the marketing of the product.

Implementing of actions devised.

Following up of the process.

The following aspects must also be taken into account during the marketing process:

- The type of **market** that we want to enter according to production capability and product diversity throughout the year. An adequate strategy is important. It must take into account that normally the greater the effort, the higher the price. It is advisable to focus on nearby markets. Local markets



Organic market.

allow for lower transport costs. In addition to this, it is easier to get to know it thoroughly and to have a positive influence on consumers, as products can be easily advertised. Once local markets become saturated, it is the moment to spread to more distant markets, providing we still can control the situation. Nearby markets are always more convenient for producers, even if initially there is no demand at all.





- **Consumers** must be informed of the advantages of organic food, both as regards quality, health and environmental protection:
 - Organic food does not contain toxic products.
 - It protects the health of producers.
 - It prevents soil erosion and makes a sustainable use of water.
 - It helps small producers.
 - Food looks and tastes better.

- **Organic products** must meet several requirements in order to appeal consumers: quality, design, price, canning, labelling, service, image. They must compete with conventional products at all levels.

- **The price** of organic products is always slightly higher (between 10 and 15%) due to the higher quality and production expenses. This should not be an obstacle for the general consumers to buy them. It is difficult to tell organic products from conventional ones; consumers need information in order to be able to compare them.

- **Supply diversity.** In general, consumers look for offers when they buy regular products (vegetables, fruit, rice, potatoes, eggs, dairy products). In order to provide enough variety of products, organic farmers should join together.

- Another option is having a **group of consumers that “adopt” a given farmer**, which allows for a constant and diverse production that the group commits to buy.

- **Work with other organic farmers.** Often producers have to face some problems when they start selling their products to supermarkets, and sell specific products instead of providing a group of them. In such situations, it is advisable to collaborate with other organic food producers.





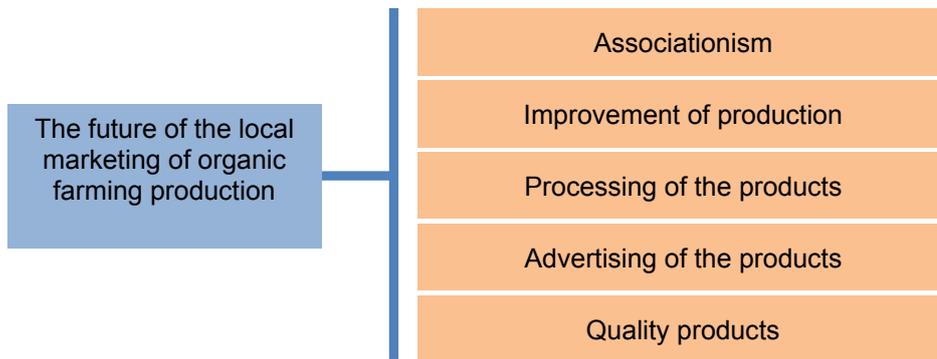
- **Distribution** is important in order to allow consumers to access products that maintain all the characteristics that make them more attractive than the rest, which gives them a chance to compete with conventional products. Accessibility may be a major problem; if consumers cannot find a product regularly, they stop buying them.

- **Advertising** has an important role. Products must be advertised in such a way that their special characteristics are explained in a clear and understandable way. This important information must include the benefits of consuming these products instead of any others.
 - Use of organic food in organic food menus.
 - Encourage the creation of small processing industries, which allow for the diversification of the production.
 - Compete with producers from other areas. In order to do this, the strategy must be based mainly on quality. Quality is the distinguishing element. Quality must be present both in the production and the processing stages.



Workflow is planned beforehand.





c) Ecotourism and environmental sectors.

Employment creation potential:

- Activities connected with the environment and the so-called green tourism.
- Organic farming workshops.
- Ecological excursions that promote craftsman food. Courses, workshops and visits to the organic food artisans.
- Promotion of organic food in country lodges and rural hotels.

Organic production can become part of the tourist sector. Thus, typical products and organic products can be promoted as high quality, exceptional products that are an expression of the area and its culture:

- Promotion of craftsman food.
- Create a link between quality/territory and regional products. Thus, gastronomy, food education and respect for the environment are promoted.
- Upholding and restoring traditional farming activities including workshops as the following in tourist amenities:
 - o Jams and tinned fruits;
 - o Spirits and liquors;
 - o Pickles, pickled meat and salted meat and fish;
 - o Cheese and cottage cheese;
 - o Honey sweets and herbs sweets;
 - o Salt pork and delicatessen meats;





- Pastries and fritters;
- Ice creams, sorbets and iced drinks;
- Products made with medicinal and aromatic herbs;

3.2.2. Emerging professions.

Organic production is a production system that implies adopting methods that are different from the ones used in conventional agriculture.

Organic farmers do not need recipes, but the training required to adapt the principles of organic production to their own specific circumstances.



Terrace configuration.

In rural areas there are several groups that need qualification and training in order to improve their professional activity in the organic sector and thus encourage self-employment.

There is a strong need for trained specialists that cope with the demand of agroecological technologies and techniques; there is a need for people that inform farmers on this production model. There is an increase in the number of young PAE member farmers (Producción Agroalimentaria Ecológica; Organic Agri-food production), which presumably implies that there will be a growing interest on this type of training.





TRAINING OFFER IN ORGANIC PRODUCTION:

SPECIALIST IN ORGANIC FARMING

There are several options:

- Organic horticultural production.
- Fruit growing, and extensive production of cereal and other crops.
- Organic cattle breeding.
- Organic beekeeping.
- Large-scale organic production.
- Organic vegetables planting under plastic.
- Organic ornamental flowers.
- Organic gardening.
- Specialist in disease, pest and weed control in organic production.

SPECIALIST IN ORGANIC PRODUCT PROCESSING

Addressed to organic processing and marketing enterprises.

ORGANIC CATERING SPECIALIST

Intended for the training of specialised kitchen staff that can prepare organic menus.

ENVIRONMENTAL SPECIALIST

Intended to train specific staff for environmental activities in the scope of green tourism, that can include the promotion of organic farming among their activities.





3.5.2.3 CHESTNUT TREES

1. GENERAL DESCRIPTION.

1.1. Description of the resource.

1.1.1. Origins.

Chestnut trees have existed for more than forty million years. Since men stopped being hunters and became farmers, chestnut trees have been highly valued for their fruits.

Some archaeological remains found in ancient settlements in Southern Europe dating from Roman times give evidence of the importance that Chestnut trees (*Castanea sativa* Miller) had in the life and primitive economy of the inhabitants of these areas already 20 centuries ago. Before that time it was already an important



Chestnut trees have always been connected with the life of man.

element in the landscape, but it was in the times of the Romans when it started being grown as a fruit tree.

Chestnut trees have always played an important role in the survival of wild fauna. Many animals feed on chestnuts during the long winter periods. Many bird species find shelter under its leafy branches, and its dead leaves allow for many small animals to survive.





1.1.2. Description of the resource *Castanea sativa* Mill.

Chestnuts are both fruit trees and forest trees, of about 20-30 m. high. They have hemispherical crowns and grow fast, especially when they are young.

Leaves are deciduous, simple, alternate and with a short petiole of 3-5 cm wide and 10-15 cm to 25 cm long. They are lanceolate and slightly coriaceous (hard), deep-dented and serrated, with a regular pinnate nerve. Leaf fall takes place at the end of November or earlier if there are frosts. The flowering period takes place in May-June. It is a monoecious species, that is, there are male flowers and female flowers in the same plant. Male flowers are called catkins and have cyme inflorescences of 5-6 flowers. Female flowers sprout in little clusters under male ones. The fruit is a brown-coloured ovoid achene, with hilum and a hard and shiny pericarp.



Distribution of chestnut trees in the world.

- **Growth rate**
Fast, especially in young trees. It lives very long and can become very big.
- **Soil**
Ideally, light, fresh but also well-drained, deep soils, free of calcium.
Chestnut trees are calcifugous and have leaf chlorosis, and die in calcium-rich soils.
The ideal pH is between 6 and 7.





- **Climate**

Chestnut trees live in different climates. They need some 700 mm³ of water a year.

They need to be moist, especially by the end of the summer - August and September-, as this is the period in which the fruit grow.

It tolerates wind but it does not grow strong in windy areas. Shoots are affected by droughts and frosts, especially in the late spring or early autumn.



Female flowers turn into cupules.



The fruits are within the cupules.

- **Orientation**

It is a heliophilic species, and requires plenty of sunlight, although it needs less light in lower latitudes.

- **Variability of the species**

Chestnuts have always had a great genetic diversification. The different climates have led to many different varietal types. In selection processes the following features are taken into consideration: size of the fruit, resistance to diseases, adaptation to the soil, climate, taste, and easy peeling and opening, etc.

This species is an essential part of the landscape and culture of some European regions. During medieval famines, chestnut trees provided food and were used as building material (beams, shutters). They were also used as fuel





(wood) and for crafts (wickerwork, barrels, casks, walking sticks and furniture). In some places people still carry out all these activities connected with chestnut trees, which provide an added value to the production of the area. Thus, this endogenous resource has become an instrument for the development of rural areas.

1.1.3. Good practices connected with chestnut tree growing.

For good practices programmes to be really useful, those local inhabitants that are directly connected with the resource must become involved in the initiatives.

This is a difficult issue, as they use ancestral work methods and may not be willing to change them, especially when positive results are only to be seen in the long term.

The good practices programme herein suggests investing more time in chestnut trees in order to improve production and have trees in optimal phytosanitary conditions.

The good practices programme must include a set of measures concerning the different aspects that affect chestnut tree growing, which can be described as follows:





a) Plantations.

This section addresses only new plantations, and explains why it is important to use plants of our own or to keep a strict control of tree nursery plants.

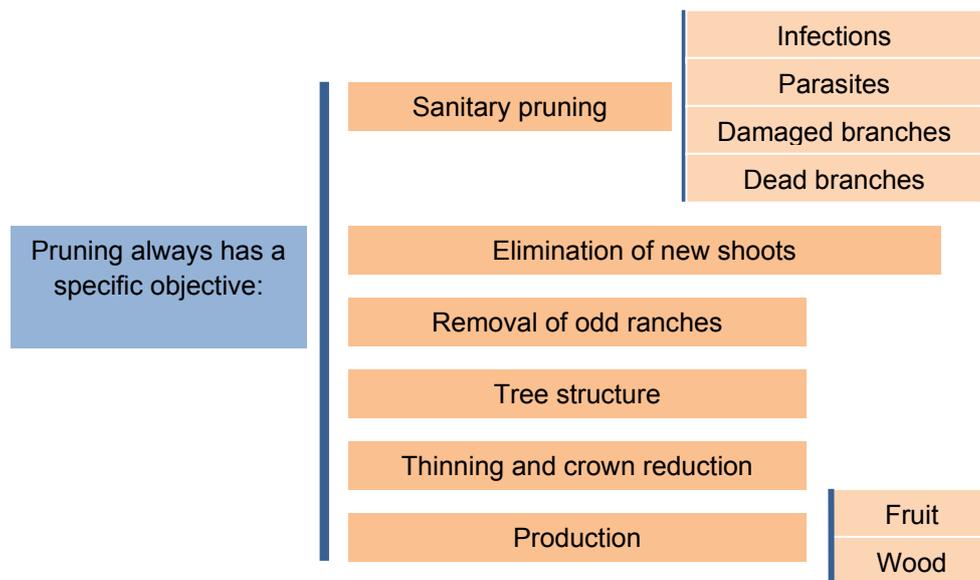
When planting the tree:	
It is advisable to use plants of our own,	derived from our own wild chestnuts that can later on be grafted on the chosen variety.
Using our own plants allows us to know all their characteristics beforehand.	It is difficult to know where tree nursery plants come from.
We can put the plants in a seed box	or in a container directly (pot), depending on the number of chestnut trees we want to grow.
The best time to plant the trees is November.	If we delay sowing, chestnuts must be kept so that they do not lose their germination capacity.
When choosing the seeds, it's advisable to pick big ones,	as they have more nutrients.
When we transplant the plants to their final growing place, root and stem reinforcement are advisable, so as to favour rooting.	Reinforcement is also necessary with nursery plants.
If we intend to plant many times in the following years, we should not use the same peat or earth that we have used previously, especially for container plants.	Containers should be disinfected in order to prevent contamination. We can use bleach.
When we transplant the plant to the final growing place, we should establish an adequate planting framework,	in order to allow the plant to grow and improve production.
If we are using our own plants, whether they have grown spontaneously or they are shoots from other plants, we must make sure that there have not been infected with chestnut ink disease.	
If there is ink in the area, we must take the necessary measures described in the section dealing with diseases,	in order to prevent the new plants from being infected.
If the plant comes from a tree nursery, we must check whether it is infected with ink disease.	In order to do so, we must disinfect the roots with copper sulphate or with a synthetic fungicide like "Aliette".
Tree nursery plants can be contaminated if the soil or peat is recycled over the years.	There can be latent fungi in the new plant that may appear during the growth process. If the disease does not develop in the nursery it may go unnoticed to tree nursery workers.
We should always buy our plants in tree nurseries that comply with all health regulations.	
It is important to buy plants that have good root development.	
Once we have chosen the new plants, we must make sure they do not have too much water.	
Transplants to the final growing place must be done in November-December,	rather than in spring.





b) Pruning.

Pruning is one of the most important tasks and has to be included as a good practice. We have to establish a general set of criteria that explain its importance both for chestnut trees and fruits.



Pruning improves tree nutrition.



Badly pruned chestnut tree.





Pruning

This practice has a **great influence in the phytosanitary conditions of the chestnut tree and in its productivity.**

Pruning also **affects the total weight of the plant and the balance between the aerial portion (crown) and the underground portion (roots).** An unbalanced crown causes plants to grow weak and be little productive.

Young specimens require a shape pruning, as it will to a great extent determine their future structure. Whenever possible, we should prune plants that have already been grafted. Thus, we will prune only above the graft area.

As for bigger plants, we may do a corrective pruning, especially when the crown is very leafy or is affected by age or by parasites.

Shape pruning must be done in plants that have not grown too large so that we can easily control them. This makes future works easier.

Pruning also **helps providing a given structure (shape) to the plant and favours plant feeding, as it improves ventilation and sun exposure.** These two aspects are important, as well as root absorption of minerals, for the plant to generate the nutrients it needs.

The so-called natural pruning is not recommended, as it favours the presence of fungi, insects and parasites. Natural pruning cause crowns to grow too dense and plants to grow too high, and as a result, branches that are not exposed to the light rot and dry out. This kind of pruning is more suitable for timber trees.

If we decide not to prune, **we should at least remove dead branches periodically.** Pruning can be done all year round, but **it is advisable to do it by late winter or early spring (February-April),** as at that time plant structure can be seen easily and wounds heal faster.

Modern pruning methods choose the right positions for the cuts so as to help the healing of wounds. The principles of this technique are simple and easy. The right places for the cuts depend on the shape of the plant. This method prevents certain areas to rot in the future and weaken the tree.

In order to prevent diseases and parasites, **it is advisable to disinfect the tools we are going to use and the pruning cuts.** This is very important to prevent chestnut blight.

Copper sulphate or a bleach solution 50/50 can be used in order to disinfect them.

It is advisable to use sharp and clean pruning tools. These precautions will condition the future phytosanitary conditions of the plants.

When the wind tears off branches and when there are wounds in the trunk (caused during tilling, for instance) **the torn tissue around the wound has to be removed quickly to help healing.**

Wound dressing is quite commonly used in order to seal the wounds of fruit trees and prevent fungi to infect them. Wound dressings are plastic sealants that isolate the wounds and prevent the appearance of parasites that may damage the tree in the short or long term.

In areas infected with chestnut blight wound dressings are necessary to prevent the plant from getting infected.





c) Soil management.

Soil management is a very important technique when dealing with plants. It is not an easy task as there are no qualified experts able to adapt practices to the real needs of the soil. A thorough explanation on soil management would need a chapter of its own. However, we consider it necessary to explain at least some of the most important elements involved:

Soil management
The soil is one of the most important elements when you work with plants , as it has a great influence in their development, nutrition and phytosanitary conditions. The soil is not a lifeless substrate, it is a living and fragile element.
Therefore, it is very important for chestnut tree growers to know the soil and its properties. Not all soils are the same, need the same or behave the same way.
When working the soil we must bear in mind its characteristics in order to keep it in good conditions. We must not act prompted by habit or whim.
Working the soil is important in order to improve its structure. In most of the plantations we have studied, the result is a better intake of organic matter.
Most soils studied were sandy , and prone to some extent of erosion and washing out of nutrients. This causes a progressive impoverishment of the soil. Therefore, we must stimulate it by keeping the plants in good conditions and by providing nutrients.
Work practices must take these characteristics into account for the soil to improve its nutrient holding capacity and slow down erosion. Both objectives can be achieved by adding organic matter to the soil.
Hoeing may not be necessary in every type of soil; it could even be a harmful practice in many cases. Nevertheless, it is possible to hoe every two or three years. In some cases, when the soil is too damaged, the do-nothing method may be suitable. It consists of taking no action at all.
Working the soil is an important factor in the spreading of chestnut ink disease, as the farm equipment used contributes to soil turning. Thus, the disease spreads from one place to another, and from one plot to another, without obvious connections.
If we decide to hoe the soil, we should do it immediately before gathering the chestnuts , in order to have a clean soil during harvesting. Covering the plants, leaves and spiny cupules (from the previous harvest), protects the soil from erosion (caused by air and water) and helps maintaining it fresher, especially as sandy soils are concerned.
Chestnut trees should not be watered during the summer, as it would favour chestnut ink disease. In general, chestnut trees do not need great amounts of water, but they can adapt to it to a certain extent.
In all cases, we must control soil moisture to prevent it from being too high or too low. The plots studied tended to be too moist for chestnut trees.
Watering chestnuts is a very old and deep-rooted technique that chestnut growers have used for years, but nowadays, chestnut ink disease makes it inadvisable.
Small plants (herbaceous plants) are beneficial in chestnut groves, as they protect the soil and keep it moist. They also provide nutrients and stimulate the biological activity that helps nutrition and improve the defensive mechanisms of trees.





Soil management

There may be an excessive growth of herbaceous plants hindering harvesting. In this case, it is advisable to control them but not make them disappear completely. In order to do so, we may reap them and let them rot in the surface. If we hoe the soil, as we should right before harvesting, another option is to bury them partially. Thus, the plants take nutrients from the soil but also provide nutrients to it.

A regular use of herbicides for weed control is not advisable. However, herbicides may be used at the beginning if there are too many woody plants or harmful plants, provided we start using other control methods soon.

We must bear in mind that most herbicides are residual even if the contrary is believed. These products are washed out in sandy soils and may affect the roots of chestnut trees even if the product has not been applied there. They may also concentrate in aquifers and pollute them.

Herbicides impoverish the soil and destroy the biological activity needed in plant feeding.

Using fire as weed control method is not advisable. It has negative effects in the environment, the soil and the nearby chestnut trees. In addition to this, it increases the levels of greenhouse gases as carbon dioxide.

Covering the soil with grass is very beneficial for the management of soils devoted to chestnut tree growing. It protects the soil, favours nutrient holding capacity and contributes to ventilation, among other positive effects.

Using a communal approach to weed control is highly advisable.



Tilled soil.



Grass-covered soil.





d) The use of fertilisers.

When we talk of manure we are thinking basically of organic fertilizers, which have more durable effects and are more beneficial for sandy soils prone to erosion. Using chemical fertilisers, on the contrary, speeds up soil erosion.



Organic matter is a good fertiliser for chestnut trees.

Fertilising

Chestnut trees require soils, which are rich in organic matter. Most of the areas lack organic matter.

Organic matter consists of more than manure. There are other sources of organic matter that we can use (remains of previous harvests, grass, green waste from the area...etc.).

The remains of previous harvests can be useful organic matter (as leaves and cupules). Therefore, we should use them instead of throwing them away or burning them.

Covering the soil with organic matter (plants) provides organic matter to the soil and prevents erosion.

Organic matter improves the physical and chemical characteristics of the soil and stimulates the biological activity of micro-organisms.

Micro-organisms act as a physical and chemical **barrier to pathogenic agents** as the fungus causing the ink disease.

Depending on the characteristics of the soil, we may have to add organic fertiliser every year, but it depends on the case.

The addition of organic matter must be done in autumn, for nutrients to be available to the plant by springtime.

Depending on the characteristics of the soil, **it may be necessary to use calcium amendments periodically in the spring.**

Mineral fertilisers do not improve soil conditions.

If we use this type of fertiliser, **we must do it in spring, as it is a period of vegetative activity and the plant will use it.**

If we use mineral fertilisers, we have to spread out doses (instead of adding it all at once) during the vegetative period, in order to prevent leaching in soils with filtering qualities and avoid the loss of the fertiliser, with the consequent economic and productive losses.

We may choose a mixed method consisting of adding organic matter one year and mineral fertilisers the next.

Nutrient scarcity hinders growth and chestnut production. The plant is more sensitive to external aggressions caused by the climate or by parasites.





e) Graft.

Grafting

This technique is necessary in order to preserve geographical varieties and genetic reserves for the future.

Grafting requires being aware of the chestnut varieties of each area and their features.

In order to preserve varieties, it is advisable to use local specimens rather than alien varieties. This practice preserves genetic diversity, which is very important in order to classify the different varieties and tell them apart.

We may use different types of grafts. Normally we use varieties that we know well or are more experienced with, but this does not mean we are picking the best.

The secret of good grafting practices consists of **bringing the cambium layer of the stock and of the scion bud into contact.** The bigger the contact surface, the more chances of getting a successful graft union.

When we graft young tissue into young stocks, the chances of success are even bigger. If we graft young tissue into old tissue, we are more liable to fail.

It is advisable to **disinfect tools and material in order to prevent diseases.**

If we are not using home grown material we should make sure they are not infected with blight, as it may be a source of infection and the disease may spread fast.

Grafting tools must be sharp, clean and disinfected. At this point, we are never too careful.

Grafting is possible in many points of the plant's biological cycle, but **the best moment is April-May for wood grafts and bark grafts** (ideally late May), and **the second half of June for bud grafts.**

No precautions are normally taken, as normally grafts are successful. However, it is an interesting work method and it may prove useful as **prophylactic agent against diseases.**

When we are not using our **own plants, or when we are using plants that are resistant to ink disease, we may have incompatibility problems if we graft them into local varieties,** and grafts may be unsuccessful or else result in weak, low-yield plants.

There should be different varieties in plantations, so as to favour tree pollination, as they are self-infertile and require cross-pollination.

Cross-pollination takes place naturally, as different varieties coexist in nature. However, when making a large new planting, we must take this into account in order to plant different varieties.



Annular graft.



Whip grafting.





f) Tree management.

The following aspects have to be taken into consideration in tree managing

The soil or substrate that we are going to use in seedbeds and containers must be prepared.

Seeds must be planted at the right depth; never deeper than 6-8 cm. beneath the soil.

Maintenance of seedbed plants (watering, weed control) or container plants (watering).

Transplant to a tree nursery or growing place before reinforcing the plant.

Grafting can be done in the seedbed or once trees have been transplanted to the final growing place. In all cases, the sooner the better, as grafting can bring fructification forward.

Before transplants, it is advisable to prepare the soil. Using good quality earth to cover the roots is preferable.

This should be done by November-December.

A fertilising scheme can benefit the growth of the plant both in early stages and afterwards.

Young plants require shape pruning, then thinning and finally periodic maintenance pruning.

Concerning medium size plants, we may want to do a crown reduction, depending on the location of the chestnut tree. If the plant is very large and cannot be easily accessed, we may skip this step.

Both bare soils and grass-covered soils are suitable. If we do not cover the soil, it is preferable not to use **chemical elements** for weed control (herbicides).

During hot periods, we should cover the soil in order to protect it and keep it moist.

Works should be planned according to the characteristics of the soil.

Irrigation is not advisable during the summer.

We must bear in mind all these **suggestions in order to keep plants in good phytosanitary conditions**, and in order to protect them from chestnut ink disease in particular.

All plants affected by ink disease to some extent that have not been included in any protection plan, must be pulled up and burned, at least in the roots. Thus, the number of infectious inoculum will be diminished.





g) Diseases.

1. CHESTNUT INK DISEASE.

Many Mediterranean chestnuts are affected by ink disease, in spite of the efforts of many European researchers in order to fight against it.

- **Characteristics of the fungus causing the ink disease**



Tree infected with ink disease
(dark parts in its base).

This condition is caused by two fungi species belonging to the Peronosporaceae family: *Phytophthora cinnamomi* Rands and *Phytophthora Cambivora* (Petri) Buissman. The former is more widespread than the latter.

Even though it is older, it was not until 1917 that Petri managed to isolate and identify the agent causing this disease.

It is a telluric semi-saprophyte fungus that lives some 20-30 cm below the earth. Semi-saprophyte organisms can feed from dead organic matter by decomposing it, or else feed from a living plant as a parasite, depending on the circumstances. This feature makes fungi much more resistant and difficult to fight.





- **Characteristics of the infection**

It is a contact infection that takes place when the infectious structures of the fungus are in contact with the roots of the chestnut tree.

The spores (chlamydospores) are produced in the sporangium, which gradually appear in the edge of arborescent sporangiophore stalks and spread from there.

In addition to this, it has **motile zoospores** able to move in the soil, specially if it is too moist or swamped.

Sclerotia and rhizomorphs are structures like pieces of roots or wood, that appear in the lower parts of chestnuts and in other soil structures, in which saprophyte fungi can live.

In many cases this soil inoculum is inactive; it requires certain external stimuli in order to reactivate.

Roots release certain exudates that can stimulate the germination of the spores in the soil.

Mycelial filaments produce zoospores. Due to chemotactism, motile zoospores can move in liquids, thanks to two flagella, and go into the radicles of the host plant.

In the presence of parasites, plants produce certain substances released by the roots in order to hinder their development. Sometimes the infection can be caused by the absence of fungistatic substances in the soil.

Teliospores can remain in the soil for months or even years waiting for the right moment or for a plant that is appropriate for their development.

In order to become active, they need the presence of certain substances that act as stimuli for them to start their activity.

Their infectious capacity can be hindered by the presence of fungistatic substances in the soil. These substances may have been produced by micro-



One of the signs of a chestnut tree killed by ink disease is the fast debarking..



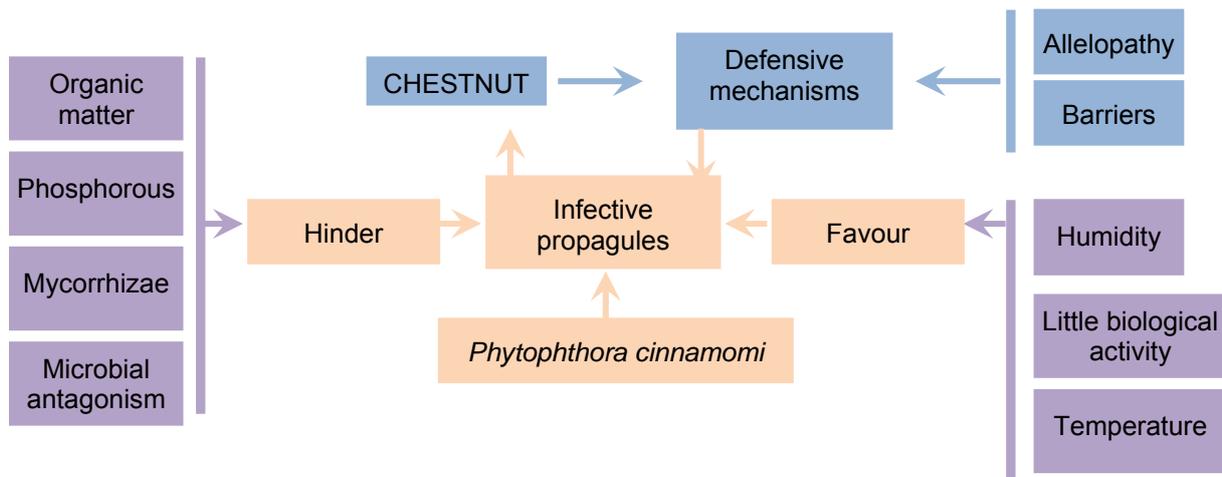


organisms around the root living in symbiosis with it. Thus, these micro-organisms use such substances in order to compete with other micro-organisms that may interfere in their symbiotic relationship by infecting the plant with a disease. These substances are known as **allelopathic substances**. They are specific substances whose role is to prevent certain fungi from growing.



Dead chestnut presenting some of the signs of ink disease, as the small cupules and leaves in the edges of branches.

With the support of the Lifelong Learning Programme of the European Union





The propagation to other plants takes place when the fungus comes into contact with its roots. The living mycelium of the fungus is in the area where the disease is spreading, which means that if we want a sample of the mycelium we have to look for it in the infected area.

The infection affects the peripheral upper roots first, and spread inwards until it reaches the neck of the root. At this point, the plant loses its capacity to produce new roots that substitute the ones that have been injured, and dies. If the infection takes place near the trunk, the tree dies fast.

- **Symptoms**

The symptoms of this disease can only be seen in the aerial portion of the plant, as the roots are not visible. By the time symptoms are visible, the infection is already in an advanced stage. The existence of infected plants nearby may be useful to determine the probabilities of healthy plants to be infected too.

The most common symptoms are the following

Upper branches with dry tips. The tree dries out from the top to the bottom as the disease progresses.

Yellow leaves, especially the ones in the upper part. Sometimes the leaves of the sides may be yellow too, in one or more directions, depending on the part of the roots that have been affected. **In addition to this, leaves fade and bend.**

General weakening of the plant.

Small cupules remain on the tips of the branches.

Some leaves remain on the branches when they die in the vegetative period of the plant.

The tree produces more fruit but the cupules are smaller and the quality of chestnuts worsens.

When the plant dies, it loses its bark very fast, revealing the black stains with the shape of a flame that may spread up the trunk about 50 cm.

As a consequence of the rotten roots, the tree falls down with the wind or the rain, which softens the earth.

Damages caused by the pathogen

When it goes into the roots, the pathogen causes the following damages: It corrupts the tissue and hinders sap circulation.

Roots become black and soft, as sap comes out of the vessels and invades the rest of the tissues.

Thick roots may tear off due to the changes in the bark and in the cambium. The plant loses its capacity to absorb nutrients, becomes weaker and finally dies.





- **Control methods**

It is a difficult situation, as there is no truly effective remedy to chestnut ink disease this far.

Using chemical products only solves the problem partially, and in many cases, they are difficult to apply. However, given that there are no better options, chemical products should be used to control the disease.

Nowadays researchers are working in a new field of investigation based on the presence of mycorrhizae and their influence in the tree that they live in association with.

Genetic hybridisation is a control method, which is being widely used in some countries, especially France, in order to obtain ink-resistant patterns.

The Japanese chestnut *C. crenata* is 75% resistant to ink. Research centres have started to work in selection techniques in order to improve the resistance of trees with the hybridisation of *C. sativa* x *C. crenata* and *C. crenata* x *C. sativa*.

The INRA (French National Institute of Agricultural Research) has developed several controlled hybridisation programmes that have resulted in several hybrid ink-resistant plants, which were successfully grafted into several Japanese varieties. These varieties include: Marigoule, Maraval, Bouche de Bétizac, Maridonne, etc.





2. CHESTNUT BLIGHT DISEASE

Chestnut blight is caused by a fungus of the Sphaeriaceae family, known as *Cryphonectria parasitica* (Murr) Barr. This organism has been classified under other names before.

This fungus develops in the aerial portion of plants. It has not got the necessary enzymatic mechanisms in order to trespass the bark, and needs to find a way in order to infect the tree.

Its mycelium is resistant to cold and desiccation. Once inside the plant, it develops within the bark and the cambium, and kills the affected branch. If the infection is in the trunk, it ends up killing the tree.

It reproduces thanks to two types of spores:

Asexual ascospores

Sexual conidia

The propagation of these spores is conditioned by humidity and temperature. They propagate in the spring, with the first rains, reach their peak in the summer, decline in the autumn and cease in cold winter months.

- **Characteristics**

We must be acquainted with some characteristics of the biological cycle of the pathogen. This pathogen is semisaprophyte, that is, it can live on decomposed organic matter or on living plants, as the fungus that causes chestnut ink disease.

The infection takes place when the pathogen comes into contact with the plant. The fungus can reach the plant in several different ways:

Swept by the wind.

In rain water.

Thanks to insects and birds that move from tree to tree.

In the pruning and grafting tools.





The infectious inoculum is usually formed by:

Spores produced in the sporangia.

In favourable ambient conditions, the spores produce mycelium, which infects the plant entering by some kind of gap: pores, bites, wounds, grazes in branches etc.

The plant has its own defensive mechanism based on physical and chemical barriers that attempt to prevent the development of the pathogenic organism.

• **Symptoms**

The most typical symptoms are to be seen in the aerial portion of the plant. It is possible to detect the infection in early stages, and to use control methods in order to prevent the development of the pathogen.

The most common symptoms are:

There are brownish-yellow stains with crooked edges around the infected area.

Canker causes cracks in the bark and the living part of trees, which run parallel to the axis of the affected plant or branch. These cracks become deeper and eventually reach the woody part.

Near the cracks there may be orange-red pustules that produce infective spores, which will eventually infect other branches or trees.

The fungus corrupts the invaded tissues and block vessels, which hinder sap circulation.

The fungus ends up destroying the vascular cambium around the affected branch or trunk. At this point, the part of the branch or tree above the infection dies.

Leaves do not fall from dry branches in the vegetative period.

It is possible to see the yellowish mycelium of the fungi under the bark in infected areas, **in the shape of a fan.**

When the plant dies, the fungus becomes saprophyte again and lives on the dead wood.



In this sequence of pictures we can clearly see the characteristic colour of the barks infected with blight.





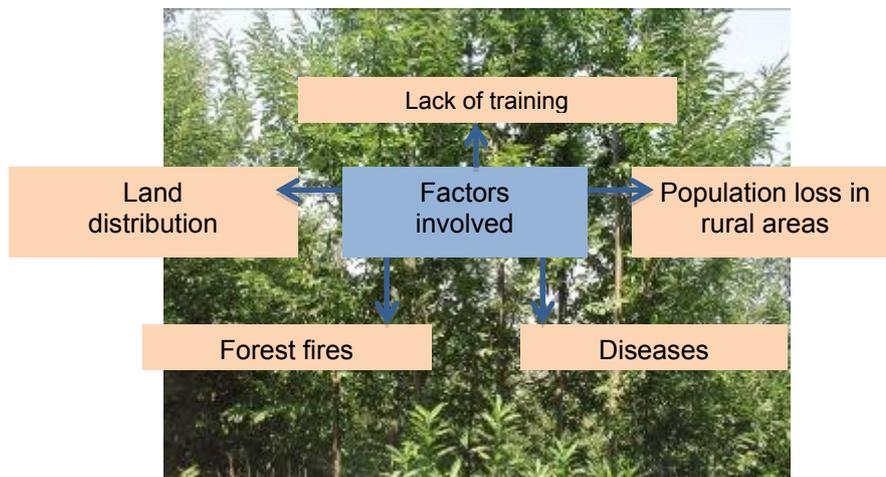
1.2. Evolution in the use of the resource.

Chestnut trees had an important role for the survival of local population in the past. After a few years of forgiveness, people are rediscovering the interesting culinary possibilities of chestnuts and derived products, and the subsequent improvement of the economy of many families. In some regions of Portugal, Spain, France, Italy and Greece, chestnut trees are the main source of income of families.



Detail of the structures in the shape of a fan.

The future of chestnut trees depends on several elements that are changing in the last few years and that have a great influence in them.



Factors that influence the present situation of chestnut trees.

- **Most relevant factors:**

1. **Population loss in rural areas**, as a consequence of the migration of young people, forced by the lack of professional opportunities in their villages. Only old people stay in rural areas, and they do not have economic needs. A brighter future implies stopping migrations by





encouraging chestnut growing and processing industries that help preserving the resource.

2. **Plantations are very old** and have three major problems: Chestnut ink disease, blight and forest fires.
 - **Ink disease** has a direct effect on chestnuts (*Castanea sativa*) and jeopardise the preservation of the habitat, as it kills both young specimens and centenary trees of incalculable environmental value. In order to fight this disease efficiently, a study of the actual situation of chestnuts must be made, and preventive and control measures should be set out.
 - **Chestnut blight** has serious effects on chestnuts and their habitat, as it is an airborne disease that dries branches and trunks out. This pathogenic fungus works its way into the host plant through wounds (pruning cuts, cracks, scars, bites etc.)



Chestnut blight is a serious problem.

Airborne transmission lends this pathogen a great spreading capacity. Besides, it can live in all climates, which favours its propagation too. Thus, it spreads fast from a small source of infection over large surfaces, affecting almost all chestnuts on its way and killing them. Preventive measures must be set out in order to control the disease in the short term, at least to a certain extent. Then, long-term measures should be put forward.





- **Forest fires.** Chestnut tree maintenance is neglected as a consequence of diseases and the reduction in the exploitation due to population loss. As a consequence, plantations are in bad conditions and have been invaded by undergrowth that cover the soil and increase forest fire risk. Forest fires damage chestnuts and cause the disappearance of the biodiversity of mycorrhizal fungi.



Forest fires are very dangerous for forestry habitats..

The impact of forest fires is very serious, and affects both animal and vegetable species. Chestnuts need some 30-40 years in order to regenerate the biodiversity of mycorrhizal fungi. Therefore, it is advisable to plant mycorrhized plants. We must also bear in mind the economic losses to be expected during these 30 or 40 years in connection with mycological resources (*Boletus*, *Amanitas*, *Russula*, *Cantharellus*), which are providing interesting returns to the rural population. By taking these factors into account, we will be able to prevent forest fires and to allow for the future use of the resources connected with chestnut trees while protecting them.

3. **Land distribution** (small holdings) makes the mechanisation of farm work impossible. Chestnut tree growers should unite and make bigger plantations in order to work on bigger surfaces and make mechanisation profitable.
4. **Lack of specific training** on effective and adequate phytosanitary management.





There are several transnational European projects that intend to preserve forests and manage their sustainable exploitation.

Cooperation is important, as it allows for the exchange of experiences and for a joint approach to the same problems, in order to find common solutions that may apply in all EU regions.

These projects are showing that forests can provide many benefits beyond direct exploitation, as they are the best contexts for certain emerging leisure activities.

These leisure initiatives include some traditional activities as hunting or fishing, as well as emerging ones as hiking, climbing and other outdoor sports comprised in green tourism, cultural tourism and low impact tourism.

These leisure and rural tourism activities connected with the forest are getting very popular, which implies management and planning efforts that allow our forests to hold these tourist activities in a sustainable way.

The management of chestnut groves implies having an exploitation plan that improves production and acts as a base for the processing and marketing of chestnuts. There is a need for a better sectoral structure.



Chestnut trees are part of the landscape of some European regions.

- **European projects connected with chestnut trees, we can highlight: FOREST and “III-MILLENIUM”**

These two projects addressed chestnut tree as instruments for rural development in two different stages.

A curricular design for chestnut growers and a good practices guide were produced in the scope of these projects. Besides, the results were successfully disseminated in many sectors.





At present, several years after both projects finished, the results still prevail and the products are used to train professional chestnut tree growers in several EU member countries. This type of training initiatives has encouraged employment and self-employment in the sector of chestnut tree growing.

2. IMPORTANCE AND IMPACT OF THE RESOURCE

2.1. Current situation and impact of the resource.

Chestnut trees may be considered as a vital endogenous resource in certain regions.

There is a tendency to make a sustainable use of the environment as an instrument for rural development, in view of the problems brought about by the abandonment of rural areas and agriculture caused by different social and economic factors. Some old traditions and customs are being revived. These traditions, together with new scientific knowledge and experience, allow for the conservation of the rural context, with all the benefits this implies.

In general terms, it could be argued that no defined and unifying strategy that comprises both the valorisation and potential of chestnuts has been devised yet. In addition to this, we must bear in mind the damages caused by forest fires due to the invasive undergrowth in some neglected areas, as well as those caused by diseases.

A sound work programme would be liable to invert this situation in the future.



The activities connected with chestnut trees must be included within local development schemes.





2.1.1. SWOT analysis.

SWOT analyses are useful to define the actual situation of the resource and to find adequate solutions.

This analysis focuses mainly on the chestnut variety that bear fruit, as it is the most liable to provide short-term returns.

- **WEAKNESSES**

- Important population loss, scattering and ageing, which results in the progressive abandonment of chestnut groves.
- Little economic diversification and low innovation capacity in order to improve production.
- Failure to adapt to the changes that are taking place in the rural areas.
- Lack of entrepreneurial initiatives in the field of chestnut processing.
- Difficulties in the professionalisation of rural economic activities as chestnut tree growing.
- Insufficient use of natural resources as chestnuts, wood and woodcrafts...etc, and lack of the resources needed for the processing of their own products.
- Lack of diversity, as a consequence of the wrong techniques being used.



An adequate management system is needed.

- **THREATS**

- The backwardness in alternative development instruments to manage the whole process of producing, processing and marketing chestnuts.
- Insufficient development of networks of associations and of a support scheme that encourages the production and managerial capacity and fosters new development and entrepreneurial initiatives at local level.





- The training offer does not answer the needs of rural areas and does not make an extensive use of NICT.
- Not enough emphasis is made in applying quality standards to agri-food, environmental and tourist products (there is no designation of origin for the high quality, autochthonous chestnuts).

- **STRENGTHS**

- - There are very good agri-food products with an added value (chestnuts and the agri-food industry connected to them).
- - There is an outstanding historical, cultural and natural heritage with a great potential for tourism.
- - The increasing diversification of agricultural activities brought about by the sustainable exploitation of endogenous resources is liable to create employment and to improve the economic situation at local level.
- - The organisation of social partners thanks to the local action groups intended to promote local entrepreneurial initiatives.

- **OPPORTUNITIES**

- Chestnut tree growing understood as the keystone of the agri-food sector and encouraged by increasing the added value of derived products by processing and canning them locally.
- Relying on the possibilities of rural tourism in order to publicise local products, and boosting the natural habitat of chestnut trees by producing posters, brochures and other informative material.
- Support the adequate management of those ecosystems that have always been connected to man, and which are at the moment undergoing many problems, as it is the case of chestnut trees.
- To transfer and implement new technologies, managerial approaches and manpower flows towards traditionally disadvantaged areas, where it would be almost impossible to implement any other development instruments.





- The creation of a Chestnut Interpretation Centre, which could be the starting point for many initiatives connected with chestnuts and intended to make a sustainable exploitation of the resource.

Society is gradually changing its attitude towards nature and feel more inclined to discover the rural world and start to consider it as a space for leisure and relaxation.

Tourism as a social activity is continuously growing, and it is focusing more and more in activities connected with natural and local resources, that is, the so-called rural tourism.



Quality of the processed agri-food products derived from chestnuts.

Landscapes, natural values, animal and vegetable species and new hobbies are the main elements sought by rural tourists.

Chestnut-picking has become very popular in many European and Asiatic countries, and the number of people that becomes involved in the sector of chestnut trees looking for an economic return is increasing.

The SWOT analysis shows that there is a EU-level network that is becoming quite important and which gathers a varied range of people and institution around chestnut trees and forestry: producers, sales cooperatives and industries involved in preservation, processing and marketing.

We may conclude that, in order to manage this resource in a sustainable way, there is a need for experts with specific training who are liable to transmit their knowledge in an educative way, and carry out dissemination and information campaigns together with the authorities involved in forestry.





2.1.2. Social, economic and structural problems in the area.

Economic diversification in the areas connected with chestnut trees would allow for the sustainable exploitation of untapped resources as chestnut trees and other related resources as medicinal plants, berries and beekeeping.

The main problems of the resource are connected with its general phytosanitary condition. We must bear in mind that this tree species is being ravaged by chestnut ink disease and blight. These two diseases are responsible for the short-term production drop.

2.1.3. Lack of preservation and processing infrastructures in producer regions.

The processing of chestnuts extends working periods and aids the diversification of production. These processed products have the added value of creating employment.

Some of these chestnut derived products are already appreciated: chestnuts canned in their own juice, dry chestnuts, vacuum-packed chestnuts and frozen chestnuts.

These products encourage others to use these processes in order to diversify production.

At present these products are not processed locally but far away from producer regions. In the future it should be possible to process production locally. It is not a matter of creating large industries, but family undertakings or associations forming a business network liable to contribute to employment creation in producer areas in order to improve the economic situation and the depopulation and ageing problems of these areas.

Such network of small enterprises would also prevent migrations in depopulated and ageing areas in which quality of life is decreasing due to the lack of services.



Chestnut grove ecosystems need being protected.





Processed chestnut products:
Chestnuts canned in their own juice
Dry chestnuts
Vacuum-packed chestnuts
Frozen chestnuts in bags
Confectionery and marron glacé
Chestnuts in syrup
Chestnuts in alcohol and chestnut liqueur
Chestnut creams and purés
Chestnut flour and derived products

2.1.4. Marketing of chestnuts.

PRESENT

There is a lack of cooperatives and associations that standardise the type, size and quality of chestnuts in order to boost chestnut processing and complete the production cycle locally.

Nowadays the sector is going through many difficulties.

Among them the most important ones are:
It's a very fragmented sector.
The areas of production are small sized.
Individual productions are not enough to enter the markets.
There is a lack of cohesion among the producers.
There is an excess of individualism and lack of capacity to join together.
There aren't processing industries.
There is a lack of knowledge and installations to preserve the product.
The market is controlled by intermediaries.
Most of the production is for exportation.
There isn't a typical classification of the product.





The marketing of chestnuts is controlled by intermediaries who sell the product to wholesalers who in their turn sell them to processing industries or market them directly.

Prices are fixed by intermediaries and fluctuate quite a lot during the season, depending on production and on the needs of the industry. In general terms, prices are quite arbitrary and producers have no decision taking power.

It is difficult to leave marketing channels without knowing how to sell the product or without having any contacts in the market. Intermediaries also change from one year to the next, which influences the final destination of production.

FUTURE

The scarcity of the product, together with the increasing demand, especially of processed products, increases the marketing possibilities of chestnuts.

The creation of small local processing industries should be encouraged. These industries would provide an added value to

the product, which would be marketed in more profitable conditions.

The product is normally supplied to distributors, restaurants, gourmet food stores etc, but only in the local and national scope.

Target market is not very well defined at the moment, but with the passing of time this will change and producers will focus on the most appropriate markets, always bearing in mind local markets, although other markets shall also be taken into consideration.



There are many processed chestnut products





Traditionally, there is no local consumption. This problem can be solved with awareness raising activities (chestnut feasts, the so-called “magostos”, school activities, meetings with representatives of the restaurant industry etc.) and publicity campaigns (brochures, stickers, posters etc). These initiatives would provide information on the quality and components of chestnuts



The market requires homogeneous chestnuts.

and of the environmental benefits of using this resource in a sustainable way, avoiding synthetic chemical products as pesticides and herbicides.

Thus, the use of natural chestnuts in typical dishes and consuming derived products should be encouraged.

Local markets should be among the main objectives. Local markets allow for lower transport costs. Moreover, it is easier to know them and influence consumers, as products can be easily advertised. Once local markets become saturated, it is the moment to spread to more distant markets, providing we still can control the situation.

We must convince users that it is not a seasonal product that can only be used at certain times of the year.

Processing allows us to get round that problem and market a wider range of processed products that are scarce, need to be imported or do not exist this far.

This implies using preservation techniques and creating small processing industries that lead to the diversification of chestnut-derived products by adding new elements to them.

There is a need to compete with producers from other areas. In order to do this, the strategy must be based mainly on quality. Quality may be the main distinguishing element. Quality must be present both in the production and the processing stages.





There is a need for chestnut processing industries.

In order to achieve this, production has to be improved not only quantitatively but also qualitatively; the size, beneficial elements and processing techniques must be upgraded. In order to improve production, cultivation techniques must be updated and ink and blight diseases must be controlled with specific measures and with the help of forestry authorities.

It is important to consider chestnuts as organic products liable to open new markets. In order to do so, production must be controlled.

This would allow quality labelling in chestnut production, which is greatly appreciated by many consumers. Chestnuts with quality labels stand out among chestnuts from other areas.

Product distinction is an important distinguishing element in high quality products. Product distinction makes the product known in those markets and improves the price and marketing potential.

In order to access the markets, producers have to make an effort and overcome all the problems above mentioned.

Future for the marketing of chestnuts
Associationism
Improvement of production
Processing of the product
Product distinction and advertising
Quality products, organic products?





HOME MARKET

We will first focus on the home market and its current situation.

Nowadays, chestnuts are not as valued as they should at national, regional and local level, not even in producer areas. It is considered as a seasonal product only available at a certain time of the year. Chestnuts are not very well known by consumers that do not live in producer areas.

Product distinction is necessary in order to market it successfully: producer areas, no chemical products used, easy to peel, good taste...etc.

All these issues make it necessary to have a work strategy addressing each problem individually in order to boost this endogenous product. The product may be understood individually or as part of a group of products with employment creation potential. These initiatives could be the solution for many villages that may disappear due to the lack of economical resources.

In order to compete in the home market and overcome all the obstacles, it is important to be aware of the existing problems. These obstacles must not hamper the development of the activity.

Home market problems
Not traditionally used
Capacity to compete
Local Markets
Quality standards should be defined
Still considered a seasonal product





FOREIGN MARKET

The foreign market gets most of the product, which is normally classified by sizes and quality. The main destinations of production are fresh markets and the processing industry.

The link between production and market is normally an intermediary who is able to sell large amounts of chestnuts acquired in many different places. As a result, chestnuts are heterogeneous and have not been previously classified.

Only cooperatives are able to access foreign markets and processing industries directly, provided they have the necessary amounts of the product. Cooperatives are liable to become intermediaries, which would not benefit the sector.

These cooperatives must work with distinctive products, more likely to become popular in the markets. In order to do so, producers must agree on product standards.

Buying chestnuts somewhere else and selling them as own production is a big mistake. This strategy has long-term negative consequences.

Market control is important when selling the product. Local markets are easily controlled, as producers know the type of consumers that buy their products. It is very hard to control foreign markets even if producers sell directly to the market, and virtually impossible if they sell raw or processed products to other industries.

Therefore, the foreign market must be taken into consideration, but greater efforts must be directed to local markets.



Chestnuts intended for exportation.





Characteristics of foreign markets
Large amounts of product
Quality fruits
Not control over the target markets
Better prices but also more expenses
Need for intermediaries

In connection with foreign markets, we may conclude that:

- Nowadays, foreign consumption is greater than domestic consumption.
- In the last few years, there is a growing demand of the product in foreign markets.
- Foreign markets opt for high quality products.
- Large-scale production is needed in order to enter this market, and producers cannot produce it individually.
- In order to enter foreign markets producers must create cooperatives or other similar structures.

The creation of Chestnut Interpretation Centres would encourage research, exchanges of expertise, training etc., which would revive a sector that has the diversification potential required.





2.2. Results and impact of the resource.

PILOT EXPERIENCES

Transnational cooperation projects have played an important role in the development of the resource, and have had a great impact.

Development projects addressing this sector would lose their meaning if they did not have a transnational dimension able to conduct development initiatives in the same direction in different territories.

These initiatives contribute to enhance cross-border contacts between enterprises, groups and social partners.

The projects “FOREST” AND “III-MILLENIUM” have caused a great impact in different sectors and in the participating countries, both in the period of performance and afterwards: Portugal, Italy, Greece, Spain and France.



Sustainable management plans for forests are needed

Some of these impacts are described below:

- a) **Collaboration among entities from the participating countries**, aimed to establish closer and durable links that enable them to carry out joint activities; exchange technology and technical advice, promote their products etc.
- b) **Involvement of social partners, SMEs, social action groups, local institutions, associations, beneficiaries and trade unions** that took part in the project and activities connected to it, as awareness raising campaigns and dissemination of results in all the territories covered by the project.
- c) The entities involved have continued their collaboration after the end of the projects. They have devised **new work tools and have worked in**





experimental pilot centres (experimental pilot enterprises, cultivation and processing of products, nurseries, processing facilities).

These activities, the dissemination of results in particular, have had a great impact in forestry and chestnut tree professionals and authorities. In some regions, the publication of the book “Chestnuts: manual and didactic guide” has made local authorities carry out specific initiatives to improve the phytosanitary conditions of chestnut trees.

The courses on chestnut tree management have had a great impact among chestnut tree growers.

The informative seminars organised have addressed people connected with forestry and chestnut trees. The main target groups have been forest rangers, employees of forestry enterprises, chestnut tree growers, ecologists and the general public.

These activities have provided a more detailed information on chestnut trees and the related natural resources which can be used as an instrument for rural development.



Working in a pilot plantation.





Awareness raising activities have been more successful than expected, and have contributed to the setting up of several experimental nurseries.

These experimental nurseries work with forest plants in general, and local chestnut trees in particular.

These nurseries are experimental centres and demonstration centres where dissemination activities (management of the plant) and training activities (talks, seminars, workshops) are carried out. In addition to this, these centres carry out a research on the use of mycorrhizae.

The most important impact of these nurseries is connected with chestnut tree growers and employees in forestry enterprises that have visited them and attended some of the information and demonstration activities carried out.

These nurseries are likely to become development centres, as they are located in territories where chestnut trees play a very important economic role.

Several chestnut cooperatives and associations of chestnut tree growers have been created. These entities promote the marketing of chestnuts without any intermediaries and get better prices.

Small processing industries have been promoted. These enterprises have started working with chestnuts and then they have included other natural products in their production.

d) Experimental pilot plantations.

The phytosanitary conditions of chestnut trees worries chestnut tree growers and forestry professionals and authorities, especially as ink disease and chestnut blight are concerned.

This situation has made it necessary to set up experimental pilot chestnut tree plantations.

These experimental and demonstration centres have carried out several actions to fight these diseases, with the contributions of the research groups of different countries.

Although it is too soon to know the results, a very promising blight control system has been developed which consists of using hypovirulent strains.





The results of the actions taken to fight ink disease are being much slower. However, the first results of an experimental treatment are encouraging.

The impact of these pilot plantations is based both on the result of the treatments and on the number of people that visit them and take part in the demonstration activities.

These initiatives are having a very good direct influence on production. Therefore, the economic situation of many people may be improved as a result.

These initiatives have generated new jobs in all the different fields of activity covered by the projects, although in some cases this is difficult to measure.



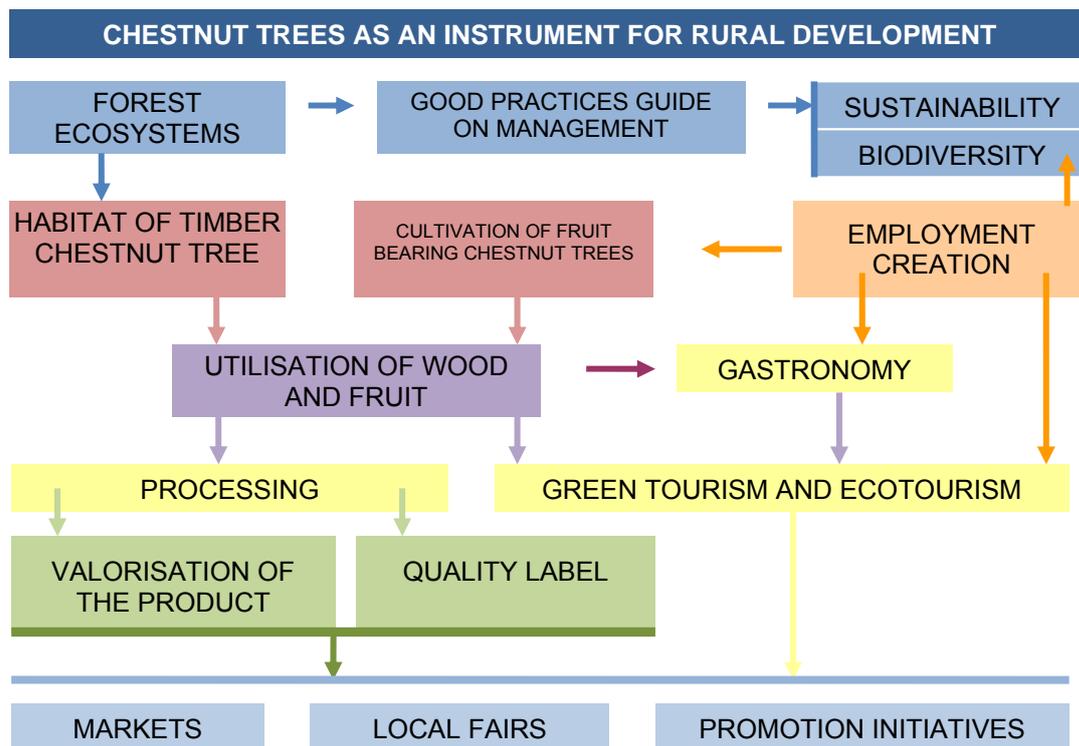


3. USE OF THE RESOURCE AS AN INSTRUMENT FOR RURAL DEVELOPMENT.

3.1. Possibilities and conditions needed for development.

Chestnuts can be considered as an instrument for rural development, as it is an endogenous resource with very promising characteristics. This new idea requires changes in the management of the resource.

We must also bear in mind that, given the current situation of the resource, some time will be needed before being able to fully transform it into an economically profitable activity enhancing cultural and ethnographic values. The period of time needed depends on the starting point and on the policies set up to achieve this target.



The diagram above describes the process that should take place for chestnut trees to become an instrument for rural development.





These actions are intended to improve the quality of life of rural population and prevent the drift from the land caused by the lack of opportunities.

In general terms, quality of life is understood to rest on three main pillars:

- Income.
- Life and work conditions.
- The environmental quality.

The influence of each of these aspects varies depending on place and time.

When the basic needs of the population are covered, income becomes secondary as compared with the other two parameters. Therefore, those activities focusing on one or more of these pillars have greater chances to succeed.

We must understand local development as a global action that aims to mobilise all those concerned in order to achieve the valorisation of the work and the resources of a given territory. In order to do so, there has to be a dialogue with decision takers in the political, economic and social spheres.

An important stage when planning a local development strategy is the identification, valorisation and use of the existing endogenous resources such as chestnut trees.

Forest owners, managers and researchers are starting to realise how important forest management is, in view of the emerging interest in forestry products.

Due to their importance for the landscape and the social and economical structure of many rural areas, all the activities related to fruit bearing chestnut varieties are more and more associated to rural development.

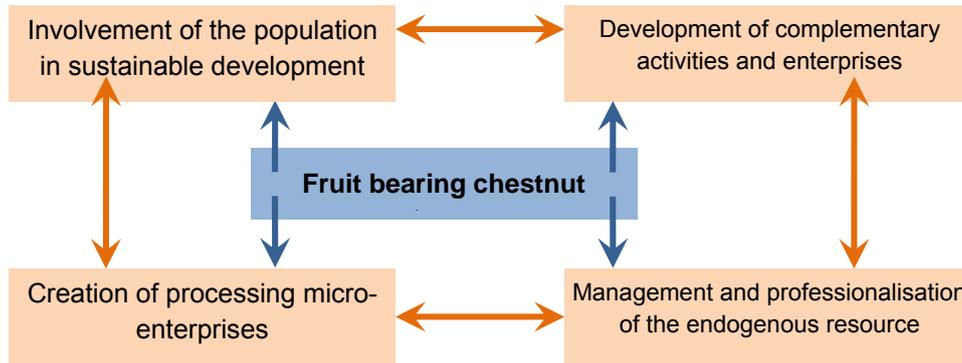
Chestnut tree growing involves other activities that are boosting the economy and the entrepreneurial activity in many villages: chestnut tree interpretation centres, ethnographic museums, gastronomy, production of local products... etc.

The exploitation of fruit bearing chestnut trees must be managed so that synergies can be created.



Hand-harvesting of chestnuts.





These activities connected to chestnut trees boost rural development if they promote the sustainable exploitation of resources, a better land distribution, as well as other activities related to chestnut trees, while preserving local identity and culture.

This approach to chestnut tree exploitation permits:
Better quality of life in rural communities.
The conservation and sustainable management of forestry resources.
The valorisation of products from producer villages and nearby areas.
The promotion of other local products.
The improvement of the local business sector.
Technical training and professionalisation of those that work with chestnut trees.

Proposal for a Sustainable Management Plan for chestnut trees	
Sustainability	Needs
Sustainable management of the resource.	Good Practices guide on chestnut tree cultivation.
Conservation of the habitat.	Prevention of agents causing diseases and pollution.
Conservation of biodiversity.	List of species connected with chestnut ecosystems that need to be protected.
Support local economy.	Inclusion in economic development strategies.
Professionalisation of the sector.	Specific training.
Promotion of the product.	Economic helps to the sector. Appropriate publicity
Encouragement of research.	Silvicultural applications.
Training needs in connection with chestnut tree growing.	Training schemes adapted to the needs detected.





SUSTAINABLE MANAGEMENT OF THE RESOURCE.

In this sense, the most important aspect is phytosanitary care, as the existing bad phytosanitary conditions have a negative impact with serious environmental consequences.

The following aspects must be paid attention to:
Increase production so as to supply the markets.
Use adequate cultivation methods.
Improve productivity by using environmentally friendly cultivation methods (avoiding pesticides, herbicides etc.).
Phytosanitary control to prevent ink and bleach diseases, so harmful for chestnuts.
Use of new mechanical harvesting methods.

Productions must increase in order to satisfy market needs avoiding intermediaries. If production falls short of demand, it is impossible to enter specific markets without resorting to intermediaries and without increasing the price of the product.

CONSERVATION OF THE HABITAT

Good practices must be observed when working with the plants in order to have stable productions while preserving the characteristics of the habitat. For instance, undergrowth around trees must be controlled, as it has negative effects on chestnut production.

In addition to this, the phytocides used to control undergrowth in forests are very harmful, as they attack woody vegetation and weaken chestnut trees. Using cultivation methods that prevent the development of phytosanitary diseases is advisable.

CONSERVATION OF BIODIVERSITY

The conservation of biodiversity is the conservation of the animal and vegetable species that are associated to chestnut trees and that contribute to the natural values of these ecosystems. Those species that are in danger of extinction must be included in a list in order to protect them against excessive pressure.





Chestnuts can boost local economy.

SUPPORT LOCAL ECONOMY

Chestnut tree growing is liable to create a small network of processing enterprises that improve local economy and create employment. Thus, rural areas may become more dynamic and allow younger people to stay in them.

Public Administrations must support these processes by setting up policies that limit the lengthy paperwork entailed in the creation of small processing industries and in the extension and improvement of chestnut tree plantations.

Entrepreneurs should be given the necessary advice for them to get more information and solve the problems that they may have with the cultivation, production, processing and selling of chestnuts.

Chestnut tree growers must obtain a satisfactory quality of life comparable to that provided by other rural activities.





PROFESSIONALISATION OF THE SECTOR

This sector needs specific training programmes that provide professional qualifications in order to solve the existing problems and improve work conditions.

At present, the people involved in the activities connected with chestnut trees are not experts in the field. Old-fashioned methods that pass from generation to generation are still in use.

However, these people must become acquainted with the problems of chestnut trees, the pathogens affecting them and production, for them to find solutions. Here lies the importance of training initiatives.



Chestnut is a resource for development.

An adequate professional training will enable them to defend their products in the market and preserve them when prices are not high enough to make them profitable.

They would not need any intermediaries and they would be able to manage all the processes that take place after the harvesting.

The most important problem lies in the fact that chestnut tree growing is not a primary economic activity, but a complement to the pensions of the local inhabitants. Chestnut tree growers are normally old people that find it very hard to adapt to new work methods and devote little time to the maintenance of chestnut trees. Young growers are needed for this activity to become profitable.

Another important issue is the lack of cohesion among chestnut tree growers. They should organise in associations and cooperatives in order to gather a big enough production to be marketed at better prices.





PROMOTION OF THE PRODUCT

This is another important aspect. A sound promotion strategy is necessary in order to inform consumers on the beneficial characteristics of chestnuts, the existing derived products and its culinary possibilities. In addition to this, consumers must be informed on the environmental benefits of using cultivation methods that respect the habitat of chestnuts (animals, plants, biodiversity, etc.).

At present, there are not enough promotion campaigns because chestnut growers lack the necessary economic resources. A product can only be promoted successfully if it meets the requirements needed to be in the target markets.

Only if consumers trust the product and the production processes will it be possible to maintain a given market share.

ENCOURAGEMENT OF RESEARCH

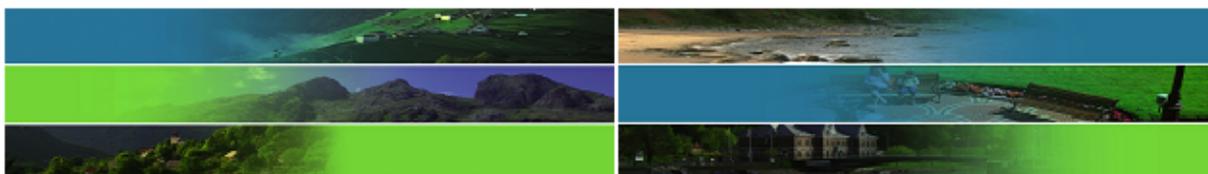
The techniques used in chestnut tree growing are evolving very fast, which requires an extra effort for those that want to know the state of the art and take advantage of new possibilities.

For instance:

- Mycorrhization techniques allow for faster plant growth and better plant adaptability.
- The use of certain work techniques help preventing the two main diseases affecting chestnut trees and causing economic losses which discourage growers.
- New methods to handle the fruits and to process them in order to diversify chestnut-based production.

TRAINING NEEDS IN CONNECTION WITH CHESTNUT TREE GROWING

Training activities are necessary for the professionalisation of the sector, which would make raw production, processed products and other connected products more profitable.





One of the main problems of the rural context is the lack of training, both general and specific. Most of the professionals that work in the sector are not qualified and have not finished secondary education (high school and vocational training) although they have completed primary education.

These training needs must be addressed, as chestnut tree growing can be considered as a New Source of Employment, due to its employment creation potential and its economic, social and cultural possibilities.

3.2. Employment creation potential of the resource.

The New Sources of Employment connected with chestnut tree growing are related to:

The improvement of plantations, by improving work methods and preventing the two main diseases affecting chestnut trees, that is, ink and blight diseases. Such improvements would allow for larger productions and thus for better economic returns for those that use environmentally friendly work methods.



In some cases harvesting can be mechanised.

Given the age of most growers, the creation of small forestry enterprises that

deal with the cleaning and maintenance of forests, and which carry out other tasks as pruning or phytosanitary care. These initiatives would provide new jobs in the forestry and chestnut sectors, very likely to become important economic sectors.

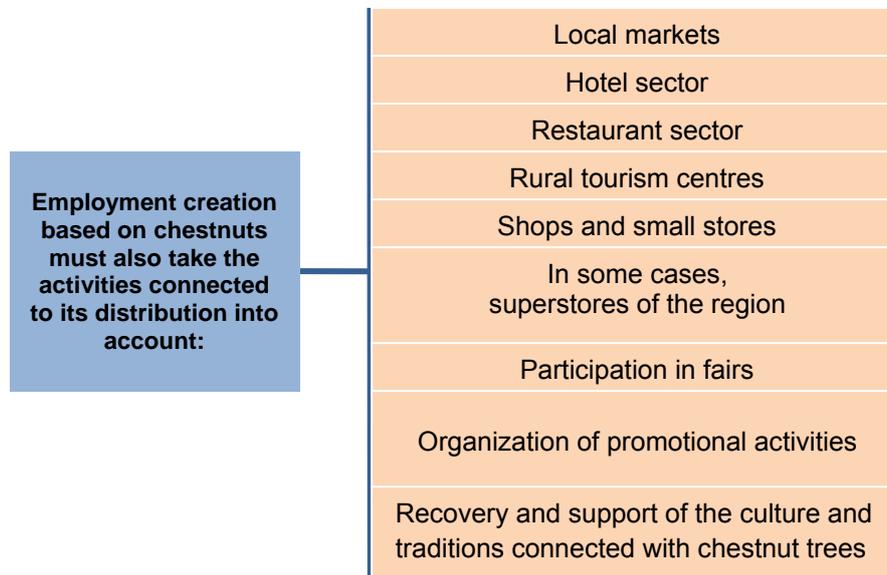
The creation of small enterprises dealing with the processing, canning and marketing of the product. These enterprises would form a small network that would improve the economy at local level and create new jobs.

The creation of Chestnut Learning Centres that promote all the activities connected with chestnut trees (such as ecosystem, flora and fauna, cultural and gastronomic





activities -traditions, tools used locally and ethnography - and cultivation) is also likely to provide new employment opportunities.



Summing up, chestnut tree growing can be a rural emerging profession with employment creation potential:

Farming sector:

- Agricultural production based on better production techniques and on disease control. (Chestnut cultivation specialist).
- The product should be marketed directly by cooperatives and associations of chestnut growers. (Chestnut cultivation specialist).

Business sector:

- Enterprises that process and market chestnut-derived products. (Processed chestnut product specialist).
- Shops and markets that sell processed chestnut products. (No specific qualification required).
- Chestnut wood furniture and woodcrafts production. (Expert woodcrafter).





- Chestnut tree nurseries and plantations. (Specialist on chestnut cultivation and tree nurseries).

Agri-food sector:

- Restaurants with chestnut-based menus. (Catering specialist).
- Food stores that sell processed products. (No specific qualification required).

Environmental and rural tourism sector:

- Forestry and agricultural enterprises dealing with chestnut care (planting, pruning and grafting). (Chestnut cultivation specialist).
- Activities connected with the environment and the so-called green tourism. (Environmental specialist).
- Chestnut Learning Centres. (Specialist in forestry ecosystems connected with chestnut trees and related flora and fauna).





3.5.2.4 ACTIVE TOURISM

1. GENERAL DESCRIPTION.

1.1. Description of the resource.



Active tourism includes activities connected with ecotourism, green

1.1.1. What is Active Tourism?

The demand for active tourism activities has grown in the last few years. At the same time, the scope of the term has changed. Thus, the activities that were considered to be reserved to professionals in the past are now within the reach of the general public in mountain tourist resorts. This type of tourism consists of practicing sports in rural contexts.

It is closely related to ecotourism, green tourism, and adventure tourism. It also involves some cultural interests connected with history, art, crafts and architecture.

The basic principles of active tourism are high quality, an environmentally friendly attitude and a sustainable management that makes the activity compatible with the context where it is carried out. This concept is the opposite of passive tourism, that

is, mass tourism and other practices that are considered to damage the environment and local culture.

Active tourism requires an active involvement of visitors, whether physical or intellectual. Tourists have to interact with the culture and the environment, and learn from them and respect them.

New professions connected with this resource are conditioned by an increase of the opportunities in each area. These



European countries have plenty of mountains, lakes, rivers, forests, etc. Tourist activities must respect the characteristics and traditions of the region where they are being developed.

new opportunities would boost the market and would ensure the availability of certain activities that are considered to be specific of each region.





1.1.2. Active Tourism activities.

AERIAL ACTIVITIES	Paragliding	
LAND ACTIVITIES	Cycling	Trekking
	Horse riding	Climbing
WATER ACTIVITIES	Paddle sports (kayaking, canoeing and white water rafting)	
	Water skiing	
SNOW ACTIVITIES	Skiing	Mushing
	Snowboarding	Snowshoeing

a) Active tourism: aerial activities.

- **PARAGLIDING**

The word “paraglider” comes from the word “glider”.

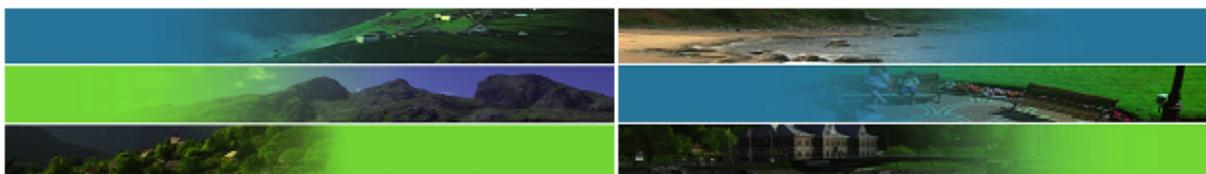
Paragliding involves free flight. Free flight consists of flying by using gravity to descend and thermals to ascend.



Paragliding involves free flight

There are two free flight sports: Paragliding and hang gliding.

Hang gliding is much more expensive than paragliding. It is possible to fly faster and further. Paragliders fly slower but it lasts longer.





Hang-gliders are heavier and more difficult to control, and therefore most active tourism air activities focus on paragliding rather than hang-gliding. Nowadays paragliding is governed by federations and other national governing bodies.

In order to practice paragliding, a basic equipment is needed:

- o including the **tourists' personal equipment**:

A protective flying suit
Gloves
A good pair of boots with reinforced ankles in order to walk in steep surfaces
Backpack
Sunglasses to protect our eyes from the sun and the wind

- o and also the **technical equipment** needed during the flight:

Paraglider
A harness with back protection, a helmet, and a reserve parachute for safety purposes
An altimeter, in order to measure height during the flight
An anemometer, in order to determine wind speed before taking off
A barometer, in order to determine the wind pressure and ensure an easy take off
A compass or GPS; these instruments will help the orientation during the flight
A radio station, in order to keep in contact the crew

Paragliders are not parachutes. Paragliders have the shape of an elliptic bell, much longer than that of a parachute. These aircrafts are very simple but their design is very complex.

They have several layers of material forming cells within the bell-shaped structure.





Harness with back protection
- This device holds the pilot to the paraglide and allows him or her to sit down comfortably while in the air.

The aerodynamic shape is maintained during navigation thanks to the pressure caused by wind speed and air over the cells of the bell-shaped structure.

There are several groups of ropes hanging from this particular bell, which converge on the harness, where the pilot seats.

Piloting is an individual activity, where everything has to be controlled by the pilot, who must have the necessary knowledge and experience in order to face any unexpected situation.

Paragliders can take off, fly and land with wind conditions between 0 and 20 Km/h. Paragliders can fly for hours. No fuel is needed; it depends on weather conditions, experience and the body's resistance to movement.

At low speeds, paragliders can land in small areas with great accuracy. In order to do so, soft winds and ideal weather conditions are required.

In order to control and handle the paraglider, the pilot must pull two ropes that are connected to the upper edge of the surface of the wing. With these ropes the pilot can reduce speed, turn or increase speed. When there are some turbulences, the inner soft structure and the elongated bell shaped structure change the pressure over the wing. These changes make the wing close. In order to open the wing again and go on flying, the pilot must descend fast and fly faster.

The phases of the flight are the following:

1. Preparation

- Take the paraglider out of its cover, stretch it out and check that the ropes are not tangled up.
- Connect the bands to the snap hook.
- Put on the harness, the boots, the gloves and the flying suit.
- Turn on the GPS and check everything is all right before the flight.

2. Take off

- Decide on the flying plan and make sure that the weather is favourable.





- Stand on the slope facing the wind and hold an brake and a band in each hand. Then push the wing strongly and continuously in order to help it rise with the bands.
- When the wing is over your head, start running towards the void.

3. Flight

- The first flights of a beginner are normally used to practice landing and using the brakes to make turns.
- After mastering the basic techniques and manoeuvres, one can enjoy a bit more “being among the clouds” using air drifts and thermals in order to move in the air.

4. Approximation

- Once we are near the soil we must get ready to land.
- Before landing, we must spot the best area (free of obstacles).
- It is advisable to face the wind in order to loose speed and position ourselves over the chosen area.

5. Landing

- Once over the landing area, the pilot must hold the harness allowing the wing to gain speed, and release the brakes.
- When the pilot reaches the land, he must brake by moving his hands and the ropes towards his hips. This will convert the kinetic energy (speed) into potential energy (height).
- Most of the time, this allows the pilot to loose speed and land softly.

Paragliding can help the economy of rural areas by creating direct and indirect employment.

Users are normally families, tourists or groups of tourists. They are looking for activities that keep them fit, give them peace of mind or even a dose or adrenalin.



The aerodynamic shape of paragliders is maintained during navigation thanks to the pressure caused by wind speed and air over the cells of the bell-shaped structure.





b) Active tourism: land activities.

• CYCLING

Cycling is the main means of transport in some flat areas. Obviously, this is not the case of steep and hilly areas.

Flat lands are more suitable for the elderly and for families with small children. Steep, hilly areas are more attractive for young people who are used to physical activity.

It is important to be aware of these aspects when devising a marketing strategy concerning cycling as a tourist amenity, as the needs of each group will probably be different. In general terms, cyclists prefer summer to winter. Excursions are normally planned in autumn and spring.

People that practice mountain biking in

rural areas are the group of users more likely to damage the environment. Tomorrow's cycling conditions depend on the way we use mountain bikes nowadays. The **International Mountain Bicycling Association** has devised a set of rules concerning trails. These rules are accepted worldwide as a standard code of conduct for mountain bikers. The aim of this set of rules is to promote mountain biking as a respectful and environmentally and socially sensible activity.

Some of these rules are described below:

- **Ride on open trails only.** Respect trail and road closures and avoid trespassing private properties.
- **Leave no trace.** Practice low-impact cycling and be sensible with the land and recognise different types of soil and trail construction.



People have discovered the advantages of cycling as a recreational and sport activity, or as a fast means of transport for daily life.





Wet and muddy trails are more vulnerable to damage, and when trail bed is soft, consider other riding options. This also means staying on existing trails and not creating new ones. Do not cut switchbacks, be sure to pack out at least as much as you pack in.

- **Never scare animals.** All animals are startled by an unannounced approach, a sudden movement or a loud noise. Running cattle and disturbing wildlife is a serious offence. Leave gates as you found them or as marked.
- **Plan ahead.** Know your equipment, your abilities and the area in which you are riding and prepare yourself accordingly. Be self-sufficient at all times, keep your equipment in good repair and carry necessary supplies for changes in weather or other conditions.



A well-executed trip is a satisfaction to cyclists and not a burden to others.

Cycling is very common in rural areas, and therefore can be very important for the promotion of rural areas that lack other infrastructures.

The creation of new trails and the improvement of the existing infrastructures can attract more cyclists to rural areas and contribute to regional development.

On the other hand, the tourism connected with cycling creates employment within the hotel sector and the service sector.

Moreover, local tourist enterprises can offer guided tours on the region, providing employment opportunities for tourist guides.

When you start cycling, it is very useful to engage in an individual training programme. In order to keep fit one must follow a light diet including plenty of liquids.





- **HORSE RIDING**

In horse riding as a leisure activity, horses appeal both the audience and the participants. In all tourist activities connected with horse riding, the interest on horses is more active (riding) than passive (watching).

Including horses in recreational and leisure activities has the advantage that they can be rode all year round. This activity can be available full time, and therefore is a good business opportunity for the professionals involved in Active Tourism.



Man has used horses for thousands of years as a work tool and means of transport. Not until quite recently have they started being used with recreational purposes.

Service providers must bear in mind several facts when offering horse riding as a tourism activity:

- They must have **stables for horses** and horse riders to start and finish their working day, whether the activity has taken place within the leisure centre or somewhere else.

There must be an area where horses can stroll and run during mounting and training. This area is called riding school and is normally fenced and covered with sand.

- There must be **different types of horses**: affable and quite for children and beginners and aggressive and robust for more experienced riders.

The minimum number of horses necessary for a small business is 4 or 5. However, this depends on the size of the business and the investment.





- **Staff must be experienced and trained.** They must keep horses in good condition, train beginners and act as guides in horse excursions.
- The basic equipment for riders is described below:
 - **A saddle for each horse and some spare saddles.** Saddles must have a raised part in the back, called cantle, which holds riders and protects them.
 - **The reins** are normally made of leather and must be kept in good condition.
 - **Boots with the appropriate heel height, riding trousers, cagoule and officially approved helmet.**



In order to practice this activity a training arena is needed for children and beginners to practice with the help of a trainer.





When creating the trails and routes several factors must be taken into consideration:

- Whenever possible, routes should cross public areas only.
- In order to use private land, permission must be obtained beforehand.
- Busy roads must be avoided.
- Noisy areas, as industrial areas must be avoided.
- Routes must have nice views and landscapes.
- Obvious dangers must be avoided, as for instance very steep slopes, low tree branches, long grass preventing the horse and the rider from seeing the ground, etc.

Horse riding can be classified according the place where it takes place:

- **Mountain horse riding-trails are in hilly areas.** This group can be classified into:
 - **Athletic mountain riding** – the rider is very fit and needs to have a lot of experience, as the land can be abrupt.
 - **Tourist mountain riding** – The trail is in a hilly area but it is much easier and riders do not need so much experience and excellent physical conditions.
- **Snow horse riding** – these trails are covered by snow, it usually takes place in the winter.
- **Water horse riding** – the trail crosses different types of water masses. There are different categories within this group:
 - Lakeshore horse riding.
 - Seashore horse riding.
 - River horse riding.





There is another classification based on the aim sought by the riders:

- **Educational horse riding** – the main objective of the activity is not riding itself but learning things such as the local history. The subject matter may be nature, archaeology or culture. In this case riding is an “instrument” for learning, which is the purpose of the activity.
- **Athletic horse riding** – riders compete in different events, and have to overcome obstacles and difficult conditions.
- **Casual riding** – where the main objective of riders is to enjoy riding itself and the trail and the peacefulness and the beauty of the landscape.



Horses are a new opportunity for the economy of rural areas. Horse riding can have an important role in tourist development. This activity strengthens the links between people and nature and is a different alternative to hikes. Rural trails can be used for horse rides.





There is another classification of horse riding activities based on the duration of riding sessions:

- **Daily/hourly excursions**, the trail can take a few hours or a whole day (normally they take 2-6 hours).
- **Multi day excursions**, tourist service providers design long routes, including meals and lodging.

When planning multi day excursions, several aspects have to be taken into consideration:

- The guide must stay with the group all along.
- Provisions must be dealt with in advance.
- Overnight accommodation must be arranged and planned. It is advisable to have some alternatives in case the programme has to be altered due to bad weather conditions.
- The guide must know the trail and must be able to guide the group safely.
- The trail should have some connection with local natural and historical settings, as forests or castles. This will make the itinerary much more interesting for riders.

Horses are a new opportunity for the economy of rural areas, both as a stand-alone activity or combined with other leisure activities. It can have a positive effect in the development of rural areas, due to:

- A better knowledge of the villages of the area;
- The use of local lodgings;
- A greater involvement in local activities;
- The use of local trails and routes;
- The restoration and use of local buildings.





Horse riding can have an important role in tourist development. This activity strengthens the links between people and nature and is a different alternative to hikes. Rural trails can be used for horse rides.

- **TREKKING**

Walking is the best way to explore the environment, especially when following trails marked with the international codes.

Trekking is suitable for all seasons and all types of territory, including parks, forests, coastal areas, plains, tablelands and protected areas.

Moreover, trekking is the most intuitive activity that can be performed in nature.

It requires no specific technical skills or equipment, only comfortable clothes and good shoes.

A good technique can prevent damages and ensure that trekkers enjoy the itinerary.

The following aspects have to be borne in mind:

- **Adequate body position.** The spine must be stretched out, we must stand straight and relaxed, the head must be upright, eyes looking to the front, our chin should be parallel to the ground.
- **Relax your shoulders.** Arms should be slightly bended and should swing naturally as we walk.
- **In order to move the lower limbs,** we must use abdominal muscles and hip flexors to rotate the hip forward and allow the leg to move forward.
- **Ankles should be flexed,** and toes should be curled upwards. First, we must move one foot in front of the body. When our body weight passes over the leading leg, we must take the next step pushing the toes against the ground.





There are different trekking levels, depending on the duration of the trail or the need to stay overnight. If the route can be finished within a day, it is called a **walk or hike**. If the route takes more than one day to be completed, we speak of **trekking**.

As for equipment, walking does not require special gear, only comfortable clothes, good shoes and a backpack:

- **Boots:** Boots are the most important element. Boots should have an appropriate shape to be comfortable. There are many different types of boots in the market; it is important to choose the right kind for each activity.



Walking is a peasant way to know natural sites; it is a very popular open-air activity. Almost anyone can enjoy walking. There is no need for special knowledge or equipment.





- **Backpack:** A small backpack should be enough for one-day excursions. For multi day excursions, the backpack should be bigger, as we need to carry the camping equipment with us. The ideal backpack should have an anatomical shape and should have adjustable straps in the waste and shoulders. External pockets are very useful to keep objects that we are going to need often.
- **Clothes:** Clothes must be suitable for the weather conditions we expect. We should wear comfortable clothes that can draw sweat away from the body.

We should avoid tissues as cotton, as they hold sweat and may lower body temperature and cause hypothermia.

Modern, perspirable tissues that draw sweat away from the body are advisable.

These modern fabrics keep the body fresh and dry even when doing physical efforts.

In the mountain weather can change quite fast and unexpectedly.

Therefore, we should always have spare clothing in case there are weather changes.

In special weather conditions:

- **Heat:** We must wear light coloured clothes that reflect sunlight. Sun hats and sunglasses protect from direct sunlight and dazzles. It is advisable to wear long trousers instead of short ones, in order to protect our legs from UV rays.
- **Cold:** Warm clothes (such as wool), gloves and a warm hat prevent an excessive heat loss, which may lead to hypothermia.





Trekking is suitable for all seasons and all types of territory, including parks, forests, coastal areas, plains, tablelands and protected areas.

:

We should wear several layers of clothes, as this is an effective way to preserve heat. Wearing a thin layer of thermal fabric next to the skin allows sweat to pass through it. The next layer should be a thick and warm fabric. The outer layer should protect us against weather conditions. This system allows us to take off or put on the different layers depending on the weather conditions and the effort we are doing. One single layer would not be effective.

Even though there is not a specific system to measure the difficulty of a route, it is possible to distinguish physical and technical difficulty.

Technical complexity refers to the route itself: the existence of a trail which is conveniently marked, the need to use a map or a compass, the need to use safety measures and technical equipment.





As routes become more complex, we must be acquainted with the following:

- **Navigation techniques:** Map reading, distance estimation, correct use of compass and other navigation devices.
- **First aid.**
- **Emergency protocols.**
- **Weather forecast.**
- **Group guiding.**

We must also take into account that leisure activities can have a negative environmental impact. When trekking, we must follow some simple rules, known as the “**landscape code**” which are intended to protect and at the same time enjoy the environment.

These rules can be summed up in three main principles:

RESPECT
PROTECT
ENJOY

Trekking contributes to the conservation of the diversity among regions and also attracts the interest of visitors in these areas, reducing the seasonability of tourism.





- **CLIMBING AND ABSEILING**

The activities involving ropes and height can be divided in two main groups:

- **Climbing** (indoor and outdoor) consists of moving forward in a wall that may be or not be rocky.
- **Abseiling** consists of coming down a wall with the help of ropes.

All these activities entail risks, and therefore special training is required. For instance, anyone that decides to start climbing or abseiling must know how to make knots. Climbing can be performed in different places and at different difficulty levels.

The physical activity can range from easy and free of risks to very challenging and seemingly risky. We say seemingly risky, because quite often such risk does not actually exist, it is only perceived risk.

In most cases climbers are well equipped and trained. Learning the different techniques usually takes a long time.

The equipment used in this type of activity is complex and includes many different devices:

- **PPE - Personal Protective Equipment.**

The concept of PPE is applied to products that have been designed to protect a person and guarantee their safety in different risky situations.

There are three types of PPE regulations:

- **Low risk** – These products protect people from minor injuries, such as small muscular injuries or sunburn.
- **Medium risk** – These products protect people from more serious damages, and include equipment such as sports helmets and protective vests.





- **Serious or fatal risk** – These products protect people from very serious risks or life threatening injuries, and include inhalers, ropes, harnesses, security snap hooks.
- **Modern ropes** are made of a material called kernmantle. The kern is the inner support, and the mantle is the surrounding sheath that protects the kern. There are different types of ropes:
 - **Static and semi-static ropes** – these ropes are used in rope descending, caves and caverns and alpine works.
 - **Dynamic ropes** – These ropes are used in cliffs, ice climbing and mountaineering and alpine mountaineering.
 - **Single ropes** – These ropes have been designed for climbing, and are the most suitable in narrow climbing trails.
 - **Double ropes** – These ropes are commonly used in alpine mountaineering and in long routes. The advantage of these ropes is that in case one of them breaks there is always another one to protect you.
- **Climbing slings.** Slings are static nylon bands of different length and thickness forming a sort of knot. They are used to fix the ropes in places that may damage them.



It is important for instructors and guides to have the appropriate training and experience in order to manage tourist activity programmes.





- **Climbing harnesses.**
 - **Harness** – This device secures the body of the climber to the rope. It is an essential part of the security system. It is a belt with two loops for the legs called leg loops.
 - **Chest harness** – This type of harness is worn around the chest and is used together with sit harnesses. They provide stability and protect the back in case of falls.
 - **Full-body harness** – This type of harness includes a chest harness and a sit harness in one single piece. It is advisable for children. It provides a greater stability when descending the rope.

- **Safety equipment.**
 - **Helmet** – This is an essential part of the equipment when climbing rocky walls. It must have an inner adjustable cradle.
 - **Security snap hooks** – Two different types of hooks are used in rope descending:
 - **HMS** - security snap hook used in abseiling.
 - **D-shaped snap hook** – this type of snap hook has a hinge that keeps the rope in a position, which provides extra security in case of falls.
 - **Jumar** – This device is used to climb up the ropes.
 - **Eight descender** – This device is attached to the snap hook of the harness. It helps the climber when abseiling. It slows down the descent of the climber by creating friction. The shape and size of these devices prevent the rope from getting too hot or damaged.
 - **Belaying device** – This device is attached to the snap hook of the harness or to an anchor point and it can stop a falling climber. It creates friction and stops the rope from sliding beyond a certain point. There are many different belaying devices. All belaying devices perform the same functions, although some of them are adapted to specific types of ropes or climbing conditions.





One of the most important aspects of this sport is safety:

1. Before starting climbing or abseiling, we must check our equipment both visually and with our hands.
2. Any defective material must be immediately discarded.



Abseiling consists of coming down a wall with the help of ropes.

Necessary checking:

- **Belt:** we must make sure that there are no open seams or signs of excessive use.
- **Ropes:** We must check and verify every rope after every session. If there are uneven areas in the ropes, we must discard them and replace them with new ropes.
- **Technical equipment:** there should not be any signs of excessive use in technical equipment. If a synthetic or metal device falls from a considerable height and hits a hard surface, it must be discarded, as there may be micro-fractures causing malfunctioning of the equipment that may provoke a fall.





Rescue

It is preferable to avoid rescue situations. We can avoid them with appropriate planning, good communication and thorough preparation.

However, unexpected accidents may occur and someone may need to be rescued. Each situation is different, and therefore the guide or instructor must be ready to face a rescue operation and be acquainted with all rescue techniques.

If a rescue situation occurs:

1. Make sure the rest of the group is safe.
2. Identify the problem.
3. Make a plan to solve the problem.
4. Explain the plan to all those that are involved in it.
5. Assign the appropriate task to each member of the group.
6. Make sure that everyone knows what they are expected to do.
7. Carry out the plan, making sure that there is communication between all those implied in the rescue operation at all times.
8. Once the injured have been rescued, apply first aid procedures.
9. After the accident, analyse what went wrong and plan how to avoid the same problem in the future.
10. Next, inform those involved in the activity of what has happened and tell them what must be done in order to avoid it from happening again.

Climbing and abseiling are normally performed in natural settings. However, these activities can also be carried out in cities, in rock climbing gyms Rope descending training courses and artificial rock climbing intend to imitate the activities that are normally performed in rural areas.

Rural areas attract climbers wishing to enjoy nature and climbing in a natural setting. This activity is boosting the economy of the areas where it is available.





c) Active tourism: water activities.

- **PADDLE SPORTS**

Men have sailed rivers, lakes and seas for thousands of years. Nowadays people can travel to remote areas by waterways and discover their natural environment, landscapes and cultural heritage. Moreover, water activities represent an important economic activity in rural areas.

Canoeing, Kayaking and white water rafting are the most popular water

activities available in active tourism resorts, as they cover a wide range of difficulty levels and can be adapted to the need of each family member. We may choose between still waters or the rapids of rivers.

Different types of vessels can be used

in active tourism water activities. There are canoes, kayaks, rafts, catamarans etc.



Nowadays people can travel to remote areas by waterways and discover their natural environment, landscapes and cultural heritage. Water activities represent an important economic activity in rural areas.

- **Canoeing and Kayaking**

Canoes exist from very ancient times, and nevertheless are still used as means of transport in many places around the world. Normally canoes are open deck boats, although there are closed deck ones too.

The main difference between a canoe and a kayak is that the former is propelled with an oar or single bladed paddle. Canoe paddlers tend to kneel down rather than sit in the canoe.





Kayaks are closed deck boats. Kayaks are propelled with an oar or a two-bladed paddle, with a paddle in each side. Normally, the longer and the narrower, the faster and unstable.

Shorter and wider kayaks, with a flat frame, are slower but safer in turns.

A kayak can be meant for just one person (K-1), two people (k-2) four people (K-4) or eight people (k-8). The last two types are only used in competitions.

Canoes can be made of rigid materials, as composite materials, aluminium or plastic, or of non-rigid materials, such as a hard frame covered by fur or fabric.

Kayaks can be made of rigid material, such as composite materials, marine wood and plastic, or of non-rigid

materials, as it is the case of collapsible kayaks and inflatable dummies.

- **Rafting**

White water rafting uses some canoeing and kayaking techniques, even if it normally consists of travelling down rough water rather than still water.

Rafting is normally a team sport, as it takes more than one person to drive these boats in white water.



Rafts are inflatable crafts.





Rafts are open deck boats with inner and outer inflatable supporting tubes. There is a thin security rope attached all around the tire tube for the crew to hold on to them and for swimmers to get in the boat. Rafts are normally made of hypalon, a very tough and waterproof synthetic material that require special and regular maintenance.

Most rafts are propelled by 6-8 paddlers using single-bladed paddles. Paddlers distribute uniformly around the outer tire tube and secure their feet to the boat with straps.

Some rafts have a hard frame, called “**oar rig**”. In these rafts, one single crewman drives the boat by using oars that are attached to the boat by means of tholepins.

There is another type of raft, called **cataraft or catamaran**. These rafts have two parallel tire tubes attached to a hard frame. They can be propelled by means of oars, as oar rigs, or by means of paddles.

Unlike kayaking and canoeing, white water rafting is suitable for people with little experience or technical knowledge.



Rafting is normally a team sport, as it takes more than one person to drive these boats.

A guide is in charge of controlling the boat and command the crew in order to make the necessary manoeuvres when crossing rapids.





International scale of river difficulty

Active tourist agents providing water activities must bear in mind environmental conditions (for instance, water level, water quality, wind strength, water and air temperature and other potentially dangerous aspects) when planning tours. They must also adapt the activity to the level of expertise of each group of clients.

On the other hand, active tourism agents or operators must make sure that their instructors have the adequate training as regards safety and rescue in the area where the activities are performed.

In order to determine the degree of difficulty of rivers, an international classification system is used, I being the lowest difficulty grade and VI being the navigability limit:





Difficulty level	Necessary Knowledge / Equipment	Risk and Rescue
GRADE I - EASY		
Difficulties - Rapid currents with small waves, without drops. - Few obstacles, very obvious and easily over passed with a little training.	Basic manoeuvres (forwards, backwards, turns and rowing against the tide).	The risk for swimmers is small and self-rescue is simple.
GRADE II - BEGINNER		
Difficulties - Small rapids with open and clear channels. .. – Medium sized rocks and waves that are easily passed by trained people.	Basic manoeuvres in limited space and time (forwards, backwards, turns and rowing against the tide). Warm clothing, life jacket and helmet.	Rare danger for swimmers, help from the group seldom needed to rescue someone falling into the river.
GRADE III - INTERMEDIATE		
Water: With moderate to strong water currents. Difficulties - Rapids with moderate and irregular waves that can be difficult to avoid. - Big waves and strainers are easily avoided.	Experience in manoeuvring in reduced time and space (forwards, backwards, turns and rowing against the tide). Company, warm clothing, life jacket and helmet.	Injuries to swimmers are rare and self-rescue is easy, but assistance from the group may be needed to avoid distant swimming.
GRADE IV - ADVANCED		
Water: With moderate to strong water currents. Difficulties - Intense and powerful but predictable flows, that requires precise control. - Depending on the river's characteristics, it can have unavoidable water features.	Experience and control of the technique. Good level of personal fitness. Knowledge of the river, company, warm clothing, life jacket and helmet.	The risk of injuries to swimmers is moderate to high, the water conditions make self-rescue difficult. Group assistance is necessary and requires previously developed skills.
GRADE V - EXPERT		
Water: Very high jumps with strong water currents, wave and whirlpools. Difficulties - Extremely long, violent rapids. - Big, unavoidable waves and hydraulics with steep flows and demanding complex routes.	Experience and excellent control of all techniques. High level of fitness required. Exploration of the river is essential, occasional difficult areas. Requires company, warm clothing, life jacket and helmet.	Swimming is very dangerous and rescuing is difficult event for experts.
GRADE VI - EXTREME		
Generally regarded as the limit of navigability. Difficulties - As grade V but more continuous, steeper, greater volume and less obvious routes.	Total commitment physically and mentally. High level of experience.	Swimming potentially fatal.





Rafts are open deck boats with inner and outer inflatable supporting tubes. There is a thin security rope attached all around the tire tube for the crew to hold on to it and for swimmers to get in the boat.

These group activities boost the development of rural areas with navigable lakes or rivers, and contribute to employment creation, and to prevent the drift from the land towards cities.





- **WATER SKIING**

Water skiing is a very fun sport. However, it is important to remember some safety clues concerning first aid, equipment and water movements.

Only authorised federations can provide training in order to perform this sport. Boat users must have a licence and appropriate training.

This sport can only be practiced in authorised areas. Water skiing is performed in natural settings such as lakes, dams, former sandpits and gravel pits. Once the activity is developed, these places are more attractive to tourists, and demand grows.



Water skiing has become very popular. It may seem surprising but it is very easy to learn.

National and international official associations enforce laws and directives in order to protect bodies of water and their environment.

When performing this sport, skiers are normally towed in a boat, but a towing wire can also be used.

Water skiing can be classified in different categories: barefoot, cable ski, disabled water skiing, racing and tournaments.

- **Barefoot**

In this water skiing category, the feet of skiers are in direct contact with water.

The advantage of this category is that it requires very little equipment and is quite easy to learn.





- **Cable Ski**

Cable skiing is very similar to water skiing, but skiers are not pulled by a boat but by a wire connected to a platform. The wire tows skiers in a lake. Skiers use a wakeboard or other similar devices used in this water sport.

Cable skiing is a very safe sport. The system is controlled by a computer, and it is not very energy-consuming. There is no need for a boat (normally very expensive) and therefore most skiers can afford it.

Skiers are pulled by a wire instead of a boat, and therefore there is no risk of petroleum or fuel spills.

Wakeboarding is another version of water skiing. In this case, a snowboard is used. This sport is divided into boat and cable ski categories.



Water skiing is a water sport that can be performed by several users in an hour, as it is possible to pull 8-12 people at the same time.





A wakeboard is similar to a snowboard but it is used in the water, as in water skiing. Wakeboards are shorter than snowboards, and also slightly broader.

Wakeboard skiers can be towed by a boat or by a towing wire.

Wakeboard boats are heavier than the ones used in water skiing and the shape is also different (intended to create a larger wake) and have a tower or pole to tie the rope.

A **hydrofoil** is a device used in order to practice water skiing but sitting down.

The sportsman is towed behind a boat with a driver and a spotter.

Water skiing has a great potential for rural development. Together with the beauty of the landscapes, it is an added interest for rural tourism.





d) Active tourism: snow activities.

Nowadays there are many different activities connected with snow and hilly areas that can be performed by all kinds of people.

Some of the most important snow activities are listed below:

- **Skiing**, including the different categories and disciplines, as Nordic skiing, alpine skiing and snowboarding.
- **Dog sleigh** or mushing.
- **Snowshoeing**.



Snow activities contribute to the promotion of rural areas and their cultural, natural and scenic heritage.





- **SKIING AND SNOWBOARDING**

Modern skiing was first practiced in Norway in the 14th Century and fast spread to the rest of Scandinavian countries.

Skis are made of wood, metal or synthetic materials and have special devices to secure ski boots.

The length of the skis may vary depending on the height of the skier and on what they are going to be used for. Beginners are advised to use short skis, as they are more easily handled.



World War I (1914-1918) contributed to the development of skiing, as special skiing troops were trained.

Nordic Skiing or Cross-Country Skiing

In this category, relatively flat or wavy surfaces are used, and long distances are covered.

In Cross-Country Skiing almost every important muscle of the body is used, and therefore it is considered as one of the most complete sports.

Alpine Skiing

This is the most popular skiing category. It is performed in ski resorts.

Skiers use mechanic lifting systems to go up the slopes. Each ski run is graded according to its steepness and difficulty.

Ski Mountaineering

Ski mountaineering is a more professional category.

It is advisable to have previous knowledge of Alpine skiing, for descending and cross-country skiing for ascending and moving in flat surfaces.





Snowboarding

Snowboarding consists of sliding on snow with the boots secured to a surfboard. Snowboarders must bend their knees and keep their shoulders parallel to the knees.

The main snowboarding categories are:

- **Free-riding.** It consists of surfing on the mountain freely, preferably out of the ski runs, among the trees and over untrodden snow.
- **Free-style.** It consists of jumping with the board and making a series of routines in the air. This sport is practiced in snowparks.
- **Freecarving or Alpine snowboarding.** It consists of descending the slopes at high speeds.
- **Extreme snowboarding.** It consists of skiing down the mountains and out of ski runs. It requires previous knowledge, not only of snowboarding, but also on the mountain, avalanche risks and weather conditions.



Unlike skiing, in snowboarding both feet are attached to a single board.

Snow activities that take place in rural areas can help visitors discover and respect rural areas, which is essential for development and conservation.

Nowadays there are specialised ski resorts with all the necessary infrastructures. They are equipped with different types of drag lifts (ski lifts, chairlifts, gondola lifts, aerial tramways, inclined railways, etc.) that adapt to different types of hilly areas and to different volumes of users.





However, snow activities in the scope of active tourism can be performed with much simpler infrastructures.

- **MUSHING**

Mushing is based on dog sleigh as a means of transport on the snow.

In this sport men and dogs must become a perfect pairing. In mushing there is a “musher”, or pilot, a helper and the dogs. The number of dogs varies depending on the discipline.

The main mushing disciplines are the following:

- **Sleigh.** A sleigh is a transport method equipped with skates or skis instead of wheels that slides on snow or ice.

There are different categories, depending on the number of dogs, which ranges between 3 and 10 or 12.

- **Pulka.** A pulka is a small sleigh, normally made on a single piece of rigid plastic or metal. In this discipline dogs pull the small sleigh to which the skier is attached.

- **Skijoring.** This discipline consists of skiing behind the dog, to which the skier is bound by a rope with a damper.

The tow-line must be tied to the skier by means of a belt.

- **Cani-cross.** This sport consists of a runner on snowshoes being pulled by one dog.

More and more dog breeds are being used in this sport. However, most of them are Nordic breed dogs.



The origins of mushing are lost in time, suffice it to say that sleighs were already used before the wheel in many places.





Characteristics of the dogs that are most used in mushing:

Dog Breeds		Comments
Alaskan Malamute		<ul style="list-style-type: none"> - The ones that run closer to the sleigh. - The biggest and more powerful Nordic dog breed. - Domineering dogs, they require very strict training.
Siberian Husky		<ul style="list-style-type: none"> - They are in front, to pull the sleigh. - Active, light and fast dogs. - Traditionally used as shepherd dogs or as hunting dogs.
Greenlander		<ul style="list-style-type: none"> - They are normally placed in the middle, in order to make the most of their stamina. - Very strong dogs. Sleigh dogs par excellence. - This breed was used by the first explorers (such as Admunsen) in their journeys.
Eskimo		<ul style="list-style-type: none"> - Similar to Greenlander.
Samoyed		<ul style="list-style-type: none"> - Normally placed in the centre of the sleigh. - They are very furry, even woolly dogs, with curled tails. - These dogs are very powerful but not specially fast.
Akita Inu		<ul style="list-style-type: none"> - Strong, vigorous dogs, similar to Nordic breed dogs, but used in game hunting in Japan. - They are excellent and powerful sleigh dogs, but are less common in sprints.





- **SNOWSHOEING**

Snowshoes are among the oldest transport methods on snow. For centuries, snowshoes have been used as a means of transport in areas where it snows a lot in winter and where walking on the snow can be rather difficult. These platforms cover a wider surface, and therefore the weight of our body does not cause our feet to sink in the snow when walking.

In general, walking on a surface covered with snow requires an extra effort, as our feet are not adapted to it and are too small. Snowshoes are “bigger feet”. They must adapt perfectly to the size of the feet of the sportsman.

Learning how to walk with snowshoes is not difficult, we must simply get used to the new dimensions of our feet.

Snowshoes are not suitable for uneven or hard surfaces. The itineraries for a snowshoe walk must be flat, always snowy and easy to cover.



Snowed forests, deep valleys, trails or forest trails are perfect for a snowshoe walk and to approach the magical and quite nature.

Snow activities normally take place in rural areas, which are increasingly attractive for those interested in active tourism. These areas can help visitors discover and respect nature, which is essential for development and conservation.

Tourist snow activities are very beneficial for rural areas, as they normally entail the creation and development of other activities: hotels and restaurants, as well as other services as chemists, post offices or shops.





e) An example of an active tourism activity: Mountain Tourism.

As a conclusion of the different types of active tourism, we will now describe a specific example of active tourism: **mountain tourism in the Italian Alps.**

The six Italian regions in the Alps, namely Valle de Aosta, Piemonte, Lombardia, Veneto, Trentino – Alto Adige and Friuli Venecia-Giulia, are suitable areas for active tourism:



Punta Lachena, Mont Blanc. Mont Blanc is the highest mountain in the Alps; it is 4,808 metres high.

- during the winter, sport lovers take their chance to go down the slopes and slide down the hillsides,
- in the summer, climbers can climb to mountain tops using almost inaccessible paths,
- there is also room for nature lovers, as they can enjoy their natural parks and dramatic landscapes,
- also families with children can enjoy Italian hospitality in countless little villages.

In this context, the profile of the Alpine professional Guide has gained importance. These guides accompany individuals or groups of people in excursions or as they climb iced or rocky mountains. These guides instruct people on alpine techniques and skiing techniques, except for those technical disciplines that must be taught by specialists.

The job of alpine guides takes place in the mountain, and is often hard. It is very important to have an appropriate equipment, consisting on ropes, emergency harnesses, ice axes, ice and rock pitons, warm clothes and trekking boots.





The job of alpine guides is often hard. The very different situations that they have to experience imply several physical and technical skills.

In the Alps, mountain guides work for private agencies or public bodies that manage parks, mountain resorts or natural areas. Guides can perform their activity in an individual way or as part of the CAI (Italian Alpine Club). They normally are self-employed workers with contracts that end by the end of the tourist season, but they may also work all year round.

Their fees vary from one region to another, and also according to the level of difficulty of the job. Specific rates are fixed in accordance with a minimum established in each region.

In Italy, there are two ranks of professional mountain guides: **junior guides** (they must be 18 or over) and **senior alpine guides** (they must be 21 or over). In addition to this, they must take an exam before being admitted in the training course, in which they have to take several technical and practical mountaineering tests.

The course to become junior guide takes 2 years approximately. It includes tests on subjects as the following: first aid, alpine skiing, ascent stages, topography, alpine geography, geology, glaciers and their origins, flora and fauna, history of mountaineering.

Junior alpine guides are very autonomous and can take individuals or groups ice climbing or rock climbing.



In Italy, there are two ranks of professional mountain guides: junior guides and senior guides.





After a compulsory training phase that lasts two more years, they can become senior alpine guides, after completing another course that lasts one year. This is the highest professional level.

Senior alpine guides are absolutely autonomous and independent.

According to the Italian Association for tourist training, Arfotur, there is an increasing demand of these new professional profiles, in particular, of guides that take groups to unaltered places. “Environmental” active tourism is growing fast. This type of active tourism is especially interesting in order to illustrate the resources of a given territory.



New professions connected with this resource are conditioned by an increase of the opportunities in each area. These new opportunities would boost the market and would ensure the availability of certain activities that are considered to be specific of each region.





1.2. Evolution in the use of the resource.

1.2.1. Origin and development of tourist activities.

In the last few years, tourist activity has increased substantially in rural areas. There are many initiatives going on, both in the public and private spheres, intended to satisfy the leisure demands and to achieve the appropriation of the resources that are associated to tourist activities.

The increase of the tourist activity started in the 80's, as a result of many different internal and external factors combined:

- a) **The changes that were taking place in the agriculture sector.** These changes made it necessary to find new alternatives and attempt to diversify rural economy by developing and boosting tourist activities, industry and crafts.
- b) **The changes brought by new approaches to holidays and leisure time.** Tourism has become a very important activity in urban societies. The fact that the quality of life of part of the urban population has increased, together with the improvement in transport infrastructures has made it possible for people to travel more and further, especially on the weekend. These factors have contributed to increase tourism in rural areas.
- c) **The EU policies on spatial development implemented in the scope of the ESDP** (European Spatial Development Perspective) These development policies intend to ensure a balanced and sustainable development of EU territories, in accordance with the main Community objectives.
- d) **The new and alternative employment opportunities in the environment and leisure sectors.** The search for new sources of employment includes activities related to leisure and environment.





1.2.2. The evolution towards active tourism.

For more than 150 years, tourists have devoted their leisure time to adventure and sport in unique natural settings. At the beginning, these activities included



mountaineering and travelling by balloon.

Active tourism has become very popular in the last few years. More and more people want to spend their holidays in nature, experiencing adventures.

With the passing of time, the offer of this type of activities has increased a great deal.

The search for new sources of employment has included the possibilities of activities related to leisure and environment.

Nowadays, it comprises a

wide range of activities including trekking, rafting, canoeing, bungee jumping, paragliding, mountain biking and even different kinds of safaris.

These active tourism activities can be performed individually or as part of a more complex product, as the so called multi-activities, where nature, culture and training are combined in adventure packs that take place in natural settings.

The new promotion and advertising methods, including brochures and web pages on the Internet, have made this type of tourism more accessible and more attractive to more people.

The demand for active tourism can grow more in the future, when tourist experts likely to promote and manage outdoor activities become more involved in these activities.

Thus, it would be possible to attract varied types of public looking for adventure and new sensations and wishing to spend more time in natural areas.





1.2.3. Rural tourism and the sustainable management of territory.

We must bear in mind that not all places have the same appeal. Tourists are very selective when choosing a destination.

Therefore, nowadays tourism is seen as another development opportunity in rural areas and not as an alternative main economic activity replacing the existing ones.

Tourism in rural areas cannot be the main economic activity, as in some coastal areas. It must coexist with other activities in order to achieve sustainable management.

Tourist destinations are products or consumer goods and productive areas at the same time. Therefore, the development of tourism in rural areas must face two important challenges:

- Address the need to re-organise space, with a new land distribution that makes it possible to combine the new leisure demands with other traditional activities.
- The management of the environment, heritage and villages must be consistent with sustainability principles.



Internet has favoured the dissemination of information on active tourism. There are more and more visitors coming to rural areas on the weekends.

These two aspects are especially important concerning green tourism, where land management becomes particularly important.

When studying the sustainable management of a given territory, its load capacity is normally taken into consideration. This concept is used in order to measure at what point tourist places become too congested and packed.





The World Tourism Organisation defines tourism **carrying capacity** as “The maximum number of people that may visit a tourist destination at the same time, without causing destruction of the physical, economic, socio-cultural environment and an unacceptable decrease in the quality of visitors’ satisfaction”.

Nowadays there are several indicators in order to measure the level of tourist saturation in a given area. The most common indicators relate the number of tourists per time unit, the number of tourists per hectare or the proportion between the number of tourists and of local inhabitants.



When studying the sustainable management of a given territory, its load capacity is normally taken into consideration.



The planning and architectural approach to and operation of tourism resorts and accommodation should aim to integrate them in the local economic and social fabric.

Tourist activities in rural areas must enhance and encourage several values:

- Respect to regional culture and local customs.
- Compliance of regional and national environmental rules and regulations, in order to preserve and protect local flora and fauna.
- Use of existing trails, tracks and paths for safety reasons and in order to avoid damaging natural settings.

Thus, the relationship between tourist activities and rural areas can be beneficial.





2. IMPORTANCE AND IMPACT OF THE RESOURCE

2.1. Current situation and impact of the resource.

2.1.1. Global Code of Ethics for Tourism.

The code of ethics of the World Tourism Organisation considers tourism as a beneficial activity for host communities and countries. Its fifth article states that:

- Local populations should be associated with tourism activities and share equitably in the economic, social and cultural benefits they generate, and particularly in the creation of direct and indirect jobs resulting from them.
- Tourism policies should be applied in such a way as to help to raise the standard of living of the populations of the regions visited and meet their needs. The planning and architectural approach to and operation of tourism resorts and accommodation should aim to integrate them in the local economic and social fabric. Where skills are equal, priority should be given to local manpower.
- Special attention should be paid to the specific problems of coastal areas and island territories and to vulnerable rural or mountain regions, for which tourism often represents a rare opportunity for development in the face of the decline of traditional economic activities.

2.1.2. Active Tourism in Europe.

Nowadays Europe is the leading destination of international tourists.

Some of the aspects that have contributed to tourism growth in Europe are listed below:

- The removal of borders,
- the integration of the different means of transport,
- the support of institutions,
- the improvement of cultural relationships,
- the increase of commerce among the different regions
- and the creation of links between tourism and enterprises.





In Central and Eastern Europe, active tourism, outdoor tourism and rural tourism are new important elements in tourist offer.

The World Tourism Organisation has made general forecasts for tourism in 2020:

- Sport tourism.
- Adventure tourism.
- Tourism connected with nature.
- Cultural tourism.
- Rural tourism.
- Theme parks and cruises.
-



Active tourism and rural tourism can contribute to the diversification of rural economy, as they create employment and they enhance and protect culture and local traditions.

In those regions where rural economy has been affected by changes, economic and social factors are important elements in the development of rural tourism.

Many European countries have natural resources: mountains, lakes, rivers, forests etc. in lively rural areas with an outstanding rural heritage.

These elements, combined with rural activities and sports as climbing, trekking, fishing or cycling, are the foundations of profitable rural tourism.

The proximity of the main markets and the growing demand of genuine rural tourism allowing people to interact with the environment are important elements in Europe.

However, we must bear in mind that tourist activities must respect the traditions, laws, customs and characteristics of the region where they are performed.





2.2. Results and impact of the resource.

PILOT EXPERIENCES

Active tourism, outdoor tourism and rural tourism are new important elements in tourist offer. However, there is no specialised training for this specific sector. Due to the growing demand for this type of tourism, and to the lack of specialists in the sector, it is necessary to create a new training scheme to train the future professionals of active tourism and rural tourism.

In this sense, the Lenoardo da Vinci Pilot Project “**Active Tourism: A New Professional Profile**” has contributed to the promotion of this type of training. In the scope of this project, an Active Tourism Manual was devised, as well as a training itinerary that provides guidelines for those who may be interested to create and implement this type of training.



In Europe, the demand for qualified staff in active tourism activities is growing day by day, especially in rural areas.

In addition to this, the actions carried out within the project:

- Have contributed to establish closer relationships between partners from different countries, thanks to the exchange of experiences and good practices.
- Have included information and dissemination seminars intended to promote this new source of employment in rural areas.
- Have included training and initiatives with rural tourism providers liable to create employment.
- Have included the design of several tools intended to contribute to the professionalisation of the sector and the creation of an European Qualification in “Active Tourism”, which would also contribute to the Forum on the Transparency of Qualifications.





3. USE OF THE RESOURCE AS AN INSTRUMENT FOR RURAL DEVELOPMENT.

3.1. Possibilities and conditions needed for development.

The key concept of active tourism is using the environment in order to perform physical activities. Therefore, an active tourism professional must know how to manage the environment, the resources and the host communities, in order to address economic and social needs, while preserving their culture, ecology, and resources for the future generations.

The sustainability of tourist activities rests on aspects as the ones listed below:

- preserving the natural environment,
- integrating local socio-cultural elements in tourist activities, without altering the elements that characterise the region,
- promoting the equal distribution of the benefits of tourism between the locals and the visitors, in order to increase their quality of life and
- addressing cultural and environmental elements respectfully and carefully.

Rural tourism encourages the recognition of the area where it takes place.

Rural tourism is liable to enhance the culture and natural diversity of the region and promote the protection and conservation of historical, cultural and natural heritage.

Tourism can be a sustainable development tool, as it can improve the quality of life of local population and contribute to the conservation of the environment. Tourists will be enabled to enjoy an improved tourist product.

However, in order to protect the environment and the quality of life in tourist areas and areas affected by the connections with tourist resorts, a European strategy for sustainable development and an appropriate action plan are needed.

This is essential for the long-term success of European tourist industry.

Local development policies are intended to achieve a balanced development of the European Union.



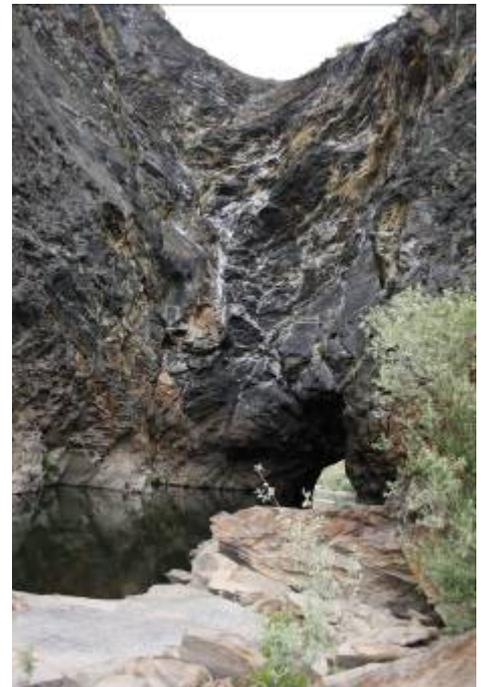


Active Tourism can contribute to the three objectives of Europe's regional policy:

- Economic and social cohesion; as active tourism can be a source of income in rural and remote areas.
- Conservation and management of natural resources and cultural heritage; the main assets of tourist resorts.
- A balanced competitiveness within the European Union; as the tourist industry usually implies the development of other local enterprises and industries.

Active tourism professionals may use the following principles in order to apply the concept of sustainable development in tourist offers:

- They must protect and manage natural resources, as they are the foundations for economic and social development. In order to do so, they must have a plan that limits and controls the impact of the activity in the environment.
- They must understand the relationship between the conservation of local resources and the role of tourism and tourist managers.
- They must make a proper use of the environment in order to develop tourism, without altering ecological processes and preserving natural heritage and biodiversity.



Active tourism professionals must understand the relationship between the conservation of local resources and the role of tourism and tourist managers.

In order to do so, they must be acquainted with environmental processes (as the bird's

coupling season or the areas with unusual flora) and must teach others on good practices that minimise environmental impacts.

- They must respect cultural heritage and the traditional values of the local communities. Thus, they must comply with local and national regulations and the local codes on the use of the environment.





The sustainable management of tourism is beneficial for the local population, as they can become directly or indirectly involved in the activities connected with it.

Active tourism can exert too much pressure on local communities if the load capacity of the region is exceeded. The main aspects in this context are:

- the size of the area devoted to lodging facilities,
- the traffic generated by tourist transport,
- water consumption,
- the pollution caused by sewage and the amount of rubbish produced,
- the large tourist resorts and the events and tourist activities that involve an intensive use of the countryside (as for instance, golf courses or ski resorts),
- and finally, some motorised activities, which can exert a lot of pressure on these areas.

In order to encourage the involvement of communities in sustainable tourist development, all those local people connected with the sector must be well informed and become involved:

- In order to achieve sustainable tourism, special attention must be paid to the possible impacts.
- Preventive or corrective measures should be applied whenever necessary.
- Sustainable tourism should be able to maintain a very high level of client satisfaction; it should be able to offer visitors meaningful experiences. Sustainable development should be promoted among visitors.
- Clients should be able to learn and understand the interactions between nature, local community and tourism, while they enjoy taking part in the different activities.





3.2. Employment creation potential of the resource.

New initiatives are being developed in rural areas, which create employment and support local resources and SMEs.

These initiatives are the response to the demands coming from the outside (improvement of the habitat and the environment, rural tourism) and from the inside (services for the local population).

These measures address the demands of local and foreign people. They are based on the new concept of rural culture, the valorisation of local products, the new cultural approaches, tourism, leisure, environmental awareness and market decentralisation.

These employment creation measures have received public support in the last few years.

The diversification of the economy is being achieved with the development of new economic activities and enterprises, based on the resources and the potential of rural areas.

3.2.1. New types of rural tourism.

As we have previously mentioned, the tourist sector has changed to a great extent in the last few years.

There are many new tourist approaches that differ greatly from the traditional tourism that used to be the most common type of tourism.

The main types of rural tourism can be classified attending to the following concepts:

- **Tourism in rural areas:** it consists of leisure activities performed in rural areas, and includes:
 - rural tourism,
 - ecotourism,
 - adventure tourism,
 - cultural tourism,
 - business tourism,





- young tourism,
- social tourism,
- health tourism,
- and sport tourism.

All these activities are connected in one way or another with natural, cultural and rural tourism. Moreover, most of the existing tourist offers combine more than one of these types of tourism. Even though in some cases accommodation facilities and restaurants are the main sources of income for rural resorts, there are other services connected with sport, learning and culture.

- **Rural tourism:** activities that are connected with nature and wildlife. These activities boost the economy and culture of rural areas.
- **Agrotourism:** activities that complement the standard farming activities. For example:
 - farm lodgings,
 - fish-and-pay activities,
 - hunting estates, boarding houses,
 - traditional restaurants,
 - products sold directly by producers,
 - crafts,
 - home made goods,
 - and other leisure activities linked to daily life in the countryside.



Rural tourism includes activities that boost the economy and culture of rural areas.

- **Ecotourism:** it comprises activities performed in protected rural areas. These activities consist of studying, admiring and enjoying flora and fauna, and all those cultural elements (whether contemporary or from the past) within these natural areas.





3.2.2. Employment created by tourist development.

1. Jobs directly related to the management and development of tourist industry.
2. Jobs created as a result of the development of tourist industry, in sectors such as transport, agriculture, banking etc.

Tourism can encourage the production of foodstuff for tourists and for the local market. This alternative activity may be a complementary income for rural families.

This new market should include traditional regional products whose quality is much higher than that of the products found in city markets.

Rural tourism should complement farming activities.

Depending on the season, on the characteristics of the territory, and on the seasonality of some activities, tourist flows may vary. Therefore it is advisable to combine both farming and tourist activities, and to avoid expectations that may not be fulfilled.

3. Indirect jobs resulting from tourist activities, and from the productive activities of local people.

Tourism brings about many improvements in rural areas, as the improvement of infrastructures or the creation or upgrading of services as:

- basic clean-up activities,
- paving of paths,
- electricity,
- telecommunications,
- schools, hospitals,
- public transport,
- safety,
- recovery of damaged areas,
- conservation of parks, forest reserves, etc.



Tourism can encourage the production of foodstuff for tourists and for the local market.





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°Rural tourism can be a very valuable instrument for the promotion and development of depressed rural regions with stagnant economies, provided these activities are organised and managed in a coherent and sensible way.

The creation of a specific market for farm products, the recognition of the cultural and natural characteristics and the improvement of infrastructures create employment opportunities within farms and in other sectors.

Tourist activities in rural areas are liable to improve local economy if they are carried out in harmony with agriculture and if they are compatible with rural development, as they increase employment opportunities and improve the quality of life of the population involved.

However, tourist initiatives that are detached of rural areas, that is, those carried out by external agents that do not intend to involve the local population should be avoided. This type of tourism has little or no benefits for local population. It is typical of some tourist resorts connected with specific natural areas as forest reservations, where

tourists are brought directly to the resort. They normally stay there just for one day. In these cases, the tourist operator and the visitors themselves are only interested in taking, and forget giving something in return to the local community.

Rural tourism can be the driving force of development, as it contributes to the recognition and preservation of the historical, cultural and natural heritage of the regions where it takes place.

3.2.3. Emerging professions: Active Tourism professionals.

There are already specialists in the different sports connected with active tourism and rural tourism. Therefore, the profile of **Active Tourism Professionals** will be more





general and it will cover the management of the tourist offer as a whole, not only the sport activities as such. Therefore:

1. Active Tourism operators or providers must know the region where they work:

- They must be acquainted with the geographical and environmental characteristics of the area and they must be able to transmit such knowledge to their clients.
- They must know how to conduct themselves when in the countryside in order to avoid any damages in the habitat.
- They must know and comply with local regulations, laws and restrictions.

2. Active Tourism providers must focus on organisation:

- All technical requirements needed in order to develop a tourist programme must be written and explained in detail before putting it into practice.
- In addition to equipment, several factors must be taken into account, such as: the number of participants, weather, accesses to the place where the activity will be performed, separation in genders and age ranges.
- A risk management plan should also be devised.
- The activities carried out must comply with the regulations currently in force.
- They must have all the necessary insurances.

3. Client needs must be a priority when offering a product or a service:

- Good verbal and non-verbal communication skills are required.
- A good relationship with customers is necessary in order to find out what do they want.
- The product or service must be developed taking the skills of participants into account.





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- Customer satisfaction surveys should be made before, during and after the activity.
- 4. Active Tourism operators or providers must know the business and the market:**
- They must decide who are going to be their target customers.
 - They must carry out an effective marketing strategy.
- 5. Active Tourism operators or providers must have financial knowledge:**
- Cost planning is needed in order to assess the feasibility of the project.
 - Some knowledge on cost estimates is necessary when developing the project, as it will help predicting benefits and expenses.
 - Cost planning must take into account the costs derived from personal, material, communications, outsourcing and external financing.
- 6. Active Tourism operators or providers must take competition into account:**
- They must focus on a market liable to provide good returns.
 - They must remember that technical expertise is not enough to ensure success.
 - They must establish long-term strategies to keep the interest of their clients and expand the business to new areas.
 - Being an expert does not necessary imply being a specialist. However, being specialised in a given area ensures quality and stable demand.

A new training itinerary for Active Tourism professionals was created in the scope of the Leonardo da Vinci Pilot Project “**Active Tourism: A new professional profile**”.

This itinerary contemplates the different activities that can be offered in Active Tourism as well as different issues concerning the tourist offer, such as the knowledge of the territory or the quality of the services provided. This itinerary was intended for 700 hours of training, distributed in the following training modules:

- Nature Interpretation.

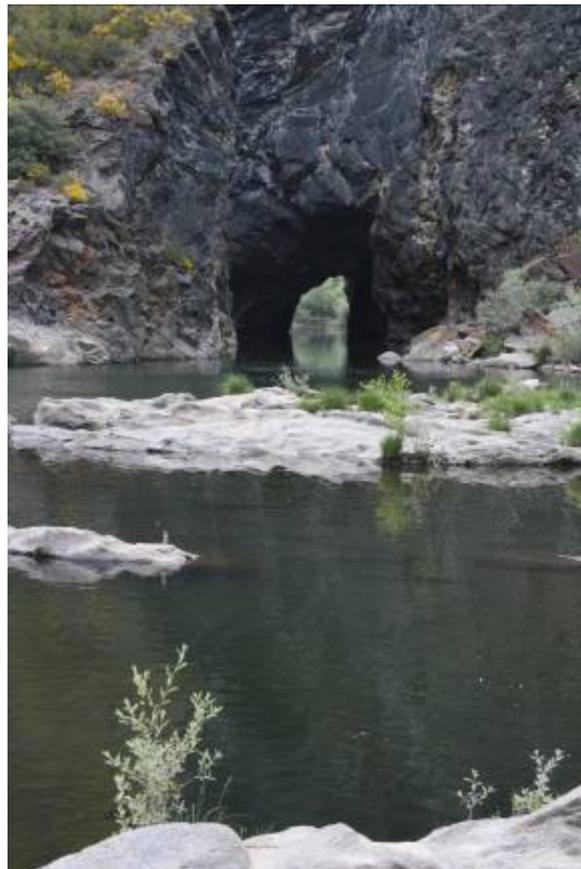




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- Active Tourism Activities.
- Risk Management.
- First Aid.
- Client management.
- English for Active Tourism Specialists.
- New Technologies of Information and Communication.
- Career guidance and Work Experience.

This training itinerary is a guidebook for trainers. It provides some useful information on the training of well-prepared Active Tourism specialists. The programme has been adapted to the market, as it combines theory and practical issues. It provides several tools that encourage critical thought and the exchange of experiences.



Active Tourism professionals must know the region where they work.





3.5.2.5 INTERPRETATION IN RURAL AREAS

1. GENERAL DESCRIPTION.

1.1. Description of the resource.

1.1.1. What is Interpretation?

The term “interpretation” makes reference to the techniques used in order to transmit the value of things. The interpretation of a given territory consists of a series of initiatives aimed to improve the knowledge of users on the different aspects that distinguish such territory.

AIP (Asociación para la interpretación del patrimonio, The **Spanish association for the Interpretation of Heritage**) defines interpretation as:

The “art” of revealing the meaning of natural and cultural heritage on the spot to an audience that visits a given place in their leisure time.

Interpretation is a creative, communicative process, in which the meaning and value of a group of elements that represent a given territory are revealed to an audience for them to understand, appreciate and enjoy it and contribute to its conservation.

The interpreter uses several communication techniques in order to help people connect emotionally and intellectually with the natural resources, the culture and the historical heritage of a given territory.

“Interpretation is an educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience and by illustrative media, rather than simply to communicate factual information”.

Therefore, the aim of interpretation is to detect the existing resources and devise specific techniques in order to illustrate their value by arousing people’s interest and





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making them understand their functioning and the importance of their conservation. The rural realm interpreter acts as a link between the visitor and the resource. The interpreter helps the audience build their own idea of reality, according to their opinions, values, memories and experiences, by using a communicative technique consisting on creating emotional, physical and intellectual connections between people and the resource being interpreted.

1.1.2. Interpretation in rural areas: culture and nature.

Interpretation first began in natural parks. This is why it was initially associated with nature alone.



Interpretation is the art of defining the role of mankind in its context, to raise awareness on the importance of that interaction, and encourage the public to contribute to the conservation of the environment.

During the 90, the concept was broadened to include cultural elements too, history and the connections between man and nature. Thus the unique values of cultural heritage became evident: the historical, artistic, aesthetic, documental, ethnographic and anthropologic values of cultural heritage.





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Rural areas are characterised by having all sorts of cultural and natural resources at hand.

The interpretation of the rural context made it possible to show other lifestyles and the cultural heritage of rural areas, as well as its meaning.

The cultural background is part of the local and regional identity of a given territory.

Good interpretative practices entail the understanding of the real meaning of the culture, tradition and history of local

communities. Interpretive activities help visitors understand the relationship between people and the place they live at.

The interpretation of nature, history and culture give rural areas a chance to become recognised. Thus, rural areas will not only be considered as producer areas but also as valuable nature reserves with cultural landscapes.

Using an interpretive approach, the sustainable exploitation of rural areas will contribute to the knowledge, protection, respect and recognition of cultural and environmental values.

1.1.3. Interpretation principles.

In 1957 Freeman Tilden, one of the fathers of interpretation, formulated the following principles:

1. Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile.
2. Information, as such, is not Interpretation. Interpretation is revelation based upon information. They are entirely different things. However, all interpretation includes information.
3. Interpretation is an art, which combines many arts, whether the materials presented are scientific, historical, or architectural. Any art is to a certain extent teachable.





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4. The chief aim of Interpretation is not instruction, but provocation.
5. Interpretation should aim to present a whole rather than a part, and must address man as a whole rather than any facet.
6. Interpretation addressed to children should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program.

These principles can be summed up in the three main aims of the interpretive activity:

Provoke - Relate - Reveal

1. **Provoke:** The interpretive act must provoke interest and curiosity in the audience. This may be achieved by providing new ideas and presenting information in a different way, and by creating links with visitors (by using a theme, a specific language, asking questions etc.).
2. **Relate:** We intend to relate the interpretive activity with the experience of visitors, by delivering a relevant message (with personal meaning) connected with their knowledge and experiences (examples, comparisons, metaphors etc.).
3. **Reveal:** The interpreter must reveal a memorable message. The audience must be able to remember it after the visit. Therefore, when interpreting, it is essential to focus on a key concept. It is quite useful to use a unifying theme that helps the interpreter to sort and organise information, and identify and deliver the key message.

1.1.4. Characteristics of Interpretation.

The interpreter transmit the visitors a given reality that does not express itself to its full extent. The interpretive act intends to motivate, attract, “provoke” and amuse visitors, but it also to contributes to sustainable development.





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It implies:

- Creating a comfortable and pleasant atmosphere for the audience.
- Making information accessible to all types of audience.
- Provoking a reaction in the audience.

The interpretation of the rural realm has the following aims:

- To provide a general idea of the place which is being interpreted.
- To communicate the meaning of a given territory in an interesting and effective way.
- To make people understand how the evolution processes happen in natural areas and how human impacts have affected the environment.
- To help to understand how social and economic needs have changed and influenced nature.
- To contribute to the satisfaction of the needs of visitors.
- To stimulate visitors' interest in an object or place and to encourage them to revisit and discover new features by their own initiative.
- To protect and preserve the resource and contribute to its sustainability in time and space.
- To improve the quality of life of local population.



Information, as such, is not interpretation.

All these aims are present in every interpretive initiative, but some prevail over the rest.

In addition to this, every interpretive process must pursue the following **specific objectives**:

- **Educational** objectives: what do we want visitors to **know**?
- **Emotional** objectives: what do we want visitors to **feel**?
- **Behavioural** objectives: what do we want visitors to **do**?





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In order for interpretation to be effective it must take place on the spot, that is, in front of the element being interpreted.

The visitors taking part in the interpretive act have gone to the rural setting in their leisure time. As it is a recreational activity, the level of attention of visitors will not always be high. However, the relaxed atmosphere will enable the audience to establish emotional connections with the place learn things about it and understand it to a greater extent (which goes beyond mere learning).

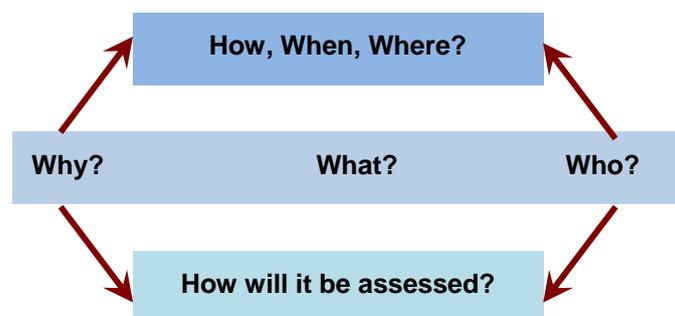


The interpretive act intends to motivate, attract, "provoke" and amuse visitors, but it also contributes to sustainable development.

1.1.5. Planning interpretation: The interpretation Programme.

During the planning process, we must answer the following questions:

- Why and what for? (Objectives)
- Where and what? (Analysis of the resource)
- Who? (Analysis of the target audience)
- How, when and where? (Interpretive media and programmes)
- How and when will it be assessed? (Setting up of indicators and evaluation procedures)



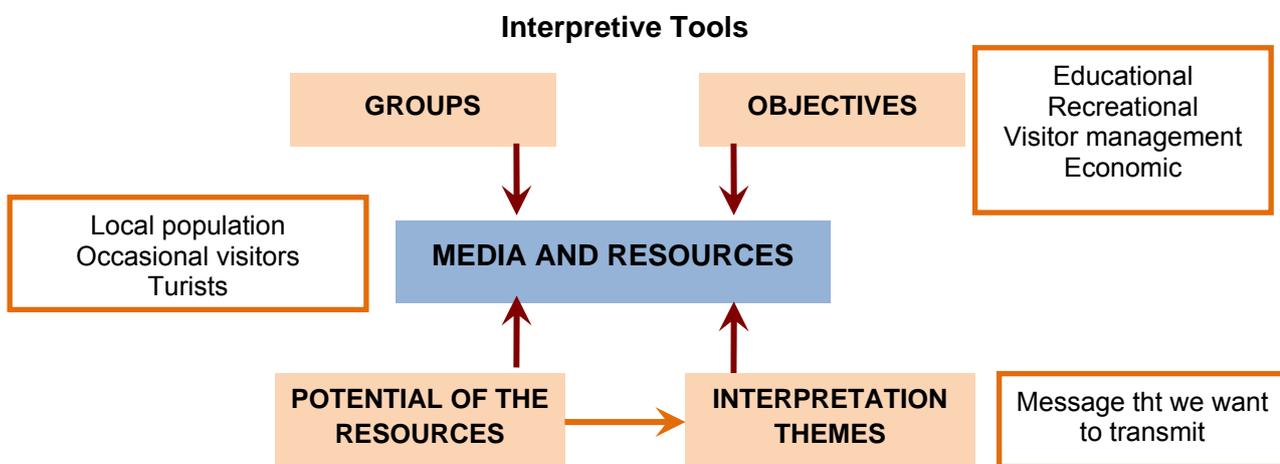


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Interpretive planning is the key for all rural interpretation programmes and for the design of effective and attractive activities. All interpretive activities should be the result of a previous interpretation plan.

During planning, the programmes, services, media and staff needed in order to transmit the message to the visitors are analysed. This process is based on the detection of those characteristic elements that define the area and the heritage that will be subject to interpretation, in order to choose the media that best illustrate the interpretive message we want to transmit.

The Interpretation Plan is the result of this process. This Plan will provide guidelines to those involved in the interpretive initiative.



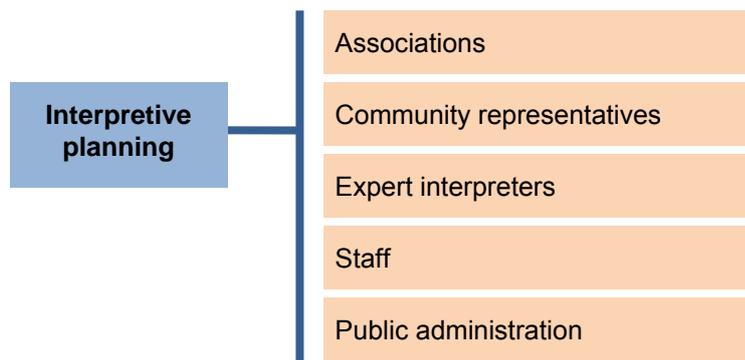


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Historical elements are very attractive, both due to their physical appearance and their historical implications.

Interpretive planning involves working with different groups of people:



In general terms, and getting into more detail, interpretive planning consists of several stages based on the following ideas:

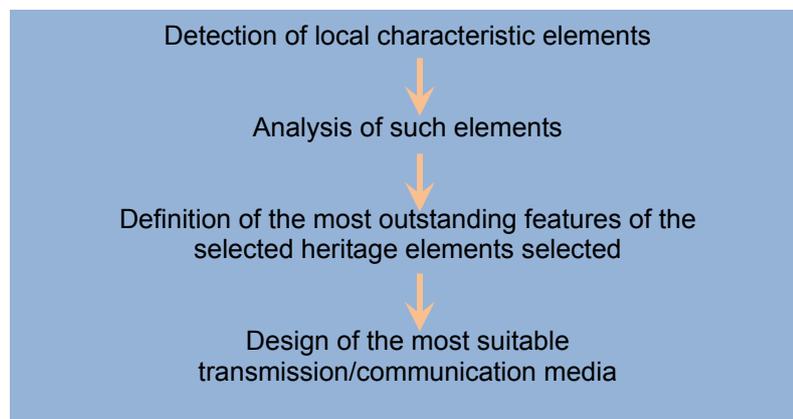
1. To gather and analyse information on the place that is going to be interpreted.
2. To analyse and define who will be the target audience of the interpretive actions.
3. To choose and develop the interpretive media and communication strategies that are most suitable in order to transmit the message to the audience.





The stages of interpretive planning are as follows:

1. Previous situation.
2. Planning aims.
3. Gathering of information.
4. Analysis.
5. Synthesis.
6. The Interpretive Plan.
7. Implementation.
8. Assessment and follow-up.





1. PREVIOUS SITUATION.

The previous situation is the starting point. At this point we study the place that will be subject to the interpretation action:

- We must know the size of the territory;
- we must study the area, its problems, its values and interests;
- the aim the area is devoted to;
- main fauna and flora, historic interest, cultural and ethnographic sites;
- the different accesses to the place, the times of the year when the environment is most sensitive, etc.

2. PLANNING OBJECTIVES.

Any interpretation programme should include the aims and objectives. Such objectives can be classified into seven categories:

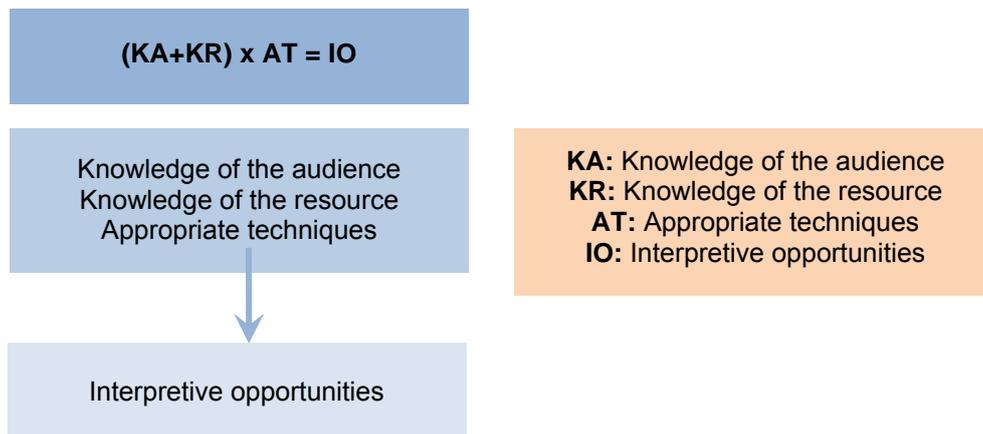
1. Educational.
2. Leisure - entertainment.
3. Tourism management.
4. Rural development.
5. Marketing and promotion.
6. Inclusion of local population
7. Heritage preservation - environmental conservation.





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The following formula sums up the aims of interpretation, and may be applied to any interpretive activity:



Knowledge of the resource
Why is it so important? The interpreter must be aware of the meanings that are inherent to the place, but also of its fragility. The interpreter will try to influence the attitude of the audience as regards these and other aspects.
Knowledge of the audience
There are many interpretation media available. Choosing one or other depends on the characteristics of the visitors. The interpreter should make sure that visitors have a positive experience, fulfil their expectances, and take something valuable with them.
Knowledge of the appropriate techniques
The decision must be the result of the analysis of the themes connected to the resource and the characteristics of the audience. The interpreter must evaluate the effectiveness of his or her techniques frequently. If objectives are not achieved, the interpreter has to change or update the techniques.
Interpretive opportunities
The different techniques used by the interpreter will have different effects on visitors, both in the short and the long term. The reaction of visitors cannot always be seen immediately.





3. GATHERING OF INFORMATION.

In this stage information on the resource is gathered, although this process goes on during all stages.

Only useful information should be taken into consideration, there is no need for an exhaustive inventory of the resources of the territory. It is a selective information collection. In order to do this, we must resort to existing sources of information, studies and original data. Such data will constitute the basis of the interpretive initiative.

We will need information on:

1. The value of the resource.
2. Potential and real target users.



The context of the element being interpreted is also important, as it usually enhances it.





4. ANALYSIS.

In order to define the interpretative potential of a group of elements or single heritage element, we should evaluate the actual suitability of the resource and its context to be visited, understood and used.



Natural resources must be analysed in order to maximise the outputs of interpretation.

Taking the data we have collected as a base, we will analyse the following aspects:

- The resource (the place and its value).
- The target audience of the interpretive act.
- The tentative aims of interpretation.
- Contents (future messages).
- The interpretation / communication media.

4.1. Analysis of the resource.

We will decide which places have the most interpretive opportunities.

Several criteria are used in order to assess the interpretive potential of a given resource:

- access,
- singularity,
- attractiveness,
- visibility and permanence of interpretive features,
- resistance to the impact of visitors,
- safety of visitors etc.

By analysing the features with interpretative potential, we may come up with further ideas, concepts, meanings and histories that will help us in the interpretation.



Cultural heritage is a source of income for rural communities.





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The following chart describes the criteria usually used for the assessment of the interpretive potential of a given resource:

Singularity	Singularity of the element that is going to be interpreted as compared with the context where it is located. The more singular the element is, the bigger the interpretive potential.
Attractiveness	Attractiveness deals with the capacity of the feature to attract the curiosity of visitors.
Resistance to impact	Fragility of the interpretive element. Capability of the resource to resist the impact of visitors.
Accessibility	Accessibility of the place for different types of visitors.
Seasonality	Time during which the resource is accessible (or restrictions imposed in order to preserve the element at different times of the year).
Present affluence of visitors	We must assess whether the element (or any nearby interpretive element) is already well known and has a certain amount of visitors.
Availability of information	We must assess the quality of the information available on the interpretive element. Without information, interpretation is not feasible.
Level of difficulty of explanation	Level of difficulty of a schematic explanation of the interpretive element and its meaning.
Pertinence of contents	Coherence of the interpretive element with the rest of contents.
Safety	The safety standards of the element and the surrounding area.
Level of difficulty of setting up	Adaptation capacity to the interpretive activity (seats, entrances, roads, drinking water, etc.).

4.2. Analysis of the target audience of interpretation.

We must also take into consideration several aspects concerning real and potential target users.

The target audience are the types of visitors that may come to the place if interpretive services were made available.

The following aspects that must be taken into consideration:

- The visiting patterns of the place (seasons, schedules, space usage).
- The duration of the visit.
- The size, structure and type of visitor groups.





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- The possibility of adapting the interpretive activity to groups with special needs.
- The social and economic characteristics of visitors.
- The origin of visitors.
- The different accesses to the site being interpreted, etc.

4.3. The aims of interpretation.

Apart from setting up the planning objectives, we must consider the aims that will define WHAT is the place going to be interpreted FOR, that is, the frame of reference for the interpretive initiative.

The aims of interpretation will lay the foundations for the actions, strategies and messages that are going to be delivered.

4.4. Selection of contents.

Once we have analysed the audience and the place, we must decide on which contents are we going to focus on, bearing in mind the aims of interpretation.

4.5. Interpretive media and facilities.

Another important aspect is finding the way to help visitors come into contact with the interpretive message.

The interpretive media are the channels that the interpreter uses in order to illustrate an idea to visitors.

These mechanisms, sources, tools or work methods can be classified into:

- **personal and non personal:** according to the type of interaction existing between the interpreter and the audience.
- **media which are/are not staff assisted:** according to this classification, the services that are not managed by staff are those that use objects and other instruments in order to transmit the interpretive message.





We will now describe the **Classification of Interpretive media** according to Stewart (1981):

1. NON PERSONAL MEDIA

1.a. SIGNS AND SIGNALS

Advantages	Disadvantages
<ul style="list-style-type: none"> - Clear and synthetic information - Easy to build and not expensive - Low maintenance costs 	<ul style="list-style-type: none"> - They are static - They do not provide details - They are subject to vandalism - Possible negative visual impact



Signs and posters are the most common non-personal media.

1.b. PUBLICATIONS

Advantages	Disadvantages
<ul style="list-style-type: none"> - Low costs - They can be taken as souvenirs - They can be read any time - They can be used by several visitors at the same time - They provide detailed information 	<ul style="list-style-type: none"> - No direct contact with staff - They do not answer specific questions - They may be discarded as litter - They cannot be updated regularly





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1.c. MASS COMMUNICATION MEDIA

Advantages	Disadvantages
<ul style="list-style-type: none"> - They provide different types of information to a wide range of visitors - They encourage people to visit the place - They can be used to advertise special activities 	<ul style="list-style-type: none"> - Production is expensive - They are usually associated to "marketing strategies"

1.d. SELF-GUIDED TRACKS

Advantages	Disadvantages
<ul style="list-style-type: none"> - Visitors can walk at their own pace. - They help managing the use of space - They involve the participation of visitors - They stimulate the use of senses 	<ul style="list-style-type: none"> - They are impersonal, they do not answer questions - They are difficult to maintain and may be subject to vandalism

1.e. AUTOMATIC AUDIO-VISUAL MECHANISMS

Advantages	Disadvantages
<ul style="list-style-type: none"> - Quality information - They create a special atmosphere - They provide complementary information - They encourage people to visit the place 	<ul style="list-style-type: none"> - They are expensive - They require electric power - They are impersonal, they do not solve doubts - They need permanent control and maintenance

1.f. EXHIBITIONS

Advantages	Disadvantages
<ul style="list-style-type: none"> - They are real objects - Visitors can go at their own pace - They can be moved form one place to another - They have low maintenance costs 	<ul style="list-style-type: none"> - They are static - They do not tell the complete story - They do not solve specific doubts - They normally require "do not touch" signs

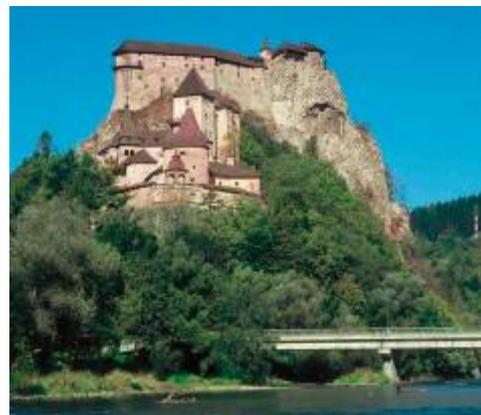




2. STAFF-ASSISTED MEDIA

2.a. GUIDED TRACKS OR ITINERARIES

Advantages	Disadvantages
<ul style="list-style-type: none"> - Personal contact with the interpreter - Contact with the resource - They make using senses possible - Questions can be answered - There is direct control over the usage of the resource 	<ul style="list-style-type: none"> - Outcomes depend on the ability of the guide - Visitors cannot walk at their own pace - The number of people is restricted to less than 20



In guided tracks, one can find ruins with historical value.

2.b. TOURS IN MOTORIZED VEHICLES

Advantages	Disadvantages
<ul style="list-style-type: none"> - They allow for larger itineraries - Collective transport allows for the participation of a larger number of people - Allows direct control over the usage of the area 	<ul style="list-style-type: none"> - If they are individual, someone must be able to drive them - They do not adapt to groups of all sizes - In some cases they can pollute the environment - They require special safety measures

2.c. TOURS IN NON-MOTORIZED VEHICLES

Advantages	Disadvantages
<ul style="list-style-type: none"> - They require certain skills - They encourage the use of the senses - Contact with the interpreter - They allow direct control over the usage of the area 	<ul style="list-style-type: none"> - Constraints in the time and length of the itinerary - They do not adapt to any type of group - They depend on weather conditions - They require special safety measures - Animals require special maintenance





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2.d. STAFF-ASSISTED AUDIO VISUAL MECHANISMS

Advantages	Disadvantages
<ul style="list-style-type: none"> - Many people can participate at the same time - They encourage the use of the senses - They make many different activities possible - They do not depend on weather conditions 	<ul style="list-style-type: none"> - They require appropriate facilities - They require special safety measures - They require maintenance for the material used to be in good condition

2.e. SPECIALISED STAFF

Demonstrations – Development of activities – Conferences

Advantages	Disadvantages
<ul style="list-style-type: none"> - They allow more personalised attention - They allow for more specific activities - They allow to make the most of the resource being interpreted 	<ul style="list-style-type: none"> - They require specialised staff

2.f. ANIMATION

Passive – Active

Advantages	Disadvantages
<ul style="list-style-type: none"> - Users can get some new skills - It allows an active usage of the context - There is more contact with the interpreter - It is more inclusive 	<ul style="list-style-type: none"> - It requires specialised staff - In some cases it may require special facilities

2.g. CASUAL SERVICES

Advantages	Disadvantages
<ul style="list-style-type: none"> - They adapt to some specific situations - Suitable for large groups of people 	<ul style="list-style-type: none"> - They require staff with some specific qualifications - In some cases they require specific facilities





5. SYNTHESIS.

Once we have analysed all these aspects, we must take decisions.

All feasible possibilities must be considered, taking into account methodological, economic and information aspects.

At this point, all crucial elements of the Interpretive Plan are decided upon.

6. THE INTERPRETATION PLAN.

The Interpretation Plan is the reference frame for the implementation of interpretive services. It contains flexible and well-structured guidelines. It must not be understood as a static document; it is subject to continuous revision and updating.

The following data are included in the Contents of an Interpretive Plan (by the AIP, La Asociación para la interpretación del patrimonio, The Spanish association for the Interpretation of Heritage):

- Technical equipment, collaborators.
- Introduction (Background, Context).
- The Interpretive Resource.
- Target users of the interpretive initiative.
- Aims of Interpretation.
- The message.
- The Interpretive Services.
- Follow-up and Assessment.
- Recommendations for the implementation
- References and annexes.

7. IMPLEMENTATION.

The interpretive services will be provided taking into account the Interpretive Plan.

8. ASSESSMENT AND FOLLOW-UP.

Visitor's assessment of the interpretive message is necessary in order to know if it was successful.





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We must remember that the main aim of interpretation is to transmit or reveal a meaning, and therefore we must evaluate “what do visitors remember after participating in an interpretation programme”.

We will now provide two examples of evaluation forms: one is meant for cultural heritage and the other was devised for natural heritage. These forms have been extracted from the Nature Interpreter Guide created in the scope of the project INNATURE.



There must be an interpretive plan in order to increase the value of the elements being interpreted.





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EVALUATION FORM				
Cultural heritage				
Resource				
Architectural heritage				
Artistic heritage				
Ethnographic heritage				
Complementary heritage				
Identification				
Name / designation				
Style / period				
Place / location				
Level of protection / status				
Nature				
Use	Public	Private		
Conservation				
Conservation conditions	Good	Reasonable	Bad	Ruin
Threats				
Other				
Access				
Types of accesses	Highway	A road	B road	Pedestrian
Public transport	Yes	No		
Visits				
Time of the year recommended	Yes	No		
Visit rules	Yes	No		
Free entrance	Yes	No		
Paid entrance	Yes	No	Which ones?	
Infrastructures	Yes	No		
Picture and location in the map	Yes	No	Which ones?	





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EVALUATION FORM				
Natural heritage				
Resource				
Natural settings / landscape				
Rural settings / landscape				
Protected tree				
Track				
Identification				
Name / designation				
Level of protection / status				
Place / location				
Administrative status				
Short description	Public	Private		
Conservation				
Natural interest	Flora	Fauna	Rivers	Geology
Rural interest	Landscape	Agriculture / cattle	Villages	Legends
Threats for its conservation				
Other				
Access				
Types of accesses	Highway	A road	B road	Pedestrian
Public transport	Yes	No		
Visits				
Time of the year recommended	Winter	Spring	Summer	Autumn
Visit rules	Yes	No		
Free entrance	Yes	No		
Paid entrance	Yes	No		
Infrastructures	Yes	No	Which ones?	
Picture and location in the map	Yes	No		
Nearby sites of tourist interest	Yes	No	Which ones?	





1.2. Evolution in the use of the resource.

1.2.1. Origin and development of the interpretation of the rural realm.

Heritage interpretation has always existed under different forms and in different places worldwide. In ancient times, elderly people, travellers and socially relevant people were the ones that carried out this task, which they did orally.

Nowadays, interpretation is a specific field in heritage management.

At present interpretation of cultural and natural resources uses more complex instruments, while retaining the primitive function of communicating something to someone in order to increase the comprehension.

The economic welfare of industrial societies made possible a generalised use of automobiles and an improvement of communications, which have brought about mass tourism. One of the consequences of these changes is that leisure areas are considered a common asset.

The undeniable appeal of rural areas is complemented by a growing interest on the so-called “new tourism”: a type of tourism that is more interested in culture, nature and sport and which appreciates (or at least wishes to be able to appreciate) the complexity and diversity beyond apparently simple things.

Tourists feel that the natural sites they “consume” should meet certain quality standards. These processes have made people think that rural landscapes are a common asset.

In the urban societies of industrialised countries, there is a cultural conception of nature as a common asset. This cultural



Nature as a "common asset" is a modern concept common to all urban and industrialised western societies. Tourists feel that the natural sites they "consume" should meet certain quality standards.





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model is a modern tendency present in societies where mass tourism exists. These new leisure activities are associated with “nature icons”. These natural sites are an important economic activity and must be taken into consideration when devising interpretive activities in rural areas.

In this new context, Nature Interpreters are the answer to the new needs of the mass tourism market.

1.2.2. European approach to land use planning and rural development.

Rural areas cover 90% of the enlarged EU’s territory and are home to approximately half of its population.

Agriculture and silviculture play a key role in the management of natural resources in rural areas, and can contribute effectively to their development. Nevertheless, the primary sector is in decline.

This fact makes the diversification of the economy necessary in order to preserve the structure of rural societies.

In order to achieve this, it is important to participate and become beneficiaries of regional, national and European schemes and initiatives for rural development.

The European Union has devised several rural development schemes.

ESDP: European Spatial Development Perspective.

Its objective is to define at Union level policy objectives and general principles of spatial development to ensure the sustainable balanced development of the European territory, according to the main objectives of Community policies, namely: the economic and social cohesion and economic competitiveness based on knowledge and observing the principles of sustainable development and of the conservation of the diversity of cultural and natural resources.

The ESDP has selected four major areas, which interact and exert considerable pressure on the spatial development of the European Union:

- **The development of urban areas:**





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Almost 80% of the population of the Union now lives in towns. Urban centres are being restructured or emerging and networks of towns are forming and cooperating across frontiers. A new relationship between the town and the country is required to meet the challenges faced by our territories.

- **The development of rural areas:**

The rural areas of the European Union are often threatened by marginalisation, mainly because of the possible concatenation of constraints such as distance from the main towns, harsh climates, thinly spread population and inadequate infrastructure or a lack of economic diversification because of the preponderance of agriculture.

The environment offers both problems and assets, so demonstrating both the need to protect natural resources and ecosystems and the opportunities offered by various ways of exploiting economic potential (green and cultural tourism, agricultural diversification).

- **Transport:**

The development of the single market implies a constant growth in road and air traffic, which generates pressure on the environment.

The European Union is among the main producers of carbon dioxide emissions worldwide. Moreover, the uneven distribution of infrastructure across its territory may result in substantial imbalances in terms of economic investment and call into question the principles of territorial cohesion.

- **The natural and cultural heritage:**

The diversity of the natural and cultural is a valuable asset in Europe.

Some processes of economic and social modernisation are threatening heritage.

The fauna, flora, water, soil and traditional landscapes have to cope with the imbalances generated by an over-exploited environment. With an eye to sustainable development, Europe's spatial planning policy seeks to reduce such practices and encourage the rational use of resources.





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The natural settings of cultural heritage elements enhance their value.

At EU Level, Rural Development Policies are based on the following axes:

- **Axis 1: Improving competitiveness of the agriculture and forestry sector.**

Which includes:

- Measures aimed at promoting knowledge and improving human potential through vocational training, help to the setting up of young farmers, early retirement schemes, farm/ forestry management and advisory services.
- Measures aimed at restructuring physical potential and promoting innovation through measures as farm modernisation, improvement of the economic value of forests, and adding value to agricultural and forestry products, as well as improving infrastructures and restoring the potential of resources damaged by natural disasters.
- Measures aimed at improving the quality of agricultural production and agricultural products. This will be done through initiatives including helping farmers to meet with the demanding EU standards, support food quality schemes, promotion and support of producer groups.





- **Axis 2: Improving the environment and the countryside.**

Agri-environmental measures are compulsory: Farmers have to comply with 18 standards in the fields of environmental protection, public health, animal and plant health, animal welfare, other compromise statutory requirements for farmers, as well as to keep land in good agricultural and environmental conditions. In addition to this, measures concerning the use of fertilisers and pesticides are included.

Support under this Section concerns the following measures:

- Measures targeting the sustainable use of agricultural land through, inter alia, natural handicap payments to farmers, Natura 2000 payments and those linked to Directive 2000/60/EC and support of non-productive investments.
- Measures targeting the sustainable use of forestry land by means of afforestation measures, agro-forestry systems on agricultural land, Natura 2000 payments and non-productive investment support.

- **Axis 3: The quality of life in rural areas and diversification of the rural economy.**

The measures in this section are addressed to farmers, their families and the wider rural population.

These measures include:

- Measures to diversify the rural economy, comprising the diversification into non-agricultural activities and encouragement of tourism.
- Measures to improve the quality of life in rural areas, comprising village renewal and development and conservation and upgrading of the rural heritage.
- Training and information measure for economic actors operating in the areas covered by axis 3.





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- **Leader approach.**

This axis mainstreams the Leader approach, which has been experimented successfully since 1989 and has contributed to innovation, employment and growth in rural areas by promoting local development strategies defined through a bottom up approach and public-private partnerships.

The Leader approach, since it is an innovative method for rural development, may be applied in a wider scale to the three other axes, if Member States wish to do so.

1.2.3. Global Code of Ethics for Tourism.

This Code was adopted in 2001 by the United Nations. Its fifth article, Tourism, a beneficial activity for host countries and communities, states that:

1. Local populations should be associated with tourism activities and share equitable in the economic, social and cultural benefits they generate, and particularly in the creation of direct and indirect jobs resulting from them.
2. Tourism policies should be applied in such a way as to help to raise the standard of living of the populations of the regions visited and meet their needs. The planning and architectural approach to and operation of tourism resorts and accommodation should aim to integrate them in the local economic and social fabric. Where skills are equal, priority should be given to local manpower.



The interpretation of historical resources should be compatible with the conservation of the environment.





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3. Special attention should be paid to the specific problems of coastal areas and island territories and to vulnerable rural or mountain regions, for which tourism often represents a rare opportunity for development in the face of the decline of traditional economic activities.
4. Tourism professionals, particularly investors, governed by the regulations laid down by the public authorities, should carry out studies of the impact of their development projects on the environment and natural surroundings. They should also deliver, with the greatest transparency and objectivity, information on their future programmes and their foreseeable repercussions and foster dialogue on their contents with the populations concerned.





2. IMPORTANCE AND IMPACT OF THE RESOURCE.

2.1. Current situation and importance of the resource.

2.1.1. Situation of Nature Interpretation in rural areas.

Due to the process of “industrialisation” of agriculture, this activity cannot provide jobs for all the rural population anymore; therefore, there is a need for new alternatives that contribute to the diversification of the economy of rural areas.

There are new business opportunities and rural development initiatives that must at least cope with the two main aspects below:

- the low quality of life in rural areas (mainly caused by a defective services sector).
- the new work opportunities derived from the production, processing and marketing of natural products.

In this context, Nature Interpreters represent a new employment opportunity addressing the needs of the mass tourism market, especially in rural areas.

Apart from its employment creation potential, interpretation is also liable to revitalise rural areas, provided it is carried out jointly with the local population.

Interpretation initiatives must be carried out jointly with those that live in the territory, from the very beginning to the stages of planning and implementation.

The interpretive activity is based on communication, and such communication is based on a thorough knowledge of the area or site that is being interpreted. Therefore, it is important to have a good understanding of the relationship that exists between people and their local context, history, culture, traditions, legends etc. It is also crucial to involve local population in the process.

The involvement of local inhabitants in the re-valorisation of Heritage will be the key element in the awakening of social awareness of the importance of the preservation of Heritage for the sake of local population.





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The strengthening of the link between heritage and society requires innovation and a management effort at all levels.

That is to say, we have to take into consideration the singularities of each community and involve the population in the valorisation and development of heritage:

- Knowledge and recognition of the importance of the natural and cultural heritage in the territory.
- A better insight into social demands and into the behavioural and cultural attitude towards heritage.
- The elaboration, based on the knowledge above mentioned, of heritage indicators (i.e. planning tools and policy design tools) and global strategies aimed at providing an inclusive and democratic access to heritage.





2.2. Results and impact of the resource.

PILOT EXPERIENCES

The transnational cooperation developed in the scope of the LEONARDO DA VINCI project “INNATURE”, has had a remarkable impact in the different fields of action addressed by the participating countries:

- a) The impact of the cooperation between the participating countries has contributed to the creation of strong and durable links that will enable them to collaborate in further initiatives and carry out joint activities, technological exchanges, technical advise, promotion of products,... etc.
- b) The involvement of social partners, such as SMEs, social action groups, local entities, associations, trade unions and beneficiaries that took part in the project and in activities connected to it, as awareness raising campaigns and dissemination of results.
- c) After the project finished, the partnership has devised new work tools and has worked together in several joint experiences, activities and demonstration pilot centres.

The greatest impact of these activities is seen among professionals and authorities of the rural context. This was possible thanks to the dissemination of results.

The publishing of “Nature Interpretation” has encouraged specific actions to improve the sector in some regions.

- d) The courses on Nature Interpretation have had a very positive impact in the areas where they were organised.
- e) The main aim of the seminars organised was dissemination. The main target groups were young people, unemployed people, women and the general public.

These activities have promoted the potential of Interpretation as a new source of development, as well as the natural resources connected to the interpretive action and their sustainable management.





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Awareness raising activities have been more successful than expected, and have encouraged some actions liable to provide new jobs and generate self-employment.

It has also motivated some employment initiatives based on the interpretation of rural heritage in rural areas where the project's courses had been organised.



The local population must appropriate their endogenous resources, that is, their natural, cultural and historical legacy. Therefore, it is not possible to carry out a sustainable exploitation of heritage without the involvement of local inhabitants, as they are the ones that really know such heritage in depth.

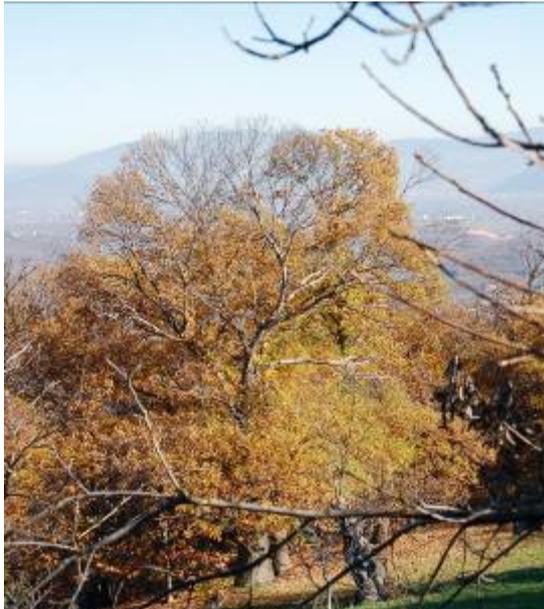
All these initiatives have a very positive influence and encourage the development of rural areas.





3. USE OF THE RESOURCE AS AN INSTRUMENT FOR RURAL DEVELOPMENT.

3.1. Possibilities and conditions needed for development.



The natural values involved in tourist activities must be preserved and sustainably managed.

Nowadays, society considers the environment as a “common asset”, as it is beneficial for the community, and therefore must be preserved. Natural resources must be protected, as well as the right of future generations to enjoy it as present generations do. In order to do so, sustainable development must be encouraged.

Apart from considering the environment as a common asset of present and future generations, we must take into consideration the benefits of nature

conservation (in a geoclimatic, scientific and economic sense) and also the rights of living beings as such, regardless their usefulness for human beings.

The fact that a given place is considered a common asset implies, on the one hand, that it must be accessible to everyone in the community and, on the other, that such place must be protected to ensure it meets certain quality requirements. Sometimes these two principles are in conflict.

Whenever this happens, the managing entity must find a solution and determine the relative importance of economic and environmental criteria in each case.

Interpretation is an instrument for visitors to discover rural areas. Interpretation conveys some implicit values as respect, that may help visitors to become aware of





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the importance of individual actions for heritage protection and the importance that heritage has in rural areas.

Interpretation must conciliate the adaptation of rural areas to tourist activities with their development. Thus, the increase in the number of tourists is compatible with conservation and with the respect to the lifestyle of local inhabitants. The collaboration and advice of local population must be encouraged constantly.



The key element in sustainable development schemes is the knowledge of the local, and the prints that it leaves throughout history.

Heritage interpretation and sustainable development are interrelated, especially in the following aspects:

ECONOMIC ASPECT

- **Valorisation of products in producer areas.**

In order to encourage the recognition of local products, there must be a collective effort to bring back to life old crafts, as well as traditional professions connected to them.

These old trades, based on traditional methods, started disappearing years ago, and are nowadays associated with old fashioned and archaic societies. Thus, not only have these trades disappeared due to the fact that they are little profitable (and also because normally they were hard to accomplish), but also because they are associated to “old” lifestyles.





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In order to valorise them, they must be adapted and improved, by means of new technologies. This would contribute to the survival of these traditions, but also to better work conditions thanks to technological development.

- **Improvement of the industrial and social fabric.**

The increase of industrial activity and the subsequent creation of jobs can be connected to the services and other economic activities linked to Heritage.

The sustainable exploitation of heritage provides both direct and indirect jobs, and it also reduces the seasonality in the labour market. Moreover, the work opportunities it creates go beyond the short term, and are liable to generate stable positions in the long run.

These new opportunities are especially suitable for young population with skills on management, recovery and dissemination of heritage and tourism.

- **Support of local economy.**

The strategies intended to achieve local development include an attractive presentation and promotion of heritage, with a varied range of activities connected with culture, sports, leisure, ecology etc.

It is also very important to offer distinctive products, that cannot be found in other places or regions.

SOCIAL ASPECT

- **Valorisation of the endogenous.**

The valorisation of the local resources, opportunities and traditions must be carried out both by visitors and local people.

On the one hand, the local population will experience the benefits of recovering (or enforcing) their community identity and values. On the other hand, visitors will be able to experience collective memory, and become aware of other lifestyles, respecting them and learning from them.





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Interpretation has a very important educative dimension for young people, as they will have the opportunity of learning humanistic values and other social and cultural teachings.

Rural development and heritage interpretation allow for better relationships between the visitors and the locals, thus somehow narrowing the gap between both worlds (urban and rural realities). This can only be achieved through active participation of both parts, enhanced and promoted through the interpretive initiatives.

HUMAN ASPECT

One of the most important benefits of sustainable development is the achievement of respect towards rural communities, too often associated to obsolete and old-fashioned lifestyles.

Along with this goes the raise of awareness (from both locals and visitors) on the need to preserve natural and rural environments while improving and developing them.

- **Promotion of rural skills and knowledge and professionalisation.**
- The importance of the revalorisation of rural traditional occupations brings about new opportunities for individual and community development, both professionally and as regards self-esteem and self-image.

ENVIRONMENTAL ASPECT

When alternative sources of development are sought (i.e. sustainable development based on heritage and endogenous resources) natural resources can be used in a moderate, sustainable way, as they no longer represent the sole source of income. This allows for sustainable practices, less aggressive with the environment and more coherent with biodiversity and nature conservation, without implying fewer benefits for the area.





PHYSICAL ASPECTS

Heritage interpretation implies setting up and/or improvement of several basic infrastructures: roads, railways, and conditioning of the access to the different elements of heritage. There is also the need for accommodation facilities, as hotels, hostels, restaurants, etc.



The importance of natural endogenous resources needs to be recognised.

Due to the increase in human activity, this sort of initiative implies the setting up of waste processing measures, which will have a positive effect not only for newcomers and tourists but also for the community.

Finally, these initiatives usually entail reconstructions and new conservation projects in the area.

A rural developing model must seek the definition and reaffirmation of heritage, bearing in mind cultural diversity and the complexity of history and current social activities.

Thus, territorial diversity is a key element in local identity and represents its distinctive features: language, crafts, gastronomy, industry, and agricultural, silvicultural and farming practices in the agro-ecosystem, etc.

The respect and tolerance of different lifestyles should be promoted in order to contribute to the social, economic, and environmental development of the place being interpreted.

The conservation of endogenous elements and “local diversity” comes up as a great advantage as compared with areas where the modernisation and homogenisation processes have taken place to a much greater extent.





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The promotion of the heritage of a given territory must take several elements into consideration:

- Take local identity as a base.
- Ask local population to provide some information on heritage.
- Consider the resource and its context.
- Integrate natural and cultural heritage in landscape.
- Heritage protection and conservation.
- Include heritage in development plans.
- Raise awareness on the inherent values that cultural heritage has in the rural areas.
- Influence public policies.
- Prepare for the growing demand of cultural tourism and reinforce the identity of rural areas.



The work of interpreters must show visitors a territory with its own identity, its own people, with unique characteristics and lifestyles that must be respected and recognised.

Interpretation is not only a communication strategy used in a specific context, but also a management tool.

Interpretation must be understood as a management tool based on an effective interpretive programme:

1. It contributes to the compliance of regulations and reduces maintenance costs.
2. Visitors may be concentrated in the most appropriate areas.
3. The entity providing interpretation services may get a greater public support.





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Interpretation, as a management tool, is beneficial in several ways. These benefits can be summed up⁵ as follows:

- It improves the visitor's understanding of the places they are visiting
- It provides visitors more enjoyment opportunities.
- It reduces the number of dissatisfied visitors.
- It avoids the need to remind people of rules and regulations.
- It reduces non-compliance of rules on the part of campers, hikers and visitors in general.
- It reduces the risk of visitors interfering with each other, and therefore it reduces the risks of conflicts among them.
- It reduces the intrusion of administrations in the activities, and visitors feel freer.
- It reduces vandalism.
- It reduces maintenance and operational costs.
- It helps managing other aspects within the protected area (for instance: security, restoration, maintenance).
- It helps explaining people the role and activities of certain institutions in a way that is understood by everyone.
- It improves the image of institutions as it encourages positive public relations.
- The audience gets information, and a well-informed society can take sound decisions on the management of their heritage.
- They help people to understand some unpopular measures (controlled hunting, management of fauna, fencing, etc.)
- It provides information on the needs of a given territory, which encourages public support.
- It can help concentrating people in less vulnerable areas that can assume the impact of human activity better than others.
- It contributes to the promotion of areas where tourism has a great economic importance.



Territorial diversity must be detected, valued and exploited in a sustainable way.

⁵ Extracted from Morales, Jorge. 2001. Heritage Interpretation Practice Guide. Regional Cultural Ministry of the Regional Government of Andalucía and TRAGSA, Second Edition.





3.2. Employment creation potential of the resource.

Rural areas have some needs that can be covered by interpretation initiatives:

- There is a need for qualified professionals that can develop programmes and devise interpretive activities, in order to improve the effectiveness of the design and the suitability of interpretive programmes.
- Interpretation needs to be promoted as a useful and necessary instrument for an adequate management of natural, Cultural and Historical Heritage in rural areas.
- The access, promotion and stability of employment for the youth must be promoted by providing training schemes concerning this innovative profession, which is a new source of employment that encourages the active involvement of women in rural development.

Nature interpretation can have a very positive influence in local development. However, nature interpreters need strong technical skills and specific competences. Therefore, the adequate training programmes must be made available to them.



Several activities can be carried out in order to improve the economy of the territory where the resource is.





3.2.1. The New Sources of Employment and the Interpretation of the Rural Realm.

The interpretation of nature, history and culture implies the recognition of some elements of heritage that have a great importance for society, or at least for a portion of society. These elements enrich society and imply certain values, sometimes hidden or tacit.

Interpretation is the most powerful tool that can be used in order to make these values explicit and protect their meaning and essence, while improving working opportunities in rural areas. Thus, endogenous development is possible. The local people are enabled to become involved in development and earn a living without leaving the rural area.

The new information and communication technologies improve the visibility of cultural and natural sites and thus a much larger number of people can become interested in them. This means new development opportunities in areas that used to be somewhat outshined by the most popular natural and cultural resources and therefore unknown to many people.

PLACES WHERE NO ENVIRONMENTAL INTERPRETATION SHOULD BE CARRIED OUT:

The working space is inside areas of natural and cultural interest like regional and national parks, reserves, botanical gardens, etc.

The interpreter usually acts as external consultant (self employed) on behalf of Public Administrations, tourist agencies or associations that manage resources. He or she may belong to cooperatives or associations involved in the environmental sector.

- **NATURE LEARNING CENTRES**

These centres include several services for visitors, as lodging, learning facilities, workshops, etc. Normally they are intended for primary school students, but secondary school may also be included. The aim of these centres is to foster the relationship between children and nature.





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- **EDUCATIONAL FARMS**

These farms are connected with natural sites but are not necessarily located within natural resources. As learning centres do, they intend to create links between nature and education.

- **OTHER INITIATIVES**

There are other types of facilities, normally seasonal, as camps and work camps. These activities normally take more than 7 days and are not included in school activities.

- **VISITOR CENTRES**

These centres include all the facilities visitors need: car parks, first aid, toilets, information centres etc. Visitor centres, interpretation centres and eco-museums fall in this category.

In these centres visitors are welcomed and get information and a general interpretive explanation of the resource. This first contact with interpretation will stimulate their curiosity about the resource.

- **TRACKS**

Tracks are normally used in self-guided itineraries.

- **OBSERVATORIES AND VANTAGE POINTS** (birds, landscape, animals, etc.)

Observatories and vantage points do not have an intrinsic interpretive nature but can be complementary to the interpretive activities carried out if signposts and explanatory devices are implemented.

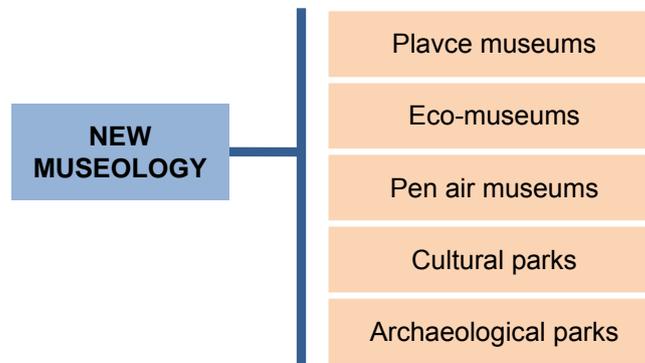
- **NEW MUSEUMS**

This relatively new conception is especially adequate for rural areas, as it combines the interpretation of cultural, ethnographic and historical elements with nature and landscape interpretation.





There are several types of museums. The most important ones are described below:



In a didactic sense, this new conception, which takes museums outdoors or combines both indoor and outdoor exhibitions, is very interesting.

3.2.2. Emerging professions: Training possibilities as regards the interpretation of the rural realm.

SPECIALIST IN THE INTERPRETATION OF THE RURAL REALM

Nature Interpreters help others to understand and value cultural and natural heritage. Interpreters do not simply lecture, they have a thorough understanding of their subject matter and share their interest and knowledge with others.

Interpreters must have good communication skills and must be able to provoke the audience with interpretation techniques.

In addition to this, interpreters must have some knowledge on the techniques and resources that they are showing to people, even if they at the same time encourage them to draw their own conclusions.

This is a hard task that requires the skills to choose the most suitable techniques for each resource and each group of visitors.





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The following list of attributes is desirable in interpretation professionals:

- Sensible performance of their duties
- Environmental awareness
- Analysis / Assessment
- Ability to detect the most suitable message in order to deliver it to the audience

Despite the fact that there are very good professionals in this field, the full professionalisation of the sector is being a hard task. Therefore, training itineraries are needed in order to promote the official recognition of this profile as a professional qualification.

Professional interpreters must take part in clerical tasks, in design and planning and in the programming and management of interpretive activities. The curricular design for the qualification of “interpreter of the rural realm” must include specific innovative aspects and has to integrate a wide variety of competences that will help them encourage tourism, regional development and heritage.

The importance of nature and rural realm interpreters in employment creation and in the promotion of nature and culture is undeniable. Therefore, specific training must be made available. Training should cover the several different areas that are connected with this professional profile.





RURAL TOURISM SPECIALIST ADVISER

Given the growing importance of rural tourism, there is a need for specialists in this field who are able to advise entrepreneurs wishing to enter the sector.

The general competences of these professionals would be:

- Encouraging people's interest on regional development connected with the setting up and management of small or medium-sized enterprises.
- Giving professional advice on the management of national and local resources.
- Giving professional advice on the creation and management of rural tourism projects.
- Having a thorough knowledge on rural tourism and on the area and the resources available.
- Awareness raising activities oriented to promote advisory services and foster the creation of local enterprises.
- Promotion of the relevant territories.
- Educational support activities.

There are other emerging professions that are connected to some extent to the interpretation of the rural realm, such as:

- Farmers.
- Rural tourism managers.
- Leisure managers.
- Craftsmen/craftswomen.





3.5.2.6 RENEWABLE ENERGIES

1. GENERAL DESCRIPTION.

1.1. Description of resource.

Renewable energies are the new sources of energy that will progressively substitute fossil energy sources, which are not renewable.

Fossil energy sources are increasingly expensive, and cause a serious environmental impact in the medium and long term.

Renewable energies are more environmentally friendly. This is important, given the gradual deterioration of the environment caused by the use of work techniques that are not sustainable as regards energy use and the protection of natural ecosystems where we live.

Renewable energies are not only less pollutant, they also allow for the sustainable management of resources and for employment creation.

Most renewable energy producing sources are located in places with environmental value, as rural areas. Moreover, these energies can be said to be a new source for employment that requires specific training and technical qualification, which are necessary in order to enter this emerging market.

Often, when we make reference to renewable energy sources, we think of wind power and solar energy, and forget the importance of agroenergy (renewable energy sources from processed agricultural and forest products and by-products).

However, data show that the development potential of agroenergies as biomass, biogas and biofuels is quite relevant.

Research as regards these clean and renewable energy sources addresses new and more efficient procedures that allow for the creation of specialised employment and improve the infrastructures used.

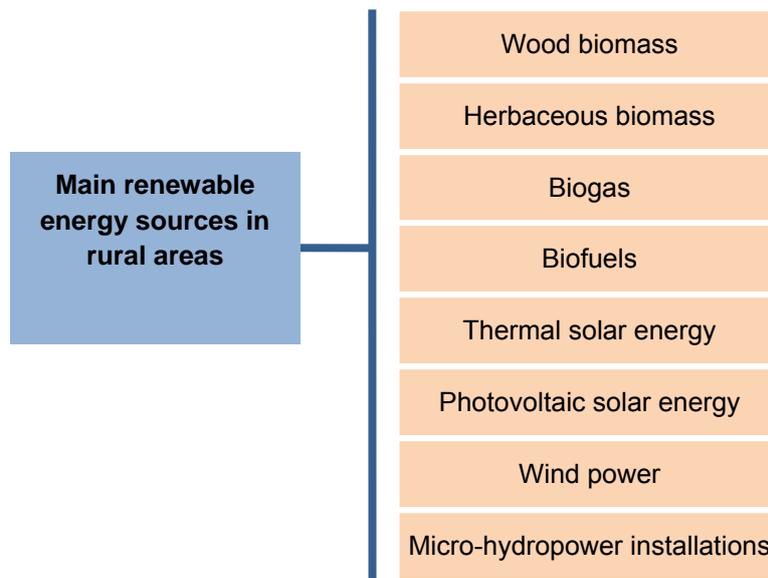




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Nowadays these energy sources are being developed, but in the future they will gain importance at all levels and will provide many jobs in rural areas, where renewable energy sources are warmly welcomed.

Their influence is very positive, as they are environmentally friendly and allow for the setting up of new enterprises.





1.1.1. Wood biomass. Wood energy.

The term biomass makes reference to any organic substance of plant or animal origin. The solar energy stored in biomass can be transformed into thermal energy, electricity or vegetable fuels. The chemical composition of biomass includes large amounts of carbons similar to those in natural fuels (coal, gas and petroleum) but they do not pollute, and are constantly renewed.

Biomass is considered as a renewable energy source when the net emissions of carbon in the cycle are 0 or less. That is, biomass is a renewable energy source when the carbon that is absorbed in photosynthesis during its production is equal or higher than the amount that is released to the atmosphere in the process of energy production.

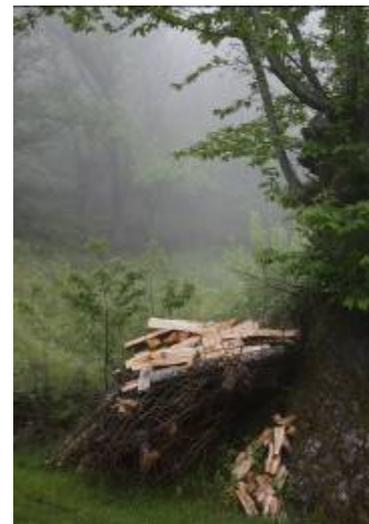
Photosynthesis generates 120,000 million tons of dry matter yearly, which amounts to 40,000 million tons of crude oil in energetic terms.

The term wood biomass makes reference to the fuel that is extracted from wood and to the energy sector that uses waste wood. It is the third source of energy worldwide, after petroleum and coal. In general terms, its energy quality is higher than that of herbaceous biomass due to its woody structure.

Nowadays bioenergy is obtained from the wood of fast growing trees. The expenses of cultivation are very small and the energy yields are very high.

Therefore, this resource is essential, especially taking into account that farming and cattle production are in decline. This new production may substitute these activities and generate employment.

Wood biomass may be an instrument to prevent population from leaving rural areas and level their quality of life with the standards considered decent. Woody biomass uses natural resources located in rural areas and fosters the sustainable use of lands that have been abandoned and may be devoted to the production of clean and renewable energy.



Wood biomass is obtained from wood.





1.1.2. Herbaceous biomass. Energy crops and traditional crop waste.

In order to produce herbaceous biomass we must use crops with large amounts of dry matter per surface unit. We must distinguish energy crops and waste crops that can be used as fuel in energy production.

The energy quality of herbaceous biomass changes depending on the species used. According to a study made in the late 90 in S. Anna School, Pisa, the species that are most suitable as energetic raw material are forage sorghum, reed, *miscanthus* and thistle (the latter is very common in Southern Europe).

YEARLY SPECIES	PLURIANNUAL SPECIES
Forage sorghum (<i>Sorghum bicolor</i> L., Moench)	Thistle (<i>Cynara cardunculus</i> L.)
Kenaf (<i>Hibiscus cannabiss</i> L.)	Miscanthus (<i>Miscanthus sinensis</i> Anderss.)
Some species of the genus Phalaris (<i>Phalaris</i> spp.)	Common reed (<i>Arundo donax</i> L.)
Lawson's cypress (<i>Kochia scoparia</i> . Schrad)	Perennial millet (<i>Panicum virgatum</i> L.)
Topinambour (<i>Helianthus tuberosus</i> L.)	

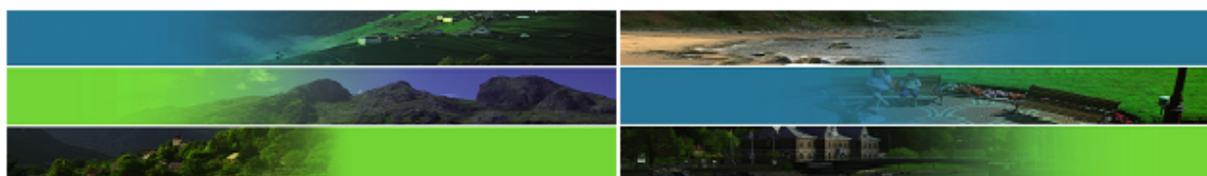
Most suitable species as herbaceous biomass crops.

The waste generated by commercial crops of herbaceous nature is another important source of biomass. The most common waste biomass for energy purposes is:

- Straw.
- Leaves and stalks.

	Biomass d.m. (t/ha)	Heating value (MJ/kg)	Energy contents (MJ/ha)	Ashes %
Yearly species				
<i>Helianthus tuberosus</i>	25,6	15,1	386,6	6,9
<i>Hibiscus cannabiss</i>	18,6	15,3	284,6	5,6
<i>Kochia scoparia</i>	26,7	14,7	392,5	6,8
<i>Sorghum bicolor</i>	28,2	16,4	462,5	5,6
Pluriannual species				
<i>Arundo donax</i>	36,4	16,7	607,9	5
<i>Cynara cardunculus</i>	14,8	14,1	208,7	13,9
<i>Miscanthus sinensis</i>	37,4	16,9	632,1	2,8
<i>Panicum maximum</i>	17,0	15,1	256,7	nd
<i>Panicum virgatum</i>	11,0	15,2	167,2	nd
Coal reference		27,4		

Production and energetic characteristics of some species (S. Piero a Grado, Pisa).





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Source: Angelini *et al.*, Pisa, 1999.

Type	Production (t/ha)	LHV (kcal/kg s.s.)
Straw	3	4100
Maize stalks	8	4100
Sunflower stalks	4	4300
Vine pruning cuttings	1,5	4100
Marc	-	4100
Tailings	-	3600

Production and energy characteristics of some agricultural waste material.
Source: ITALIA 2003.

There are two main reasons to use this waste material in energy production:

- It is much more abundant than forestry waste.
- This raw material is not expensive and can be reaped and used when necessary, unlike forest wood or short-rotation forest crops.

As regards herbaceous biomass, a suitable combustion technology needs to be developed, as the high contents of ashes damage the boilers available on the market.

However, studies carried out by the project Bioenergy Farm point out that herbaceous biomass is the most suitable for energy production.

Moreover, at this point, according to the Common Agrarian Policy (CAP) energy crops, including biomass, are as important as conventional agriculture, and they may be planted in lands within the European Scheme that aims to reduce the cultivated area meant for food production.

Sorghum contains high levels of dangerous elements. In order to avoid this problem, a wood pellet made of a 1:1 mixture of sorghum and black poplar has been used. This mixture allows for a substantial reduction of the negative parameters.



Forage sorghum (*Sorghum bicolor*)

- Yearly herbaceous species
- Yearly average production: 28,2 t d.m./ha
- Ash contents: 5,6%
- Silica content in ashes: 33,1%





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Forage sorghum.

Arundo donax has a relatively low caloric output but the rest of parameters are equally moderate, and are quite similar to the ones obtained with the sorghum/black poplar mixture, which makes it a suitable herbaceous biomass.



Common reed.

Common reed (*Arundo donax*)

- Rhizomatous yearly species
- Yearly average production: 37,4 t d.m./ha
- Ash contents: 5%
- Silica content in ashes: 44%

Cynara cardunculus, has a low caloric output and high levels of ashes, oxides and chlorides (the amounts of chlorides exceeds the limits established by the regulations of some EU countries).



Thistle.

Thistle (*Cynara cardunculus*)

- Pluriannual species
- Yearly average production: 11,4 t d.m./ha
- Ash contents: 13,9%
- Silica content in ashes: 15%

Miscanthus, has the lowest ash contents of all the crops considered, but has very high silicon oxide contents. The absolute amount of silicon in a Kilo of wood pellets is by far the highest of all energy crops, and may damage boilers and cause too high maintenance costs, depending on the technique used.



Miscanthus.

Miscanthus (*Miscanthus sinensis*)

- Rhizomatous pluriannual species
- Yearly average production: 28,2 t d.m./ha
- Ash contents: 2,8%
- Silica contents in ashes: 56%





1.1.3. Biogas.

The chemical composition of biogas is similar to that of natural gas. The difference is the relative proportion of methane gas.

Methane contents (CH_4) in natural gas represent the 95-97% of the volume.

The energy values of biogas depend on the relative proportion of methane (CH_4). In the case of biogas, the proportion of methane reaches the 50-70%. Therefore, the energy value of biogas as compared with natural gas is very low.

Apart from CH_4 , biogas contains nitrogen and sulphur if the raw material used is protein rich (for instance, if waste from slaughterhouses or dairy industries have been used).

Thus, the composition of biogas depends on several physical, chemical and microbial factors, but normally presents the following values:

Methane (CH_4)	50 - 75%
Carbon dioxide (CO_2)	25 - 50%
Nitrogen (N_2)	0 - 7%
Oxygen (O_2)	0 - 2%
Hydrogen (H_2)	0 - 1%
Hydrogen sulphide (H_2S)	0 - 1%

Biogas composition.

Biogas is obtained by the anaerobic fermentation of green biomass and wastewaters from cattle farms. Mass production of methane gas can be used in order to produce electricity with turbines.



Millions of tons of organic waste are produced daily, which generate millions of cubic metres of methane when they ferment, being this gas a greenhouse gas.





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The raw organic matter used to produce biogas is biomass.

There are different types of biomass:

Biomass crops	<ul style="list-style-type: none"> - Energy plantations (fast growing trees). - Energy crops (maize, rapeseed, etc.). - Cereals. - Oil crops. - Other.
Waste of plant origin, pre-processed and resulting from environmental maintenance works	<ul style="list-style-type: none"> - Different types of straw. - Maize, sunflower and tobacco stalks, etc. - Vine shoots, branches from fruit trees. - Waste from pastures and meadows. - Green waste resulting from the pruning of bushes and maintenance works in green spaces. - Other.
Manure of animal origin	<ul style="list-style-type: none"> - Manure and silage from cattle and poultry farms. - Forage remains. - Waste from parallel productions. - Other.
Urban organic waste	<ul style="list-style-type: none"> - Sewage water. - Solid urban waste. - Other.
Organic waste from the food industry	<ul style="list-style-type: none"> - Waste from the storage and processing of products of plant origin. - Waste from canning industries and distilleries. - Waste from wine cellars and the beer industry. - Other.
Forest waste (wood biomass)	<ul style="list-style-type: none"> - Wood resulting from thinning (sanitary felling). - Branches, pruning remains, bark, leaves etc. - Wood processing by-products (sawdust, shavings, odds and ends). - Other.

Biomass types.





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	DIM dry matter (%)	DM organic dry matter (%)	Output (litres of gas/kg o DM)	Biogas (m ³)
Liquid cattle slurry	10	81	400	32,4
Fresh manure with straw silage	22	83	420	76,7
Pig slurry	7	81	450	25,5
Sheep slurry	27	80	750	162,0
Fresh poultry droppings	15	77	654	53,7
Horse manure	28	25	580	40,6
Waste from beer industries	25	66	700	115,5
Apple pulp	3	95	500	14,2
Apple waste	25	86	700	150,5
Green waste	15	76	450	51,3
Mowing waste	42	90	780	294,8
Potato waste	25	79	840	165,9
Ripe and fruit waste	45	93	670	280,4
Maize stalks	86	72	900	557,3
Barley	85	85	500	361,2

Characteristics of the main raw materials used in biogas production.
(for 1 T of raw material). Source: St. Stanev.

Maize has the highest biogas contents of all energy crops.

As for the biomass made of waste materials, manure from pigs and other cattle breeding industries has the greatest potential.

In order to optimise the output in both cases, we must minimise the time between the moment biomass is fed to the digester and the conversion into biogas.

The main technical and technological pillars of organised biogas production are:

The main technical and technological pillars of organised biogas production are:

- The reduction of the amount of methane gas that is released to the atmosphere.





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- The reduction of the organic waste that is discarded and left in the surface (the soil and subterranean water flows).
- The production of renewable energies (biogas) as an alternative to fossil energy sources.

Millions of tons of organic waste products are produced daily, including food waste, bedding for cattle (mixture of manure and straw), sewage, etc. All these waste materials generate millions of cubic metres of methane when they ferment. Methane is a greenhouse gas, and is responsible of 3-5% of total emissions. This has caused an increase of 18% in the greenhouse effect.

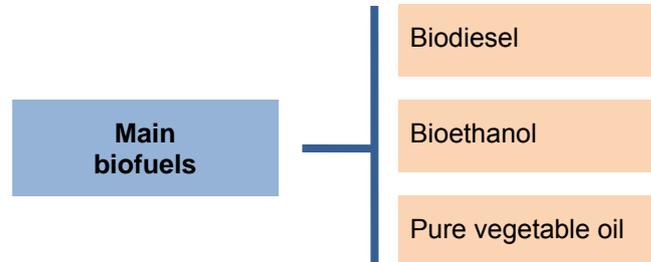
The greenhouse effect is worsened by new and uncontrolled landfill sites and by an indiscriminate use of biomass (especially of animal origin) from the farming and processing industries. On the other hand, these waste materials are an important source of renewable energy, given their volume, and have remarkable energetic potential that should be used.





1.1.4. Biofuels.

Biofuels are another type of biomass. Each type of engine requires a different type of biofuel.



Biodiesel and pure vegetable oil can be used instead of diesel oil or they can be mixed with it. On the other hand, bioethanol is mixed with petrol.

The production of biodiesel and bioethanol implies a complex industrial process that entails organised and interlinked installations. This fact reduces the margins of the farming sector. As for pure vegetable oil, production can take place on the spot, enabling dispersed energy production.

BIODIESEL

Biodiesel is the most important biofuel. It is made of vegetable oils. It is the result of a chemical process that takes place in the trans-esterification of vegetable oils, mainly from rapeseed. Other vegetable oils from the family of the *cruciferae* can be used, as sunflower oil rapeseed.

Biodiesel is very similar to conventional diesel oil. It is suitable for diesel engines, after adapting the diesel circuit.



Biodiesel is obtained mainly from rape.





BIOETHANOL

Bioethanol is obtained by fermentation and alcoholic distillation of sugar and starch-rich plants as cereals, beets, potatoes etc. Ethyl alcohol (ethanol) is suitable for petrol engines. The combustion of bioethanol is much cleaner than that of petrol or diesel fuels.



Bioethanol is obtained from crops such as potatoes.

BIOGAS

There are other alternatives to the gas that is obtained from petroleum and fed to gas engines.

A methane-rich gas suitable for conventional engines can be obtained from the fermentation and thermochemical gasification of biogas and gas from treatment plants.

SYNTHETIC BIOFUELS (SYNFUEL)

Synfuels or BTL fuels are artificially produced hydrocarbons.

Synthetic biofuels can substitute petrol, diesel oil and natural gas.

Biofuels and other conventional fuels can be used both as fuels and in heating systems. They may be used in heating systems, given the fact that they produce heat. In heating installations, biofuels can be used instead of diesel oil.

Fuel	Density (kg/l)	Caloric output (MJ/kg)	Caloric output (MJ/l)
Diesel oil	0,84	42,7	35,87
Rapeseed oil	0,92	37,6	34,59
Biodiesel	0,88	37,1	32,65
BTL fuels	0,76	43,9	33,45
Petrol	0,76	42,7	32,45
Bioethanol	0,79	26,8	21,17
ETBE	0,74	36,4	26,93
Biomethanol	0,79	19,7	15,56
MTBE	0,74	35,0	25,90
DME	0,62	28,4	19,03
Biomethane	0,72	50,0	36,00
Hydrogen	0,016	120,0	1,92

Characteristics of biofuels. Source: FNR.





The main crops used in the production of biofuels are the following:

RAPE

Rape has been cultivated since the 16th Century. It is the most important energy crop. It belongs to the family *Brassicaceae* (=Cruciferae).

In Europe, summer and winter varieties are cultivated. Summer varieties are cultivated in latitudes as high as Norway. These varieties are used as oilseed plants and in order to collect the seeds.

In Southern Europe temperatures are not low enough to allow for the growth of stalks and for inflorescence. Summer varieties can be cultivated in autumn.

In Central Europe, rapeseed is used as fodder, that is, as an intercrop in rotation schemes.



Rape cultivation.

We must distinguish between two types of rapeseed. There is one variety that is very rich in erucic acid, and there are two varieties called 0 and 00 rapeseed. In 1974, a new erucic acid-free variety was developed, which is not suitable for human consumption: the 0 rapeseed. A new agronomic success brought about the varieties 00 in the 80's, which were developed from the 0 varieties. 0 and 00 varieties have a very low content of glucosinolates, which makes them much better than rapeseed cake for cattle consumption. Nowadays, this “double zero” variety is also used in the production of detergents, anti-foam agents, paints etc.

The average output of winter rapeseed variety is 3,500 Kg/ha, which corresponds to some 1,200 litres of rapeseed oil per hectare. Summer varieties produce 1,500-1,500 Kg/ha on average.





SUNFLOWER (*Helianthus annuus* L.)

The genus *Helianthus* is part of the Family *Asteraceae* (= *Compositae*). The species in this genus present very different shapes. Just two of the 49 species are cultivated (sunflower and topinambour).

In some countries like Germany, the temperature is too high for large-scale cultivation of sunflower, which only takes place in more favourable climates. In not too warm climates, there may be low yield risks in cultivation and harvesting.

Countries with favourable climates (as Spain, France, Southern Germany, etc.) get average outputs of 1.5-1.2 t/ha.



Sunflower.

SUGAR BEET (*Beta vulgaris*)

Sugar beet was first cultivated in the late 18th Century as a result of the selection of beet with high sugar contents.

Around 1800, they managed to increase the sugar content of beet from 1.6% to 16%. Nowadays the percentage of sugar has risen to 18-20%. Sugar beet is one of the most important raw materials used in sugar production worldwide.

Sugar beet is cultivated mainly in warm climates, especially in Europe, USA, Canada and Asia.

Sugar beet is also used in order to produce bioethanol, although it is mainly used by the sugar industry. Sugar beets are harvested during the first year, as at that point the sugar contents are the highest, due to the substances stored in the plant.

The average output is 40-70 t/ha that correspond to 10 tons of sugar. The leaves discarded after the harvest may be spread in the soil as organic fertilizers or may be used to feed cattle.



Sugar beet.





WHEAT (*Triticum L.*)

Wheat is one of the most common cereals worldwide.

It belongs to the Family of the *Poaceae* (=Gramineae) and comes from the primitive emmer wheat.

The earliest findings as regards wheat date from 7800-5200 BC. Therefore, wheat is, after barley, the cereal that has been cultivated for the longest time.

Wheat is cultivated in all continents, being China, India, USA and Russia the most important producer countries. In Spain, most of the cereal-cultivated areas are devoted to wheat.

Wheat is very useful in bioethanol production, due to its high contents of starch. The starch in the cereal grains determines the amount of alcohol that can be obtained, and therefore, the selling price itself.



Wheat.

RYE (*Secale cereale*)

This cereal is essential in dry lands and poor soils, and is a very interesting source of starch, so useful in the production of ethanol.

The price of rye is undergoing a downward trend in the last few years. Nevertheless, the demand, especially in the energy sector, is growing due to the setting up of new bioethanol plants.

Rye can also be used as substrate to be fermented in biogas plants, both in the form of cereal or as whole crop silage.

This cereal uses humidity very effectively and generates a remarkable amount of biomass, even when the temperatures drop in the spring.

MAIZE (*Zea mays L.*)



Rye field.





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Due to intensive farming methods, maize is very productive, resistant and stable, even in some Southern European areas.

Moreover, it has a great potential; the production techniques used are very modern, and can still be improved.



Maize field.

Thanks to its capacity to produce biomass with high contents of dry matter, and its efficient water and nutrient intake capacity, maize silage is very useful in biogas plants or for the production of biofuels, both for the own consumption of farmers and for the bioenergy industry.

As maize is concerned, the existing varieties can produce 15-20 tons per hectare, which represents a methane production of 4,500-6,000 m³/ha.

Raw material	Output (moist t/ha)	Output final product obtained (l/ha)	Biomass needed to produce a litre of fuel (kg/l)
Maize	9,2	3520	2,6
Wheat	7,2	2760	2,6
Rye	4,9	2030	2,4
Triticale	5,6	2230	2,5
Potato	44,0	3550	12,4
Sugar beet	61,7	6620	9,3

Outputs of the different raw materials used in bioethanol production. Source: FNR.





1.1.5. Thermal solar energy.

Solar radiation can be used in an active or passive way.

The **passive use** of solar radiation allows for a reduced demand of heating and artificial light in buildings. This can be achieved by means of appropriate building structures (buildings facing South, appropriate distribution of glazed surfaces for them to absorb heat etc.).

On the other hand, an **active use** of solar radiation implies using technical devices and specific installations. There are two main systems: thermal installations and photovoltaic modules.

Thermal solar installations are used to save the heat of the sun by means of collectors, while **photovoltaic modules** transform sunlight directly into electricity.

All the applications of solar energy in cities is also valid for rural areas, where the conditions are even more favourable for solar installations: wider roofs and less shadowy areas.

Thermal solar installations or collectors produce thermal energy by transforming the sunlight that hits them. The heat is transported to the exchanger in a liquid or air stream. Thermal solar installations (collectors) may be used in order to obtain:

- Domestic hot water.
- Backup heating.
- Solar district heating.
- Swimming pool conditioning.
- Air heating.
- Solar cooling.

The solar energy can be used *in situ*. Taking into account energy that is used in the production process and the normal outputs of solar installations (in some areas, the expenses are written off quite soon) the use of solar installations saves fossil energy sources and reduces greenhouse gas emissions.

Almost 50% of the total energy spent in Europe is connected with heating and hot water, both in households and industries.





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Thermal solar energy is one of the most important alternatives in heating and hot water production.

Nowadays, the solar devices used in order to produce domestic hot water are simple but technically developed, as they can replace non-renewable energy sources as diesel oil, gas or coal. Thus, a four-member family using a solar device can save about 300 litres of diesel oil for heating, 300 m³ of gas or 3.000 Kw/h of electricity yearly.

The so-called district heating or tele-heating is even more efficient. It uses inertial accumulators (deposits that can store hot water for a relatively long period of time) that can cope with 50% of the total heating needs in inhabited areas and contribute to saving fossil energy sources.



Thermal solar strings.





1.1.6. Photovoltaic solar energy.

Photovoltaic solar energy allows for the production of electricity from solar radiation.

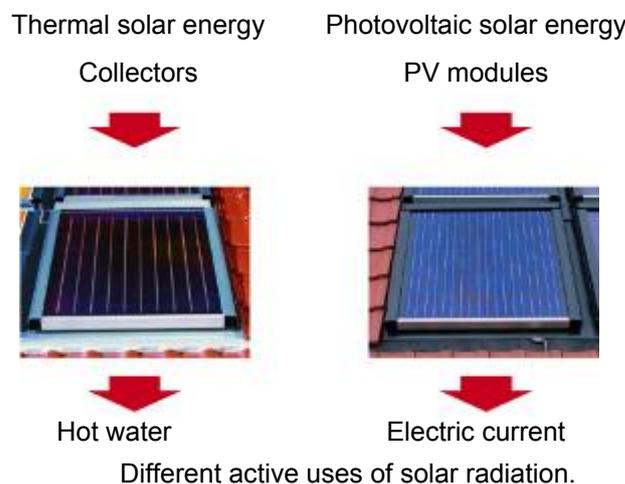
There are two types of photovoltaic installations:

- **Isolated systems**, with batteries or accumulators, which can be used directly according to the needs (stand alone installations).
- **Grid-connected systems**, which avoid the need for batteries and allow the connection to the mains whenever solar radiation is not enough. This technology has developed a lot and there are different products available in the market.

The main component is a photovoltaic installation where solar radiation is converted into electricity, which is called the **photovoltaic cell**. Each cell is made of a thin layer of semiconductor material, normally silicon that serves as a small battery.

Photovoltaic cells are implemented in a single structure, the so-called “**photovoltaic module**” that in its turn is placed in a structure called “**panel**”.

A row of serial modules forms a “**string**”. Several strings connected in parallel form a “**photovoltaic generator**”.





1.1.7. Wind power.

Wind power is the energy technology that is growing the most rapidly worldwide.

This energy resource can be produced virtually anywhere. Wind power installations can have different sizes and can adapt to different needs.

- Large wind farms can produce enough electricity in order to supply thousands of families through the mains.
- Small turbines can supply the energy needed by a farm or a village that has no access to the mains.

Wind power is very useful for the electricity supply of rural areas with no access to the conventional electric network. Moreover, it represents new economic and employment opportunities for the rural population.

Due to the fact that the wind is conditioned by day/night cycles, by seasons, geographical location and microclimates, and taking into account that there is also a randomness component, it is impossible for isolated systems to ensure a constant supply.

Therefore, local consumption must be dealt with by means of networks involving other sources of energy, that is, mixed systems where wind power is used to save fuel or where it is combined with other renewable energy sources.

Wind power in rural areas can serve several purposes:

1. Supply of isolated systems (“stand alone” and “off-grid” systems):

In areas that are isolated from the mains supply: rural tourism lodgings, campsites, farms, mountain huts, second homes etc., where it is not economically feasible to bring mains supply.

In such cases, it is possible to implement small wind turbines and accumulation systems (batteries) and hybrid systems (with photovoltaic panels and diesel generators).





Small wind turbines can also be used for power supply of telecommunication systems as repeaters, mobile phone antennas etc. in isolated areas.

Wind turbines can be useful in pumping and drainage systems, public lightning and energy supply of natural protected areas.

2. “On-grid” or “Grid-connected” systems:

These wind power micro installations use the energy that is required and supply the rest to the mains by selling it to the distributing company.

These energy producers have the right to use at all times the energy they need in order to carry out their activity, paying the distributing company accordingly.



Wind power is an important alternative energy source.





1.1.8. Micro-hydropower plants.

Micro-hydropower includes all the hydropower systems having an electrical power of 100 Kw or less. (A 100 kW system produces 100 standard units of electricity in an hour).

Micro-hydro-systems differ from larger hydro-systems, as they require much smaller water stream volumes. This fact allows for many micro-hydropower plants to be placed in regions with many streams and rivers.

The growing interest in renewable energies and the decentralisation of energy production has put micro-hydropower plants on the map.

The added value of micro-hydropower plants can be increased if old watermills are re-used. Traditional watermills can be restored and installation costs can be reduced by using some of the structures of the old mills, as the dam or the flume. In some cases, only the electrical system needs to be restored.

Micro-hydropower has a great potential in hilly areas with spring fed streams. In these cases, turbines can use small streams for energy production, provided the fall is sufficient. In these places, there is no need for installations that require large water streams, such as dams, and it is possible to produce energy at reasonable costs.



Micro hydropower is a clean energy resource with a great potential.





1.2. Evolution in the use of the resource.

1.2.1. Origin and development of renewable energies.

Renewable energies have satisfied the energy requirements of men for centuries, up to the late 19th Century. Renewable energies have stopped being the main sources of energy in the last 100 years: first came coal, then, from 1950 onwards, petroleum and, to some extent, natural gas, took the lead.

In Europe, renewable energies have an huge development potential, although all kinds of obstacles have hindered their development in the past.

Eurostat data for 2007 show that in the 27 Member Europe, the main renewable energy sources used were: biomass, with 69,3% of the total equivalent oil tons, hydropower, with 19,2%, wind power, with 6,5%, geothermic power, with 4,2% and finally solar energy, with 0,9%.

1.2.2. Energy policies: a framework for the development of renewable energies.

The European Union welcomed the Kyoto objectives and anticipated the moment when it entered into force in 2002 with the Council Decision 2002/358/EC of 25 April 2002. The Community Directives addressing this sector laid down the following objectives:

- Increase energetic efficiency in 1% approximately every year.
- Cover the 12% of the overall energetic demand with renewable energies by the end of 2012.
- Cover the 22% of the overall electricity demand with renewable energies by the end of 2012.
- Cover the 2% and the 5.75% of fuel demand with biofuels by the end of 2005 and 2012 respectively.





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The main EU regulations in this field are the following:

- Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources.
- Directive 2002/91/EC on the energy performance of buildings.
- Directive 2003/30/EC on biofuels.
- Directive 2004/8/EC on cogeneration.
- Directive 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

As for renewable energies, the EU had already set up its own policies before Kyoto, by issuing two important Commission documents: The Green Paper and the White Paper.

The **Green Paper** was published on November 20 1996, and it sets forth the European strategies for the development of renewable energies. Apart from establishing the objectives, it explains the advantages of renewable energies:

- Environmental sustainability.
- Ensure security of supply.
- Employment and development.

Emphasis is put in the following strategies:

- Regional policies should foster renewable energies, especially in peripheral and rural areas.
- Agricultural policies should support the production and the development of renewable energies.

The **White Paper** was published in 1997. It contains the actions that should be taken in order to put the guidelines in the Green Paper into practice.

It sets up the following quantitative objectives:

- Installation of one million photovoltaic systems.
- Installation of wind farms providing 10000 megawatts of electric power.





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- Installation of biomass plants providing 10.000 thermal megawatts.
- Carrying out of 100 experimental projects on renewable energies in communities, cities and regions.

Some of the main EU initiatives are the following:

- **The “Intelligent Energy - Europe Programme”.**

This programme contributes to speed up the achievement of the sustainable energy aims for the period 2007-2013, following the previous programme 2003-2006. It fosters for instance:

- The improvement of the energy efficiency,
- the use of new and renewable energy sources,
- a higher implementation and use of those energy sources in the markets,
- the diversification of energy and fuels,
- the increase of renewable energy rates,
- the reduction of the final energy consumption.

- **Reform of the Common Agricultural Policy (CAP).**

The CAP revision, approved in 2003, implied a lot of changes in the aid schemes for agriculture. The tree main elements of the reform were:

- The dissociation of aids and production: Aid is not calculated according to the type of production anymore, but according to a complex procedure based on the surfaces and previous aid received (rights). Therefore, aid is no longer associated to land use.
- The increase of the resources allocated to rural development programmes; this measure allocates more funding to local development programmes.
- Conditionality. This measure implies that aid is conditioned to the compliance of a series of environmental Community Rules.
- As for agroenergy, this reform makes provision for 45 extra €/ha for energy crops.





2. IMPORTANCE AND IMPACT OF THE RESOURCE.

2.1. Current situation and impact of the resource.

2.1.1. Current situation of renewable energies. Analysis of the different energy farming systems.

A) WOOD BIOMASS.

The main use of this energy source is the production of thermal energy by means of combustion.

The production of electric power is far more complex: the conversion of thermal energy into electricity that takes place when the biomass is burned has an energy performance below 25%. This low energy performance, added to the installation expenses and the expenses of transporting the raw material to the plant, makes it necessary to establish a specific scheme for the application of energy policies, based on dispersed energy production, in view of the increase in the use of renewable energies.



Wood is a very important energy source in Europe.





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Dispersed or decentralised energy production is based on minimising the expenses derived from the transportation of raw materials, thus reducing the negative environmental impacts, and supporting rural development schemes.

Nowadays most of the wood is burned using traditional systems, and therefore environmental and energy performances are quite low (50-60%).

Nevertheless, in the last few years, the development of new technologies have enabled an efficient use of wood as energy source:

- As for wood fuel, wood chips and pellets are being sold and used for boilers and automatic feeders. In smaller heating systems, chips are normally used, but new possibilities are emerging, as the so-called briquettes: highly efficient, small compressed wood blocks.
- As for large combustion plants, the new generation of reverse flame boilers, which is being implemented fast, ensure energy performances over 80%.

Analysis of the current situation of wood biomass.

The main advantage of wood energy production installations is the availability of the raw material.

1. The forest surfaces of many European countries have grown a lot in the last few years. Forest use is below the yearly biomass growth rates.
This allows using waste wood resulting from silviculture and forestry activities for energy production. The use of this type of biomass is beneficial for forests (removal of weak trees, more room for the best specimens), and helps reducing forest fires and pest risks.
2. Energy crops represent another source of wood biomass for energy production. The experimental short-cycle cultivation (2-3 years) of black poplar has been very successful, both as regards the amount of dry substance produced (17-20 t/ha per year) and the amount and components of the ashes.
In the case of waste wood, the weakest point is in economic concerns, as





profitability is assessed as compared with the returns obtained with other soil uses.

The development of local installations of production/consumption of thermal energy based on wood, has the following advantages:

- Support of forestry and fostering of new work opportunities for forest workers.
- Sustainable cultivation and conservation of the territories concerned with this type of activity.
- Environmental benefits in the concerned territories.
- Reduction of energy expenses of enterprises, and in the case of collective boilers, of population.

Weak points

- The possible weak point of collective boilers would be the relative complexity of the system. Building up the links between installations in order to have district heating is more complex than buying diesel oil or LPG. The process implies awareness of local development needs. In order to achieve the main objectives of these systems the implication of the economic and institutional stakeholders in the territory must be encouraged.
- Other important aspects concern the higher prices of wood boilers as compared with traditional ones. However, we must take into consideration that there is an important reduction of energy expenses; therefore, the investment is paid off in 4-7 years. Moreover, if the demand grows, the expenses associated to these installations will presumably be reduced.
- Finally, we must point out that there is little information about the sector and a lack of specific training. There is a lack for specific training addressed to enterprises and to agriculture and forestry specialists, for them to become aware of the energetic uses of biomass. In addition to this, local administrations lack the necessary knowledge and awareness on these subjects. Finally, there is a need for designers and installers specially trained for the purpose.





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The first initiatives concerning the installation of wood boilers have had a multiplier effect: administrations, installers, designers and forestry enterprises are getting more and more interested in this type of renewable energy.

As regards the evolution of the production systems, there are two main aspects that would contribute to their improvement:

- The possibility of producing high quality wood pellets made of certified wood.
- The evolution of cogeneration technologies would make it possible and convenient to install wood-fuelled cogeneration plants. Of course the prospects for these installations depend greatly on the local development schemes adopted by the administrations, and on the economic systems in the territory.





B) ENERGY PRODUCTION BASED ON HERBACEOUS BIOMASS.

The exploitation of some herbaceous energy crops has been thoroughly studied. In spite of the efforts made, the use of these crops for energetic purposes has not evolved significantly, except for some experiences with farm products (maize) for thermal energy production.

Other experiences which are worth mentioning concern pellets made of herbaceous waste (sorghum, maize, etc.).

Analysis of the current situation of herbaceous biomass.

The experiments made show that the use of this type of crops has more disadvantages than advantages:

As for productivity, the dry matter (measured in tons) per hectare of each of the four crops used in the pilot experiences⁶, is the following:

- *Sorghum*: 22,5
- Thistle: 9,1
- *Discanthus*: 22,6
- Reed: 29,9



Maize is used in thermal energy production.

Taking into consideration the expenses derived from production, and the market value of biomass, we may presume an average yearly output of 200-500 € per hectare. These returns must be compared with the ones that may be obtained using the same soils for a different activity.

Moreover, the experiments show that the ash contents are relatively high, and have high silica contents.

⁶ Data and estimates are the result of projects promoted by the Agency for the Research, Development and Innovation of Agriculture in Toscana: Projects ACTIVA and BIOENERGY FARM.





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As for the advantages, apart from the environmental benefits of using a renewable energy source, this type of crops contributes to the fertility of the soil if they are planted in a rotation basis.

As it was the case with woody biomass, the energetic use is conditioned by the implementation of installations locally, in order to reduce the costs derived from transportation and processing and thus allow forestry enterprises to improve their benefits.

This type of agroenergy can be interesting in some territories due to the tendency towards the diversification of production (caused mainly by the crisis of the agricultural sector) and the return to crop rotation systems (encouraged by the environmental objectives of PAC) and the increase of the aids for the implementation of energy crops.

The recent reformation of the Common Agricultural Policy (CAP) provides an extra incentive of 45 €/ha for energy crops, which may be very convenient in some cases.

The importance of using local raw material as biomass is stressed:

- In order to avoid bringing it from far away places and having high transportation expenses.
- It generates an added value at local level.
- It reduces energetic dependence.
- The use of biomass allows for a CO₂ neutral energy cycle and revitalises regional economies.
- The rural structures are reinforced; employment rates are maintained or even improved.





C) BIOGAS.

The growing interest in seeking alternative uses of the soil, together with the management problems caused by waste of animal origin, have encouraged the development of biogas production in the last few years, especially in mainland Europe.

In order to set up a biogas installation, raw material must be available locally. This is more important with biogas than with other biomass installations.

Therefore, the development of this production system is connected with territories with large areas of agricultural soil and an important cattle-breeding activity.



Biogas production can be managed by consortia of agricultural producers.

Analysis of the current situation of biogas.

Biogas has the following advantages:

- The cycles of biogas are fully compatible with the productive cycle of cereal-fodder-livestock farming.
- Using wastewater from cattle in energy production turns an environmental problem into an opportunity for the enterprises that generate this type of waste.
- Biogas production can be managed jointly by farmers themselves.
- Biogas is very versatile; it may be used to produce thermal energy or electricity. A combined production is also possible.

The main weak point is that biogas installations require a strong investment. In addition to this, the organisation of the installation is quite complex. Finally, we must bear in mind that biogas production adapts just to some types of agriculture that ensure enough amounts of raw material.





In spite of the fact that many progresses have been made, this production system based on renewable energy sources can be further evolved.

D) BIOFUELS.

Many experiments have been carried out in Europe concerning the energetic potential of herbaceous plants for the production of biogas and biofuels.

The difference between the objectives set by the EU on biofuel use and the actual development of this type of production is in general quite big.

This sector has not developed properly, and is largely conditioned by the logic of the market.

The Community Action that made provisions for support actions for enterprises that had contracts with processing industries has not been very successful among farming enterprises. The few industries that work in the sector have resorted mainly to imported products.



Biofuels are a hope for the future.

Analysis of the current situation of biofuels.

The **main element** liable to encourage the development of biofuels is the increase of demand, caused by many different factors, some of them concerning international agreements:

- The ratification of the Kyoto Protocol.
- National and Community regulations.
- The growing interest in other energy sources, caused by the behaviour of the crude market and the upward trend of prices.
- The growing environmental awareness of the population.





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Apart from these positive aspects, there are some **weak points** that hinder the development of biofuels:

- The price of biodiesel is higher than that of diesel oil.
- The complexity of the relationships between installations make the activity little profitable for farming industries.

There is a very obvious contrast between the factors that favour the development (of political and social nature) and those that hinder it (of economic nature).

In the case of biofuels in particular, development is strongly conditioned by political and administrative decisions at all levels.

At national level, the main actions in order to boost the use of biofuels include an extension of tax privileges.

In this sense, there are very different situations: actually, some countries as Germany have deregulated the market of biofuel. In other countries, such as Spain, liberalisation is only applied to fuel used in agriculture. In other countries, as Italy, fuels are exempted from taxation.

These actions have proved to be insufficient for the promotion of production. The benefits have been devoted to the production stage, hence to the industry, which in many cases uses import raw materials.

Recently a Community agreement on the use of biofuels has been signed, which imposes political decisions at national and local level addressing this sector. Presumably, appropriate and sound measures will be taken in order to improve the results.

In particular, support policies should focus on the promotion of biofuel consumption.

The public services sector (transport, large services systems) uses large amounts of fuel, both for locomotion and heating purposes. If this sector made an extensive use of biofuel, even in a 5% mixture, production would be boosted.

The authorities should put into practice further support measures encouraging the use of biofuels in the industry and the public sectors.





Finally, the use of pure oil is another interesting option. In that case, no industrial transformation is required, and therefore local production and supply installations could be set up, which would benefit local farmers and would contribute to environmental sustainability.

E) THERMAL SOLAR ENERGY.

The main purpose of this technology is the production of thermal energy (domestic hot water and backup heating). There are two main types of installation:

- Natural circulation.
- Forced circulation.

The **first type** is cheaper and the installation is simple (no electric pumps, strings are integrated in the accumulator), but also less efficient.

On the other hand, the **second type** has separate accumulator and strings. This makes the installation more complex (electric pumps and pipes).

The costs are higher, but the energetic efficiency is also much higher, and more appropriate in cases where hot water must be supplied all year round, and heating must be supplied in the winter.

The tendency nowadays is to develop thermal solar technologies combined with other technologies, as wood-fuelled boilers. Thus, all energy needs can be satisfied by using renewable energy sources.

Analysis of the current situation of thermal solar energy.

With good radiation conditions, as the ones found in the Mediterranean areas, a thermal solar installation (of the appropriate size) may be able to satisfy the 70% of





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hot water needs and sometimes even the 30-40% of the costs of the fuel needed in backup heating.

Nowadays, there are many products in the market which address different needs:

- Collectors have an energy performance of over 500 thermal Kwh per year.
- The costs of erecting an installation are some 700.00 €/m².
- In general, a string of 1 m² is able to satisfy the hot water needs of one person.

Write-off periods are quite low, normally never beyond 5 years. The main obstacle for the development of thermal solar installations is the lack of information:

- Consumers do not have enough information on the potential of this technology.
- The technical staff and designers that suggest and assess the suitability of this option do not have enough preparation.

In a very near future, this sector will grow significantly due to the new technical improvements and the support policies implemented. In some cases, this new technology is compulsory in new buildings.



Solar strings in an ecological undertaking.





F) PHOTOVOLTAIC SOLAR ENERGY.

In many European countries, photovoltaic systems are considered as a very good option. This is reflected in the support strategies that have been devised in member countries, always bearing in mind Community guidelines.

The so-called “energy account” is being quite successful. This mechanism consists of buying the electricity surpluses of enterprises at higher rates than normal kw/h.

This system allows for the reduction of the write-off period of the investments made in order to erect photovoltaic strings.

Analysis of the current situation of photovoltaic solar energy.

Using photovoltaic solar energy contributes to the balance of the electricity needs of a building, as it allows to produce the amount of electricity that is normally needed (even sometimes more than the amount needed).

Thus, the costs derived from the production and transport of electricity are avoided, as it is produced in the same place where it is going to be used.

Advantages of photovoltaic systems:

The **isolated installations that need batteries** have the advantage of reaching places with no access to the mains. Connecting these areas to the electric network would be much more expensive than erecting the photovoltaic installation.

In these cases, the installation requires batteries in order to store the electricity and use by night.

The 10-30% of the price of the installation (depending on its power) may correspond to the price of the batteries.

However, with this system it is not possible to transfer energy surpluses, it can only be used and/or stored.





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Grid-connected systems allow for energy exchanges with the electric network: The energy produced by the installation is used by day, and the electric network supplies energy during the night as if it were a battery.

If the installation produces more than is required, the surplus is transferred to the mains.

From the environmental point of view, each kW of energy that is produced contributes to the Kyoto Protocol, as it prevents the use of 0,3 TOE and 0,9 tons of CO₂ a year.

Solar radiation is normally enough (although it depends on the region) to ensure the functioning of the installations. Photovoltaic systems can be erected in the roof of farm facilities (always with the right orientation). In optimal conditions, it is even possible to install them in the ground.

The **main weak point** of photovoltaic systems is for the moment the economic aspect.

The costs of erecting these installations are quite high (6,000-7,000 €/kw) and the write-off periods are quite long (20-30 years). The “energy account” should allow reducing the write-off period.

In addition to this, it is possible to enter the market of Green Certificates if the installations that produce electricity with renewable energy sources reach 25001 kWh a year.

Producers that reach these figures will be entitled to issue a **Green Certificate** that can be sold in the market. It costs some 0.09 € per kWh produced and can be obtained for a period of 8 years.

The development potential of photovoltaic solar systems is connected with the energy account: in fact, the only reason why this technology is not spreading faster is the strong investment required in order to erect the installations. The Energy Account allows for the reduction of the write-off periods from 20-30 years to about 7 years.



Photovoltaic installation.





G) MINI WIND POWER SYSTEMS.

Mini wind systems allow for the production of electricity using wind energy. Nowadays generators reach 20kW, and can be adapted to small-scale production.

The power of these generators can be 1kW, 5kW, 15kW and 20kW.

These wind turbines have rotors of 2-8 meters and are installed in the top of a tower of about 8-20 meter high.



Energy production in wind power installations has many advantages.

The wind machines that are in the market nowadays are able to move at about 3m/s when they are started (10km/h approximately) and reach a rated speed of 12m/s (43 km/h approximately).

The energy that these machines can produce yearly depends on the number of wind hours and the intensity of the wind. In general, when the anemometric conditions of a place are assessed, a wind gauge is installed for a period of 6-12 months. As a result, annual electricity production estimates are obtained multiplying the number of equivalent hours by the rated power of the machine.

Analysis of the current situation of mini wind power systems.

Advantages

The small-scale production of electricity from wind power is very interesting in rural areas, as these systems require wide open and empty areas.

The technology is quite well developed, and the write-of period would be substantially reduced with the implementation of support mechanisms enabling a profitable energy production with mini wind generators.

From the environmental point of view, each kW of energy that is produced contributes to the Kyoto Protocol, as it prevents the use of 0,3 TOE and 0,9 tons of CO₂ a year.





Electricity production in mini wind installations is the cheapest nowadays, as it has a cost of 2000-3000 € per kW.

The environmental impact is limited to the visibility of the wind turbine. However, the visual impact is reduced with respect to wind turbines used in large wind parks, which may reach 70 m of height.

As compared with solar radiation, day and night does not make any difference, as the wind can blow anytime.

Disadvantages

On the other hand, however, the wind is not a constant resource. Therefore, the need to be connected to the mains supply cannot be avoided, and the installation needs to have batteries when there is no access to the mains supply.

Mini wind installations below 20 kW are convenient only if the number of potential users of the energy produced is sufficient to compensate the investment.

At present not every European countries have specific regulations on this field. For the time being, it is convenient to erect these installations for self-consumption, provided we are going to require energy in a constant way and use all the energy produced.

Mini wind installations are also eligible for **Green Certificates**: an hypothetical case foresees the following: installing a single 20 kW machine, and having 1500 hours of wind a year, 30,000 kWh would be produced, and, with the Green Certificate, that would represent 45000.00 € a year for 8 years.





H) MICRO-HYDROPOWER INSTALLATIONS.

Micro-hydropower installations are different from large hydropower stations, as they need much smaller streams.

The advantage of this type of installation is that many more places may be suitable in any country with rivers and water streams.

During the first half of the 20th Century, many watermills were adapted to produce electricity by means of turbines and direct current generators that supplied households and neighbourhoods with electricity, especially for street lighting.

Most of these installations were abandoned when the national electric network reached all the country and was substituted by a generalised use of alternating current.

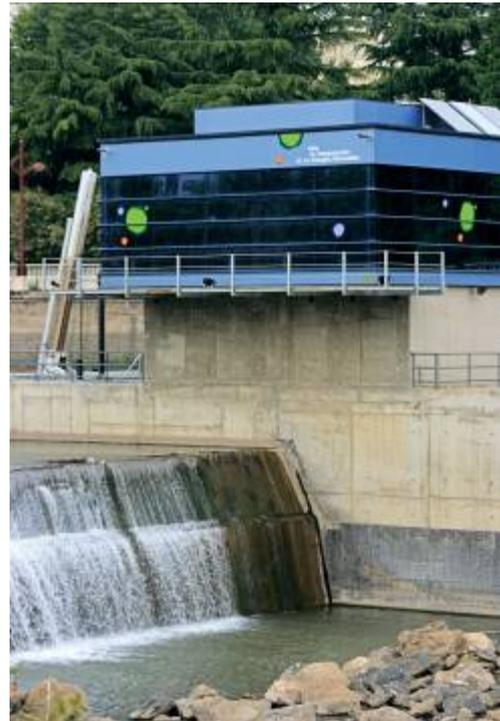
The growing interest on renewable energies and the decentralisation of the electric network has encouraged the recovery of these forgotten technologies.

Nowadays technology makes it possible to use small falls efficiently, and allows for further developments in **micro-hydropower installations**, especially in some areas:

Hilly areas with small falls fed by brooks and streams: Some turbines are adapted for the production of electricity in very small falls.

These places can be conditioned with relatively low investments, as no large structures are needed, as the drainage channels used in large hydropower systems.

Many of the **drainage channels and anti-plugging devices**, as well as the **water supply structures, the channels, the barriers and the dams** can be used in order to develop micro hydropower installations.



Micro hydropower installations have great chances of development.





Analysis of the current situation of micro-hydropower installations.

Some of the main **advantages** of micro-hydropower installations are:

- If placed in the right location, it is a constant and reliable source of energy.
- The environmental impact of the installation is very small.
- This constant and durable energy production system is not intermittent, as wind power and solar energy.
- The installations are very durable; more than 30 years may lapse before they need major maintenance works.
- Low maintenance needs and low production costs.
- The write off period is very reasonable in the installations that are connected to the mains, normally not reaching 10 years.
- The technology needed has already been developed.
- It is very profitable for rural areas (employment, profits, tourist interest, preservation of water streams).

Weak points

A few years back there were several obstacles for the development of hydropower installations of less than 100 kW:

- The costs and complexity of the network hindered the promotion of small generators.
- The low prices of the electricity produced by small generators.
- The lack of public funding covering installation costs.
- The incredibly high prices of turbines and generators.

The increasing interest on this type of installations will help overcoming these obstacles.





2.1.2. European context for the development of renewable energies.

The EU is starting to consider renewable energies as a reasonable alternative and as a source of employment in rural areas where there are not many economic activities encouraging people to stay in their villages.

The European Union is strengthening its policy against polluting energies; regulations are getting more severe, while clean energies, renewable energies in particular (those that cannot be exhausted), are being promoted. In fact, energy saving and clean technologies programmes are being very successful.

Renewable energies among other initiatives imply a very important development opportunity. Many endogenous resources in rural areas, such as forests, rivers or crops are being managed in a sustainable way.

The aim is not only to develop clean, environmentally friendly energies, but also to involve rural population and contribute to employment creation in order to stop the drift from the land that is affecting most rural European areas.

At EU level, the development of renewable energies in rural areas is supported by means of initiatives as the following:

- The Kyoto commitments and the agreements that bind member states to double the use of renewable energies.
- Some emerging technologies in the scope of agriculture and forestry have become more competitive in the last few years, even in the case of small-scale production. This is the case of wood biomass.
- The European legal framework is being put into practice at local and regional level, which will bring about new opportunities for enterprises of the agricultural and energy sectors.
- Some renewable energies, as wind power or solar energy can be very profitable for the agricultural industry when energy market liberalisation takes place in a few years time.

Rural areas have many possibilities to produce clean energies thanks to their natural resources, which can be exploited sustainably. In the future, renewable and clean energies may become the main source of income, or the main alternative, in rural areas.

Therefore, this type of energies is a hope for the future in the European Union, not only in order to solve environmental problems, but also in order to support new emerging professions in the rural context, in this case, professions connected with renewable energies.





2.2. Results and impact of the resource.

Due to the exhaustion of petroleum resources and the evident climate change, energy has become a major issue of debate. Two main strategies have been devised in order to solve the energetic problems. These strategies are connected with energy saving and new sources of renewable energies.

The development of renewable energies and energy efficiency policies will also contribute to employment creation.

The results and impacts of new renewable resources this far can be said to be important for rural areas, not only because of the jobs this new sector can create, but also because alternative energy sources can solve other local problems.

In the next few years, renewable energies will be able to satisfy 13% of EU primary energy needs. We must all work then in order to increase the use of those clean energies.

PILOT EXPERIENCES

We may mention the Leonardo da Vinci Pilot project “**ProAere: Agricultural Projects for Renewable Energies in Europe**”, because we consider it has had an important impact in the promotion of alternative energies and in the creation of specific training programmes.

This project has achieved many things:

- It has contributed to establish closer relationships among the partners of different European countries, thanks to the exchange of experiences and good practices.
- The information and dissemination seminars organised have contributed to raise the environmental awareness of users in both rural and urban contexts.
- A greater involvement of the different social partners has been achieved.
- Several tools have been devised in order to contribute to the professionalisation of the sector and to increase the sustainable use of renewable energies.





3. USE OF THE RESOURCE AS AN INSTRUMENT FOR RURAL DEVELOPMENT.

3.1. Possibilities and conditions needed for development.

Renewable energies are an emerging sector and imply new economic opportunities for rural areas, where they represent New Sources of Employment allowing for the sustainable use of natural and cultural resources.

Energy is the main challenge for the sustainability of future development actions.

Development processes in this world always need to use energy in order to take place. Energy consumption is progressively increasing worldwide: energy is present in all human activities.

From 1992 onwards, the worldwide consumption of energy has increased significantly and is expected to continue the upward trend until 2020, at a yearly rate of 2%. Worldwide consumption of primary energy in 2020 will have grown 57% as compared with 1997.

Energy and climate are closely related.

The use and consumption of energy has changed over the last 200 years. The large-scale exploitation of fossil energies has caused several climate changes in very short periods of time, which means that natural climatic processes have been accelerated to a great extent.

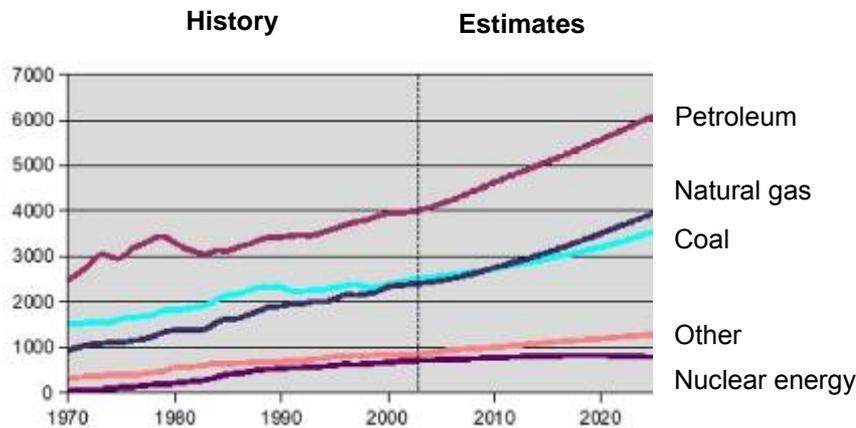
3.1.1. Traditional energy sources.

Almost 80% of the energy used worldwide comes from fossil energy sources. From 1992 to 1999, the worldwide consumption of fossil fuels increased 10%.





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Energy consumption. Source: Data extracted from EIA.
International Energy Outlook 2004, from the Department of Energy of the USA, D.O. E.

The world is expected to continue depending on petroleum, coal and natural gas, as it does at present.

A progressive decline of nuclear energy is also expected.

3.1.2. Pollution caused by traditional energy sources.

Energy production, especially energy obtained from the combustion of fossil resources (coal, petroleum and methane) is causing serious alterations in the planet:

- The heat and carbon dioxide released to the air, contribute to the greenhouse effect, and may cause climate changes and disturb the environmental balance on which life is dependant.
- Air pollution and acid rain are caused by the uncontrolled release of dust (particles in suspension) and in particular by carbon, nitrogen and sulphur oxides.

This affects the life of man as well as natural and artificial ecosystems: the atmosphere, the seas, lakes and rivers, aquifers, crops and monuments.

As regards the relationship between pollution and health, we will mention that WHO (World Health Organization) has stated that the pollution caused by traffic in Europe





has caused the early death of some 80,000 people. Many recent studies show that children living near roads with heavy traffic are twice as prone to have respiratory complications than those living near less busy roads.

For some time it was thought that nuclear energy was a suitable alternative to fossil resources, but all the problems that remain unsolved concerning the functioning of nuclear plants (radioactive waste, risks of serious accidents with catastrophic consequences, possibility to use it to make atomic weapons) and the well-known disasters occurred in Chernobyl and Fukushima have caused many countries to withdraw from this nuclear unsafe adventure.

3.1.3. Renewable energies, sustainability and rural development.

Renewable energies can replace conventional sources of energy as coal, petroleum and gas, and therefore reduce CO₂ emissions. The limited fossil resources can thus be saved easily, so that they can still be available for future uses other than combustion for energy production.

As compared with conventional energy production, renewable energies save costs, risks and losses in the transport and supply (for instance, leaks in gas pipelines or damages in petroleum tanks):

- **Biomass:** Biomass is a renewable source of energy generated in photosynthesis. It can be used to produce heat, fuels or electricity. The main advantage of biomass is that it does not contribute to the greenhouse effect. The balance of CO₂ emissions is neutral: the CO₂ that is released to the atmosphere corresponds to the amount of CO₂ that had been extracted from the air during photosynthesis when the biomass was growing.
- **Sun:** Almost the 50% of sun radiations hit our planet and produce 30,000 times the energy that we need. This energy can be used effectively by storing it in heat collectors (panels that collect the energy of the sun and convert it into





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hot water or backup heating) and in photovoltaic cells (which generate an electric current if solar radiation hits them).

- **Water:** Water was already used by old watermills, and is nowadays used in hydropower stations where turbines and alternators convert running water into electricity.
- **Wind:** Wind power has been always used in order to sail and activate windmills. Nowadays it is used to pump water (with aero-engines) or to produce electricity (with wind turbines).

Energy saving and new energy sources are linked to economic approaches that focus on sustainability and local development.

Choosing this type of model favours energy saving if small and medium-size renewable energy production installations based on local energy resources are used, thus minimising the environmental impact and improving economic and environmental profits.

The new energy production model must address the following aims:

- **Economic sustainability:** Local installations that use local forestry products are a profitable option for agricultural enterprises. This activity is liable to:
 - Contribute to the development of new products and markets in the forestry sector.
 - Control the energy costs of enterprises.
 - Provide an added value to the territory.
- **Environmental sustainability:** The profitable use of renewable sources of energy is in short production chains. For instance, the transformation of





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biomass in large electricity production plants has several environmental disadvantages:

- Low efficiency energy conversion, with a remarkable dispersion of thermal energy.
 - High energy costs in the transport of fuel to the plant.
 - Negative environmental impact in the territory.
- **Compatibility with rural development:** Rural areas have improved the quality of their products and tourist offer in the last few years, and have adopted a local development model that includes the production of energy from renewable energy sources:
 - Supporting small installations.
 - Encouraging agreements between different production chains.
 - Promoting training and information activities.

3.1.4. Essential elements in the new approach to energy issues.

Sustainable development should ensure the fulfilment of three main objectives:

- economic growth,
- social progress,
- a rational use of resources.

The development of renewable energies in rural areas would be boosted, and economic growth would be achieved while using clean and ecological approaches, and bearing in mind the quality of life of present generations and ensuring its permanence in the future.

The growing environmental concerns will lead to a new sustainable energy model that will satisfy current energy needs but also future needs. This is not possible with fossil fuels.





The main elements in this new sustainable energy model are:

1. **A global vision of energy issues.** Too often energy is associated to electricity. There are three main energy sectors that need to be developed:
 - Electricity.
 - Thermal energy.
 - Motive power.
2. **Energy saving policies.** All work sectors should save energy and use it in a rational way; from civil and productive sectors to public services and households.
3. **The development of renewable energy production systems.** This will be possible if appropriate policies are implemented and funding and support to investors are reinforced.





3.2. Employment creation potential of the resource.

The **New Sources of Employment** connected with renewable energies address rural development and modernisation:

1. Cultivation of energy crops.
2. Use of renewable energy sources that lead to energetic self-sufficiency of agricultural enterprises.
3. Use of renewable energy sources as an instrument for the diversification of agricultural activities (energy farms in rural sectors may supply energy).
4. New commercial activities.
5. New farming cooperative projects.
6. Projects addressing the local development of the territory.

3.2.1. Organisation models in the energy sector.

In the last few years, different organisation models have been defined in the energy sector. We will now describe the three main models and their practical application in farming enterprises.

- Closed-cycle energy production model.
- The model that consists of selling raw material for energy production.
- The model that consists of selling energy.

A) CLOSED-CYCLE ENERGY PRODUCTION MODEL

The agricultural enterprise produces in its own premises the energy it needs.

The thermal energy that is needed for the heating of households and of the enterprise may be produced in small wood, shaving or pellet-fuelled boilers or may be generated in solar installations.

Electricity demand can be satisfied by erecting photovoltaic systems in roofs or by building mini wind power installations.

In this case it is possible to save a lot of energy, as the products and by-products of the enterprise itself are used, although natural energy sources may also be used.





B) MODEL THAT CONSISTS OF SELLING RAW MATERIAL FOR ENERGY PRODUCTION

Energy production from renewable energy sources can be very profitable for agricultural enterprises.

The greatest profit margins are obtained by small and medium installations connected with local development projects and which belong to short production chains. These are the real energy farming systems: farmers provide raw material to the community.

We may mention small district heating networks based on wood biomass as an example.

These networks supply small villages, public buildings and suburban areas.

In these cases, the added value of energy producers is higher, as they use local raw material and fix the prices jointly with the rest of agents in the production chain.

C) MODEL THAT CONSISTS OF SELLING ENERGY

There are several possibilities in this organisation model.

The simplest case, which we will call “give heating to your neighbour” works as follows: several enterprises form a small district tele-heating network that covers own needs and supply heat to nearby users. These networks are normally quite limited (20-80 meters) so as to prevent excessive connection costs.

The users are supplied the heat produced by the boiler, which is measured with officially certified tools that are tared yearly. Users can obtain as much energy as they require from the primary circuit.

This energy must be sold according to a contract signed among the parts (for instance, a private contract) that must specify the clauses provided for by the law and the clauses that define the price of the energy being sold (€/MWh) as well as the provisions for the regulation of prices according to retail prices.

In other cases, energy agents may create small complete chains and provide clients with the raw material and maintenance required by the installation.





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Another possibility is selling energy produced by photovoltaic installations or wind generators to the electric network.

Yet another possibility would consist of supplying biomass. The enterprise supplying the grinded biomass presumes that the forestry and farming agents supply wood fuel (for instance, grinded wood) to their own installation, and then they sell the surplus to the local market and sign agreements with one or more private or public clients.

This system implies having appropriate premises, whether owned by the enterprise or not, in order to store and preserve the biomass that needs to be dried and be made available to all users in periods of high demand.

The price of the grinded wood will be fixed according to the price of the energy sold. Therefore, forestry can be profitable even in those cases where stumpage fees (term that refers to the price of trees before cutting them) are not good.

The grinded biomass comes from the maintenance of local forests, and has a positive effect in the territory and local community, both in an environmental sense and as regards social and employment concerns.

The contract of grinded wood supply can stipulate three different methods:

- Volume rates (cubic meter of bulk material).
- Weight rates (in tons).
- According to the energy content (the energy content in each weight unit can be measured according to the water content; this method is recommended).

Finally, there are some pioneering experiences of farmer consortiums or cooperatives that produce energy.

These are real energy farming systems; farmers supply the raw material to the collective structure, and have an active role in society (giving back the energy used, for instance, in the form of biofuel).

3.2.2. Emerging professions: Renewable Energies Promoter.

Achieving a new energy saving culture and developing new feasible energy options implies wider knowledge and competences as regards the suitable contexts for





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erecting installations and the technical and economic aspects connected to each energy sector.

The promotion of renewable energies implies new professional competences in the sector allowing for the creation of networks for energy production and use.

The new emerging professions connected with renewable energies include both large-scale promotion initiatives and small, specific actions carried out by individuals or small associations in rural areas, such as:

- The use of the biomass from forests or energy crops.
- The use of wind power in farms and other rural activities.
- The use of micro hydro systems to produce electricity.
- The use of solar and thermal energy to power electrical household appliances and as heating in rural households and animal farms.
- Recovery of old watermills.
- Etc.



The promotion and set up of profitable and efficient sustainable energy options implies specific knowledge.

For all these activities to be profitable and efficient, some specific knowledge is required. In this context, and in the scope of the Leonardo da Vinci Pilot Project **ProAere**, the profile of the Renewable Energies Promoter has been defined.

In the scope of the project, the manual "*ProAere: Agricultural Projects For Renewable Energies in Europe*" was elaborated as a tool for all technical staff that works in the renewable energy sector.

This manual contains specific information and techniques, dissemination itineraries, training procedures and information and promotion techniques addressed to professionals devoted to the promotion of renewable energies.

It includes some general knowledge and a general outlook of the problems linked to production chains. By means of this profile, fluent communication between the different production sectors is possible. It contributes to narrow the gap between the specialists that work in the different renewable energy sectors.





3.5.2.7 PROFESSIONAL CAREGIVERS

1. GENERAL DESCRIPTION.

1.1. Description of the resource.

1.1.1. General description.

The percentage of disabled people in Europe is 10-15 % of the total population.

In Spain, the Survey on Disability, Autonomy and Dependence of 2008 (EDAD 2008) (Discapacidad, Autonomía y Dependencia, 2008) calculates that there are 3.85 millions of people in Spain with some kind of disability or impairment that has caused or is liable to cause some disability. This figure represents the 8,5 % of the Spanish population.

The main causes for disability are illnesses, accidents and disabling conditions associated with age; the number of disabled people is expected to grow constantly, due to the progressive increase in life expectancy⁷.

There is not a common European definition of the term disability, as the Committee of Ministers agreed that this issue had to be dealt with by each member State.

However, in a previous recommendation adopted in 1998, dependence was defined as the need for “*significant assistance or help in carrying out the usual day-to-day activities*” or, more in detail, “*a state in which persons, by reason of lack or loss of physical, psychological or intellectual autonomy, require significant assistance or help in carrying out the usual day-to-day activities, especially as personal care is concerned*”⁸.

⁷ Recommendation Rec(2006)5 of the Committee of Ministers to member states on the Council of Europe Action Plan to promote the rights and full participation of people with disabilities in society: improving the quality of life of people with disabilities in Europe 2006-2015.

⁸ White Paper on “Attention to Dependent People in Spain”.





The Spanish **Law 39/2006 for the Promotion of Personal Autonomy and the Assistance to Dependent People**, which was recently enforced, defines dependence as the “permanent state of people that due to age, illness or disability, and linked to the lack of physical, mental, intellectual or sensory autonomy, require the assistance or substantial help of other people in order to carry out the basic activities of daily living, or, in the case of people with intellectual disability or mental illness, of further support for their personal autonomy”⁹.



Even severely dependent people can be looked after appropriately in rural areas, with a well-organised action plan.

1.1.2. Relevant definitions.

The Law for the Promotion of Personal Autonomy and the Assistance to Dependent People, provides further definitions¹⁰ that may help understanding Dependence:

1. **Autonomy:** The ability to control, manage and take personal decisions on one’s own initiative and live according to own rules and preferences, and to carry out basic activities of daily living.

⁹ Article 2.2. Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.

¹⁰ Article 2. Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.





2. **Activities Of Daily Living (ADL):** The most elementary tasks allowing individuals to develop their life in an autonomous and independent way, such as: personal care, basic housework, mobility, recognition of people and objects, sense of direction, understanding and carrying out of simple tasks or commands.
3. **Support needed for personal autonomy:** the support required by intellectually disabled people in order to live with a satisfactory level of personal autonomy within the community.
4. **Non-professional help:** home assistance provided by family members and relatives of dependent people, which are not connected with any professional care service.
5. **Professional help:** The assistance provided by a public body, private for-profit or non-profit entity or self-employed professional providing care services to dependent people, in their homes or in a specific centre.
6. **Personal assistance:** Service provided by a personal assistant that performs or helps dependent people performing daily life activities, in order to contribute to their independence and promoting their personal autonomy.
7. **Third sector:** non-profit private organisations resulting from different kinds of social initiatives sharing an interest in solidarity and community welfare and supporting the recognition and exercise of social rights.

1.1.3. New model for the protection of dependent people.

The approach to disability is changing: Disabled people are no longer considered as people that do not contribute to society, and are regarded as people that need some obstacles to be removed in order to become participative citizens. The former medical approach to disability has been replaced by a model based on social and human rights.

In 1998, the Committee of Ministers of the Council of Europe adopted a deep reform in order to protect dependent people.





Later, on March 2000, the Council of Europe stated in Lisbon that there was a need to reform the social protection schemes. In 2001, in Gothenburg, the Council of Europe focused on how to address the ageing of population and ordered a report on the social and health situation of elderly people. This report was presented in



Solitude and social isolation can speed up the deterioration of someone's health and increase their degree of dependence.

the Barcelona European Council in 2002, where they set up the objectives that had to be pursued as regards the social protection of dependent population in EU countries.

The recognition of the rights of dependent people has been stressed in several documents by international organisations, as the World Health Organisation, the Council of Europe and the European Union.

In 2002, in the period of Spanish presidency, the European Union agreed upon three criteria that had to govern the dependence policies of member States: universality, high quality and sustainability in time of the systems implemented.

The conclusions of the report produced by the Subcommittee on the study of the situation of disabled people, published on December 13th 2003 stress the need to create an integral system that addresses dependence from a global point of view and with the active participation of society¹¹..

¹¹ Explanatory preamble. Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.





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We have changed our view, now people go first, and the approach used is comprehensive, coherent and respectful with human rights, fundamental liberties and the dignity of disabled people.

Thus, many European countries have adopted more active policies intended to give disabled people the control over their lives back¹².

It is a fact that dependent people have the right to stay in their usual contexts for as long as it is possible, provided that they do not wish to live in residential homes¹³.

This fact implies that home assistance to dependent people is not a whim of the user, but a recognised right¹⁴. Moreover, the experiences of home assistance and tele-assistance have proved that the periodical follow-up of people at risk of becoming dependent is one of the best instruments to prevent dependence and promote personal autonomy.

1.1.4. Dependence and age.

There is a close relationship between dependence and age. The percentage of individuals with limitations in their functional abilities increases with age.

The increase of prevalence ratios in the different age groups is not constant; there is an age (about 80 years old) in which the prevalence ratio increases substantially.

In addition to this, several studies show an evident relationship between age and disability, given the fact that 32% of people aged over 65 have some type of disability, while the percentage is 5% in the rest of age groups¹⁵.



Elderly people may need assistance to perform activities of daily living, but they have a lot to give and to transmit to society, especially in rural areas, where part of the traditions are still alive thanks to the elderly people that still live in their villages.

¹² The Council of Europe Disability Action Plan 2006-2015.

¹³ Article 29b. Law of the Country of Navarra 15/2006 of 14th December on Social Services.

¹⁴ Article 3.i. Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.

¹⁵ Explanatory preamble. Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.



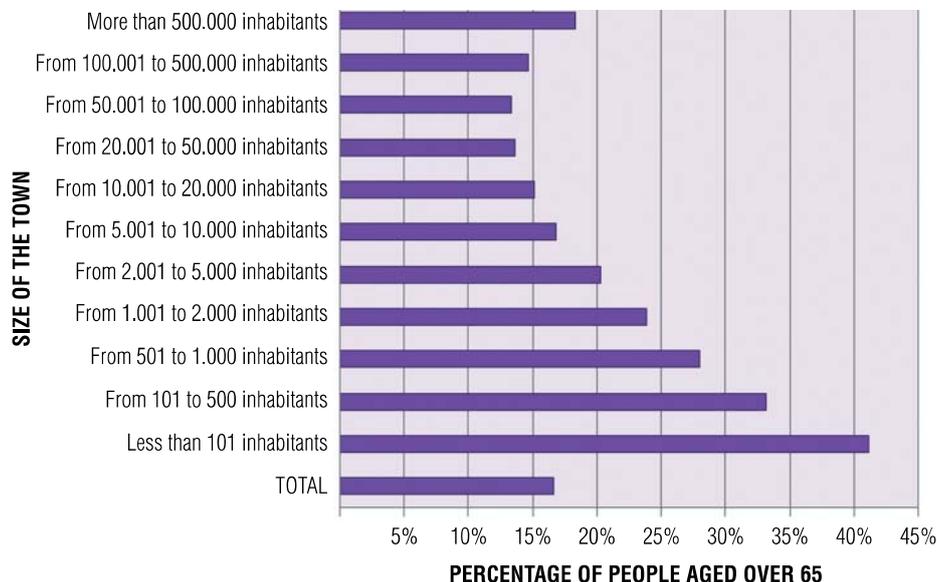


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The fact that dependence is connected with the ageing of population is not surprising.

Thus, we should not be surprised to see that a simplistic view may lead us to think that dependence affects only elderly people¹⁶.

On the other hand, there is an evident relationship between the number of inhabitants and ageing. As shown in the following figure, in Spain, the smaller the village the larger the population aged over 65.



Percentage of people aged over 65 according to the size of the town where they live. Source: Spanish National Statistic Institute. Population and houses census 2001. Definitive results. Last data available.

The ageing of the population shows that in rural areas, most people aged over 65 lacks the support of their children, that is, in most cases, their children live in bigger towns, mainly for work reasons.

This fact could increase the risk of elderly people in rural areas to become dependent.

¹⁶ White Paper on "Attention to Dependent People in Spain".





In Spain, Public Administrations have addressed the needs of elderly people and dependent people through the autonomous and local governments, and in the scope of the **Concerted Plan to Provide Basic Social Services**, in which the National Government takes part too.

At national level, the government has adopted the **Action Plans for Disabled People and for Elderly People**.

On the other hand, the **Social Security** has provided some assistance services to disabled elderly people: severe disability, aids for caregivers within non-contributory disability benefits and benefits for families with disabled dependent child, social services for the re-education and rehabilitation of disabled people and for the assistance to elderly people¹⁷...

1.1.5. Improvement of the health care system.

The Dependence Law is the result of the attempt of the Spanish Government to ensure a framework of services for dependent people. This law is a new type of social protection that broadens the former protection provided by the Government and the Social Security System.

The principles of the Dependence Law¹⁸:

1. The public nature of the system to support Autonomy and provide Assistance to Dependent people.
2. The universal, equal and non-discriminatory access of all dependent people, in the terms established by the law.
3. A complete and integrated assistance to dependent people.
4. Mainstreaming of the policies addressing the assistance to dependent people.

¹⁷ Explanatory preamble. Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.

¹⁸ Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.





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5. Valorisation of people needs, according to equal criteria to assure real equality conditions.
6. Personalised attention, especially to individuals that require more support due to former situations of discrimination or lack of equal opportunities.
7. Provision of the necessary measures as regards prevention, rehabilitation and social and mental stimulation.
8. Promotion of the necessary conditions for dependent people to have a normal life with the highest possible degree of autonomy.
9. Whenever possible, allowing dependent people to be assisted in the context where they live.
10. Quality, sustainability and accessibility of the services made available to dependent people.
11. Involvement of dependent people, and whenever possible, their families and the entities that represent them, in the terms established by the law.
12. Cooperation of social and health care services in the assistance to the users of the system to support Autonomy and provide Assistance to Dependent people, which is made provision for in the herein law and in the subsequent regulations of the Autonomous Communities and Local entities.
13. Involvement of private entities in the support personal autonomy and assistance to dependent people.
14. Involvement of the third sector in the support personal autonomy and assistance dependent people.
15. Cooperation between administrations.
16. Integration of the services made provision for in this Law in the social services networks of each Autonomous Community, to the extent of the competences that have been transferred, which will recognise such services and implement them in public centres and in private centres and private centres with public funding.
17. Inclusion of the gender perspective, taking into account the needs of women and men.





18. People with severe dependence will have preference.

The **System for the Assistance to Dependent People** was created in order to improve the social services provided by the Spanish Government and address the needs of dependent people, and promote their autonomy, quality of life and equal opportunities¹⁹.

The Law on Dependence makes provision for the promotion of personal autonomy and the assistance to dependent people by creating a **System for the Autonomy and Assistance to Dependant People (SAADP)**, in which all Public Administrations will take part.

This system is intended to ensure that conditions are met and in order to establish the levels of protection referred to in the Law. It is also the instrument for the collaboration and involvement of all Public Administrations, and for the optimisation of the public and private resources available.

Thus, the system provides for a subjective right based on universal coverage, equality and accessibility and develops a comprehensive assistance system¹³.

The Law on Dependence does not only contemplate the right to assistance, but also the way such assistance will be financed and paid for.

Funds will be determined by the number of dependent people and by the services that will be provided. Funding will be stable, sufficient and durable, and will be the joint responsibility of Public Administrations.



Promoting activities to exercise mental agility is also useful in order to prevent dependence.

¹⁹ Explanatory preamble. Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.





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The National Government will provide such amounts to the Autonomous Communities for them to provide protection to dependent people.

This system will provide equal assistance to all dependent people.

Users will contribute to the financing of these services, according to their economic situation, the type of service required, and the expenses derived from such service²⁰.

Apart from the social aim, which is the one that prevails, we must not forget that the creation of an appropriate social security coverage in order to support the autonomy and assistance to dependent people will also imply saving money and making a better use of the public health system, given the fact that *“the existence of an appropriate network of services in order to address dependence socially, would reduce to a great extent the expenses of the health care system, some of which are derived from the assistance to dependent people”*²¹.

In addition to this, preventive actions to fight the processes that reduce autonomy, and the inclusion of people at risk in the system, will also reduce the sanitary and assistance costs, as constant assistance and follow up of individuals can prevent dependence and health conditions that require further assistance.

1.1.6. Double perspective of the assistance to dependent people: support for dependent people and their caregivers.

Up to the present, the family, especially female relatives, have been responsible for dependent people, and have provided the so-called «informal support». The changes in family models and the progressive entrance of women into the labour market, affect this situation, and make it necessary to update traditional assistance systems in order to ensure assistance to all those citizens that require them. Thus, the demand for assistance services is expected to grow²².

²⁰ Explanatory preamble. Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.

²¹ White Paper on “Attention to Dependent People in Spain”.

²² Explanatory preamble. Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.





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In spite of the effort made through previous policies of reconciliation of work and family life, the lack of the necessary social assistance to families leads to an unbalanced share of responsibilities between men and women and is a major obstacle for women to enter the labour market.

There is a huge social debt with family caregivers that look after dependent people. At present, caregivers (mainly women aged over 45) are not entitled to any benefits for their services, moreover, they will have to overcome lots of problems in order to obtain pension rights.

The fact that the national insurance contribution system will take these services into consideration, and pay pensions to caregivers, partly with funding from the National System of Dependence, will allow them to have a professional career and benefit from a right that they are not entitled to at the moment²³.

1.1.7. Description of the type of activities liable to be affected by disabilities in Spain.

The type of daily life activities that are limited by the disabilities of Spanish people are described clearly in the following table and figure.

Activity of daily living concerned	6-16 years old	17-24 years old	25-35 years old	35-44 years old	45-54 years old	55-65 years old
Sight	188,37	229,07	214,64	196,73	202,48	236,82
Perception of any image	22,42	30,66	5,14	10,28	13,18	11,62
General tasks involving sight	95,51	121,11	137,66	110,7	108,08	128,01
Accurate tasks involving sight	74,07	118,3	86,3	102,92	113,1	141,4
Other sight problems	59,63	63,73	82,96	55,37	58,88	61,94
Hearing	191,64	197,25	176,67	203,12	211,6	230,57
Perception of any sound	31,42	56,57	33,06	32,16	38,64	27,11
Hearing of loud sound	39,68	46,19	48,99	54,39	34,86	51,15
Hearing utterances	158,77	128,3	134,87	156,52	164	191,58
Communication	459,7	349,82	285,88	184,25	137,38	74,36
Verbal communication	101,82	88,2	54,19	42,77	56,25	34,71

²³ White Paper on "Attention to Dependent People in Spain".





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Activity of daily living concerned	6-16 years old	17-24 years old	25-35 years old	35-44 years old	45-54 years old	55-65 years old
Communication through alternative language systems	139,7	103,35	67,07	37,19	14,08	9,41
Communication through non – signed gestures	78,91	85,66	40,27	24,42	10,62	6,29
Communication through conventional writing - reading	376,97	284,38	253,22	152,65	93,11	48,68
Learning, applying knowledge and accomplishing of tasks	399,89	342,2	287,37	185,63	114,04	83,42
Recognition of people and objects, sense of direction	118,49	91,94	84,42	57,04	26,92	28,73
Remembering information and events	194,82	166,32	135,88	96,62	70,03	68,39
Understanding and accomplishment of simple commands and or tasks	112,36	105,57	90,63	57,96	29,52	17,6
Understanding and accomplishment of complex commands and/ or tasks	380,54	307,63	261,17	158,4	89,12	42,03
Moving	183,52	165,76	208,48	288,06	334,15	348,29
Changing and maintaining body posture	109,6	106,8	133,12	177,21	205,6	190,41
Getting up and lying down	158,31	154,08	178,1	241,53	282,23	296,63
Moving within the home	147,3	100,82	120,53	149,48	153,05	148,74
Using arms and hands	239,16	258,56	223,23	295,3	353,86	365,85
Moving light objects	140,34	161,64	170,24	224,83	286,53	296,97
Using tools and utensils	177,12	198,06	157,81	191,04	206,51	213,18
Handling small objects with hands and fingers	180,66	163,62	149,87	157,99	156,47	161,73
Moving outsider the home	438,96	583,73	592,96	530,41	512,69	508,12
Moving without using a means of transport	313,6	257,57	288,38	286,85	302,19	335,37
Moving using public transport	424,13	392,69	358,52	350,56	308,64	338,07
Driving self owned car	0	522,06	528,52	441,79	394,49	370,44
Taking care of oneself	292,93	200,8	185,97	135,76	133,63	130,12
Washing oneself: Having a clean and neat appearance	253,88	175,35	162,32	117,41	104,24	99,98
Controlling the need to go to the toilet, and being able to do it unassisted	155,68	104,47	90,56	56,76	40,72	33,48
Dressing, undressing and dressing up	256,94	147,8	146,96	106,28	97,83	97,8
Eating and drinking	132,89	67,93	70,19	42,11	34,87	22,32
Taking care of housework	424,24	438,76	441,34	373,34	345,59	335
Buying and controlling supply and service needs	338,41	315,55	311,02	256,57	221,73	224,43
Taking care of meals	221,28	267,98	260,43	171,37	133,06	120,11
Taking care of laundry	203,64	249,41	262,55	208,78	183,49	182,74
Cleaning and keeping the house	211,33	273,93	289,72	257,38	260,43	258,08
Taking care of the rest of the family	228,18	271,42	263,9	192,63	141,63	128,62





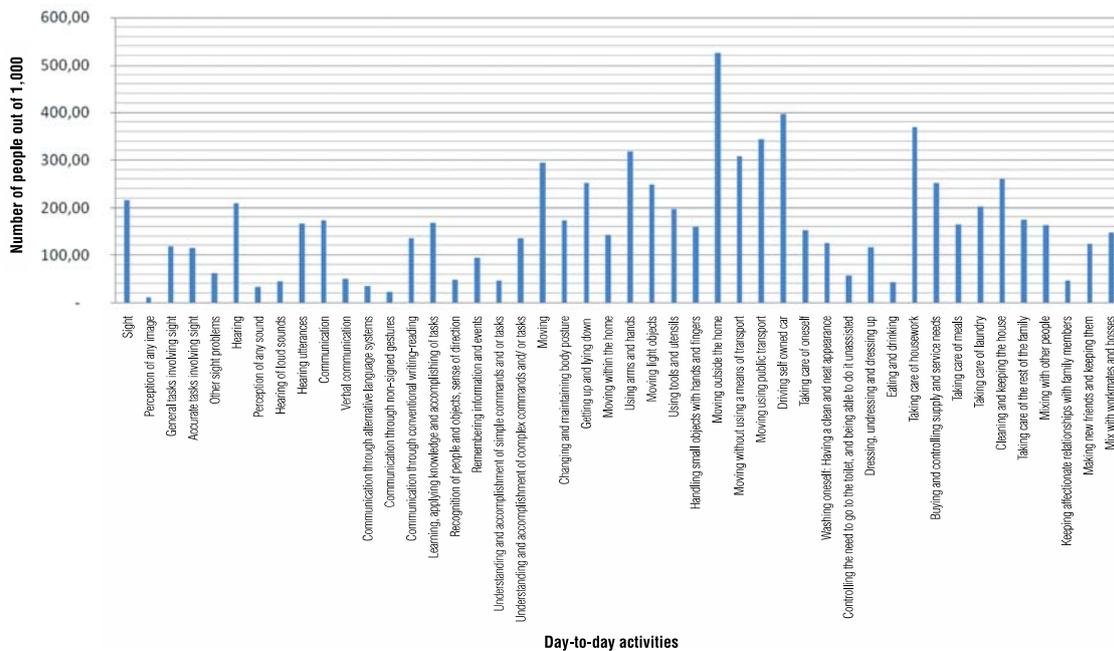
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Activity of daily living concerned	6-16 years old	17-24 years old	25-35 years old	35-44 years old	45-54 years old	55-65 years old
Mixing with other people	328,79	331,8	276,08	175,64	112,21	90,62
Keeping affectionate relationships with family members	71,76	101,46	106,67	63,3	28,82	17,55
Making new friends and keeping them	276,74	282,23	238,54	137,46	77,86	52,09
Mix with workmates and bosses	287,9	299,26	246,66	157,78	103,7	86,04

NOTE: The same person may appear in more than one disability category.

Percentage of people with disabilities out of 1000 people, according to age groups and type of disability.

Source: Spanish National Statistic Institute.



People having some disability out of 1000 people and type of activities that are affected by such disability.





1.2. Evolution in the use of the resource.

The demand for assistance:

The demand of assistance to dependent people has increased substantially in the last few years, and it is expected to continue growing for the next few decades. This is a consequence of demographic, medical and social factors, as population ageing, higher survival rates in people having congenital disorders, severe conditions or serious accidents, and increase of traffic accidents and accidents at work²⁴.

The increase of the demand is coetaneous with changes in the traditional family structures. Housewives were in charge of taking care of dependent people, among other tasks. Women started to enter the labour market decades ago. However, at



The population of rural areas has the right to receive assistance without having to move from away from their context, even if they are dependent.

present, they only benefit from equality conditions when training or studying. Women's unemployment rates are higher, and the percentage of women in decision taking positions is lower, and so are their wages.

In many cases, when a dependent person has to move to their homes, women stop working, as society still considers that is the way it should be. In addition to this, women get lower wages, and therefore if a household has to do without one job it will be the worst paid one, especially if it is that of a woman.

Governmental support to informal care-giving is liable to have a positive effect on the equality between men and women, apart from ensuring assistance to dependent people whether they

have relatives that can take care of them or not.

²⁴ White Paper on "Attention to Dependent People in Spain".





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We must bear in mind that personal autonomy is now a recognised right.

However, the entrance of women in the labour market is not the only reason for the crisis of “informal” care giving²⁵, there are many other causes:

- the reduced number of members of family units,
- families are not unbreakable and immutable institutions anymore,
- family members have a greater geographical mobility,
- the democratisation of the inter-generational relationships within families and between couples,
- children stay in the family home until much later, even more than 30 years old.

In the near future, the problems of fertile couples to conciliate work and family life may be expected to increase the problems of “informal” care-giving: couples wait longer to have their first child, and the generational replacement takes place slower, which means that parents are more liable to need their children’s assistance when the latter do not have a stable economy and family life yet.

²⁵ White Paper on “*Attention to Dependent People in Spain*”.





2. IMPORTANCE AND IMPACT OF THE RESOURCE.

2.1. Current situation and impact of the resource.

2.1.1. Current situation in rural areas.

In general terms, rural areas undergo an important backwardness of service provision and centres for disabled people, especially if they are dependent²⁶.

According to the study on the needs of people with severe disability and their families in rural areas (Necesidades en el medio rural de las personas con gran discapacidad física y sus familias, Spain, 2006), the 45.3% of disabled people live in rural areas with less than 2,000 inhabitants²⁷. These figures may be slanted, as most of the people surveyed in the study live in Autonomous Regions with a lot of rural population (namely Castilla y León, Andalucía and Castilla la Mancha).

In rural areas, few of the people with severe disabilities wishes to live in a residential home, regardless the support they may get, and their relatives share their opinion. Other options are living independently in a flat with the help of a personal assistant and living in a city. On the contrary, almost 30% of disabled people wish to live in their homes but having access to more services.

Summing up, most disabled people wish to stay where they live. There is a general opinion that living in a rural area has the advantages of quietness and a greater social support. The disadvantages are the lack of services or problems to access the existing ones²¹.

Almost 40% of people with severe disability that live in rural areas need more health care assistance. One out of four villages lack a health care centre of their own.

Moreover, there are problems to access the exiting centres, and there is not appropriate pubic transport to get to them.

²⁶ White Paper on "Attention to Dependent People in Spain".

²⁷ Needs of serious physical disabled people and their families in the rural areas. Result Report 2006. Representative State Platform of physical disabled.





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In some cases, disabled people need to travel some 23 Km. in order to get to the nearest rehabilitation centre, and in most cases they pay for the expenses derived from such journeys²⁸.

Only 16% of people with severe disability living in rural areas receive the necessary home assistance provided by the social services. In general, home assistance is not very common, and whenever it is needed, most of the times, it is the disabled person or his or her relatives who has to go to visit the social worker. A 40.7% of disabled people consider that social services are little accessible or not accessible at all²².

As for caregivers, they are 55 years old on average, although there are a significant number of older people too. In the 46.3% of the cases, the couple or spouse is the caregiver and in the 35.7%, the mother accomplishes this task. The 81% of caregivers devote their time to housework and claim that they do not work because they have a disabled family member. More than 12% of caregivers are disabled themselves²².

In addition to this, most disabled people live in rural areas. This fact makes it necessary to create an assistance model that copes with the specific needs of rural areas²⁹.

²⁸ Needs of serious physical disabled people and their families in the rural areas. Result Report 2006. Representative State Platform of physical disabled.

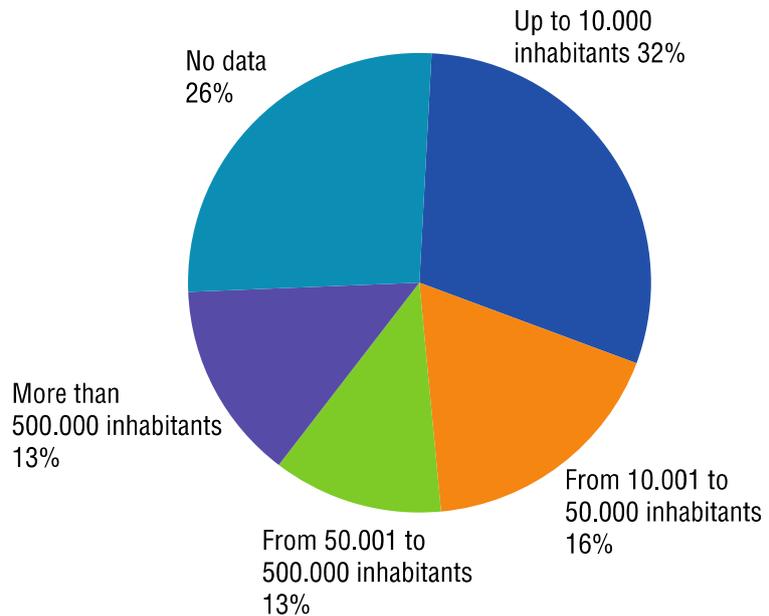
²⁹ White Paper on *“Attention to Dependent People in Spain”*.



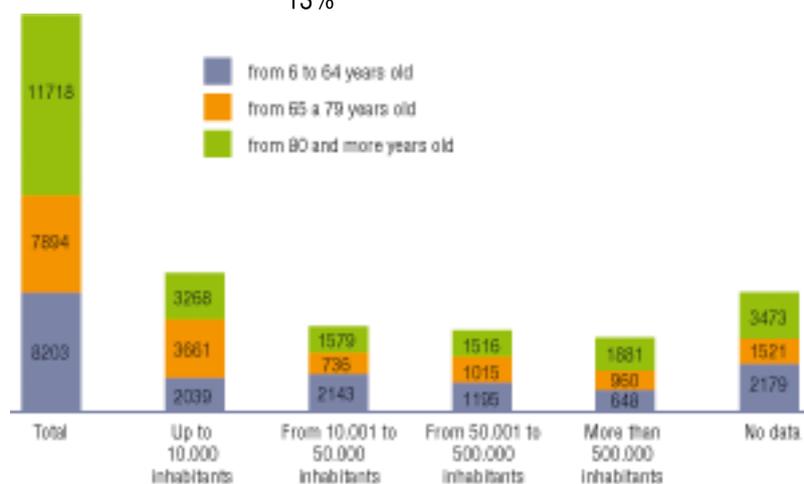


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Percentage of disabled people living in rural areas that have moved as a consequence of their condition, sorted by size of the town they have moved to. Source: Spanish National Statistic Institute.



Percentage of disabled people living in rural areas that have moved as a consequence of their condition, sorted by age group and size of the town they have moved to. Source: Spanish National Statistic Institute.



Most of the people that move from rural areas due to their disability move to towns with less than 10,000 inhabitants, because they have more services and fewer barriers for disabled people. The percentage is smaller in larger host towns.

Although this is not true in all cases, there is a tendency to move to small towns (10,001-500,001 inhabitants) for age groups between 6 and 64, instead of moving to rural areas (less than 10,000 inhabitants). However, rural areas are the second choice, before medium sized towns (from 50,001 to 500,001 inhabitants) and large cities (more than 500,001 inhabitants).





2.1.2. Assessment of dependence situations.

The **Spanish law for the Promotion of Personal Autonomy and the Assistance to Dependent People** states that the assessment of the dependence situation will be carried out by bodies appointed by each Autonomous Community, although a national body, the Territorial Council, will establish the common criteria on the composition and functions of assessment bodies of Autonomous Regions, which will in all cases be of public nature³⁰.

The assessment of the degree and level of dependence will be determined by the scale agreed upon by the Territorial Council of the System for the Autonomy and Assistance to Dependant People and approved by a Royal Decree of the Government. Such scale will be based on the International Classification of Functioning, Disability and Health (ICF) by the World Health Organisation.

The scale will establish the criteria used in the assessment of the degree of autonomy of a given person, the ability to carry out activities of daily living, the number of points awarded to each level and degree of dependence, and the protocol and techniques used in order to assess capability, whenever necessary.

This scale will assess the capability of individuals to carry out basic activities of daily living by themselves, and whether they need support or supervision in order to carry them out, in the case of intellectually disabled or mentally diseased people.

The assessment will take into consideration the reports on the health of the individual and his or her context, and the technical assistance, orthosis or prosthesis previously prescribed.

At present, the regulations and the scale used to assess dependence are established by the Royal Decree 174/2011 of 11th February, which approves the use of a scale in order to assess dependence situations, as established in the Law 39/2006 of 14th December, on the Promotion of Personal Autonomy and the Assistance to Dependent People.

³⁰ Article 27. Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.





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According to the Scale for the Assessment of Dependence, the following situations may exist:

- **Degree I. Moderate dependence:** when individuals need help to carry out basic activities of daily living at least once a day or need intermittent or limited support in order to be autonomous.
- **Degree II. Serious dependence:** When individuals need help to carry out several basic activities of daily living twice or three times a day, but do not require permanent assistance from caretakers or extensive support for personal autonomy.
- **Degree III. Severe dependence:** when individuals need help to carry out several basic activities of daily living several times a day and have no physical, mental, intellectual or sensory autonomy, and therefore need the continuous and essential support of a caregiver or needs extensive support in order to have personal autonomy.

All these degrees of dependence are liable to get Home Assistance, but the intensity, specificity and daily duration of such assistance will depend on the needs of each user.

According to the Law on Dependence, those entitled to dependence benefits will contribute to finance them, according to the type of service, the costs derived from it and the economic situation of the user. The economic situation of users is taken into consideration when determining the amount level of the benefits. In order to settle the contribution of the users, the differences between assistance, upkeep and lodging services are taken into account. Above all, no citizen will be excluded from the System due to a lack of economic resources.





2.2. Results and impact of the resource.

Nowadays disabled people are being taken care of mainly by means of “informal support”.

Assistance to dependent people includes mainly personal care routines.



Rural areas have a lot of positive elements for their inhabitants, including disabled people. However, sometimes they lack the necessary services and they are forced to move to other places where more services are available. Moving can cause depression due to social bad adaptation.





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TOTAL DATA	Total	From 6 to 64 years old	From 65 to 79 years old	From 80 years old onwards
TOTAL	2.088,1	687,8	643,4	756,9
Husband/Wife/Partner	448,8	167,1	200,0	81,6
Daughter	473,0	32,8	132,3	307,9
Son	115,9	13,7	42,3	59,9
Sister	58,8	31,5	16,0	11,4
Brother	10,8	5,6	2,8	2,5
Mother	168,5	168,5	0,0	0,0
Father	18,1	18,1	0,0	0,0
Other relative	136,8	12,4	30,3	94,0
Employee	132,9	15,3	34,5	83,1
Friends or neighbours	7,8	3,0	2,1	2,7
Social services (PPAA, NGO)	38,4	5,6	10,7	22,1
Other people	13,2	2,2	5,7	5,3
No information available	465,2	212,0	166,7	86,4

IN THE HOUSE OF THE CARE-GIVER	Total	From 6 to 64 years old	From 65 to 79 years old	From 80 years old onwards
TOTAL	1.280,2	425,9	370,9	483,5
Husband/Wife/Partner	447,9	166,5	199,8	81,6
Daughter	335,7	23,5	85,7	226,4
Son	93,5	13,1	34,8	45,6
Sister	42,2	21,7	12,0	8,5
Brother	9,4	4,6	2,4	2,3
Mother	164,5	164,5	0,0	0,0
Father	17,8	17,8	0,0	0,0
Other relative	101,6	9,4	20,8	71,5
Employee	61,4	3,8	13,0	44,6
Friends or neighbours
Social services (PPAA, NGO)
Other people	6,0	1,1	2,3	2,7
No information available	0,2	0,0	0,1	0,2





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IN ANOTHER HOUSE	Total	From 6 to 64 years old	From 65 to 79 years old	From 80 years old onwards
TOTAL	343,0	49,9	105,9	187,2
Husband/Wife/Partner	0,9	0,7	0,3	0,0
Daughter	137,4	9,3	46,6	81,5
Son	22,4	0,6	7,5	14,3
Sister	16,6	9,8	4,0	2,8
Brother	1,4	0,9	0,4	0,1
Mother	4,0	4,0	0,0	0,0
Father	0,3	0,3	0,0	0,0
Other relative	35,2	3,1	9,5	22,6
Employee	71,5	11,5	21,5	38,4
Friends or neighbours	7,8	3,0	2,1	2,7
Social services (PPAA, NGO)	38,4	5,6	10,7	22,1
Other people	7,1	1,1	3,4	2,6
No information available	0,0	0,0	0,0	0,0

NO INFORMATION AVAILABLE	Total	From 6 to 64 years old	From 65 to 79 years old	From 80 years old onwards
TOTAL	464,9	212,0	166,6	86,3

People with disabilities according to the residence of the main care-giver and his/her relationship with the disabled people. This information is also given according to the age of the disabled people (Units: thousands of people with disabilities (of 6 years old or older) that receive personal care. Source: Survey on Disability, Personal Autonomy and Dependence Situations 2008 (EDAD 2008). Spanish National Statistic Institute.

From an employment point of view, dependence could be said to be quite demanding in terms of manpower. Therefore, the **National System of Dependence** is going to have a very positive effect on employment, in two different ways³¹:

- The new jobs that would be created in the public and private spheres as a result of the implementation of the assistance programmes.

³¹ White Paper on "Attention to Dependent People in Spain".





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- The availability of new manpower that is currently out of the labour market, either totally or partly, because they are taking care of dependent people, and who would be able to re-enter the labour market again.

Apart from the above-mentioned positive consequences, other positive effects are to be expected, as the legalisation of work situations that are now irregular, and the increase in the efficiency of other economic or health care services that are currently tackling these situations, even if they are secondary, unequal and incoherent³².

Implementing specific actions addressed to satisfy the needs of dependent people, increasing the number of rooms in residential homes and day centres and extending home assistance services and tele-assistance imply many new jobs, and the expenses derived from such actions are perfectly affordable for Spanish economy. Most of these jobs would benefit social groups vulnerable to employment difficulties (such as women, unskilled workers, long-term unemployed people or young people looking for their first job). Therefore, the jobs created will improve employment rates and activity rates, reduce temporary employment and reduce the number of family units in which every member is unemployed²⁶.

All the funding devoted to the improvement of the Welfare State and to satisfy new needs by ensuring social rights, is being invested in the quality of life of citizens and in employment creation, as social services are one of the sectors liable to create more employment, and represent an important New Source of Employment at European level, as mentioned repeatedly by the European Commission and other international bodies³³.

The economic returns produced by investing in social services (saving derived from less unemployment benefits, and more social security contributions, VAT, personal income tax and corporate tax) show that social investments can contribute to create employment and new economic activities²⁷.

³² White Paper on *“Attention to Dependent People in Spain”*.

³³ White Paper on *“Attention to Dependent People in Spain”*.





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In spite of the fact that employment rates have improved in the last few years, there is still a substantial employment deficit, especially among women, who have unemployment rates twice as high as those of men²⁷.

PILOT EXPERIENCES

We will now describe the Home Assistance Service available in the district of Valdorba, as part of the Basic Social Services of the Area of Tafalla (in Navarra, Spain).

The main objectives of the Basic Social Services, supported by the Government of Navarra and managed by Local Entities wishing to make this service available to population, are the following:

- Supporting the personal autonomy of users and their hygiene.
- Allowing them to stay in their natural context and improving their quality of life.
- Preventing personal situations that may derive in physical or psychological decay and in social discrimination.
- Encouraging alternative possibilities to unnecessary stays in institutions.

The home assistance service provided in the district of Valdorba consists of providing several services and/or personal, social and housework assistance to individuals and families in their own homes, when they are not able to tackle daily routines by themselves or when there are family members with psychological family problems.

These social workers providing their services in the villages of the district of Valdorba were hired by Leoz Council seven years ago. They work for



Social worker arriving to the home of one of the users of the service provided by the Council of Leoz.





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the Municipal Consortium comprising Leoz, Garínoain, Barásoain, Olóriz, Orísoain and Pueyo-Puiu.

These social workers address the needs of 1913 neighbours. 21 users with different degrees of dependence require home assistance. These users have also been assigned a tele-assistance service, connected with the emergency telephone services (the so-called 112) of the Autonomous Community of Navarra.

Before the new Law on Dependence was enforced, Social Workers of the Basic Social Services of the Area of Tafalla were responsible for the study and assessment of the social and family conditions of users. They were asked to write a report including:

- The type of benefit the user was entitled to.
- The days and hours they were assigned.
- The fee that the user had to pay.

The main change brought about by the new law affects the assessment process, which has now a unified protocol. Thus, before requesting home assistance, users must be assessed. Their degree of dependence must be established in order to provide them the most suitable assistance for their condition and their social background.

According to the experience of the Councils of Leoz and Valdorba, the Assistance System for Dependent People may create from 2 to 4 employments in each 1,000 inhabitants. Nevertheless, a growing demand of these services is to be expected, as foreseen by all the studies.

Different people are hired by the Council of Leoz, and their working hours are the 60% of normal working hours. Their working hours allow them to satisfy the needs of users according to an adequate schedule for each case. Thus, the service is provided in the most suitable way for users and the social workers can conciliate work and family life.

Workers have received continuing training. The courses were organised by several entities connected with home assistance services such as INAP (Institutes of Public





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Administrations) and the Federation of Councils and Districts (Federación de Municipios y Concejos).

It would be very positive for workers to enrol in more training initiatives connected with social skills and other continuing training. Social workers should be paid for attending these courses, especially whenever job demand is low in the area. Thus, the staff providing this service in rural areas will be fully qualified.

In rural areas as the one we are addressing, councils always attempt to hire local people for the job, in order to boost endogenous development and to favour the relationship between the user and the social worker. This type of job creates close personal links, and the confidence between the worker and the user should be encouraged.

In addition to this, we must not forget that rural users, especially elderly people, tend to have their own idiosyncrasy (habits, customs) and someone coming from the city may consider them as “obsessive”.

People sharing the same rural background are more liable to understand each other. At present the service provided is adapted to existing needs, that is, there are no neglected users due to lack of resources. Nevertheless, there may be potential users that do not wish to apply for home assistance out of pride or embarrassment.

The Service and the entities supporting it are trying to prevent reluctance (they may feel they are allowing a stranger in their homes, they may feel ashamed to be taken care of by someone who is not their daughter or other close relatives, etc. These ideas are quite common in rural areas) by means of information campaigns describing the services provided and their price.

However the best possible advertising campaign is the one made by users themselves and by their families. Their experience may encourage other dependant people to apply for home assistance.





3. USE OF THE RESOURCE AS AN INSTRUMENT FOR RURAL DEVELOPMENT.

3.1. Possibilities and conditions needed for development.

The new **Law on Dependence** is an opportunity to define an integrated services model. The coordination of the different administrations is essential in the implementation of such model. The administration has to make the most of the advantages of rural areas in order to provide a “customised” service addressing the real needs of rural population. The new technologies are an essential tool for people to access these services³⁴.

When defining dependence as a social need that has to be addressed, not all the limited activities listed by the WHO, and described in the new classification of disabilities are included.

However, some of these should be taken into account, as the ones concerning:

- personal care (washing, body care, excretion, getting dressed, eating, drinking, caring of one’s health),
- mobility and changing or keeping body posture (basic body gestures as standing up, sitting down, laying down, etc.)
- the ability to move within the house,
- the possibility to deal with housework (cooking meals, home routines and other tasks),



The Basic Social Services in rural areas must work hard to prevent potential users of the service to live secluded in their homes instead of applying for assistance, out of ignorance or pride.

³⁴ Technical Conferences on Services for the Population in the Rural Areas.





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- the basic mental function (recognising people and objects, understanding and accomplishing easy commands, etc.)³⁵.

Private health schemes concerning dependence, in the places where they exist, are limited to personal care (basic activities of daily living) and do not include other duties of daily life, as housework, home care or the possibility of leaving the house.

In public systems addressing dependence, more activities are partly covered: funding for the removal of physical barriers at home, help with housework and transport services among other services intended to solve the problems of dependent people.

Local entities, Autonomous Communities and Central Governments are responsible for the provision of integral public services aimed to improve the autonomy of dependent people.

The assistance to dependent people should promote their personal autonomy and should improve their quality of life and autonomy, according to equal opportunities and to the following objectives³⁶:

- Contribute to their autonomous existence in their natural background, for as long they want, whenever possible.
- Improve their quality of life as regards their personal, family and social backgrounds, and encourage their active involvement in the community.

The recognition of their right to be assisted and to live an autonomous life, to the extent possible, and to get support in order to remove barriers, can imply the creation of jobs to assist dependant people in their homes. The economic aids made provision for will allow more citizens to afford these services.

Taking into account that the Law on Dependence recognises the right of users to stay in their background, home assistance may be the only service allowing rural population to live in their homes, especially in small villages, apart from “informal” support, of course.

³⁵ White Paper on “*Attention to Dependent People in Spain*”.

³⁶ Article 13. Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.

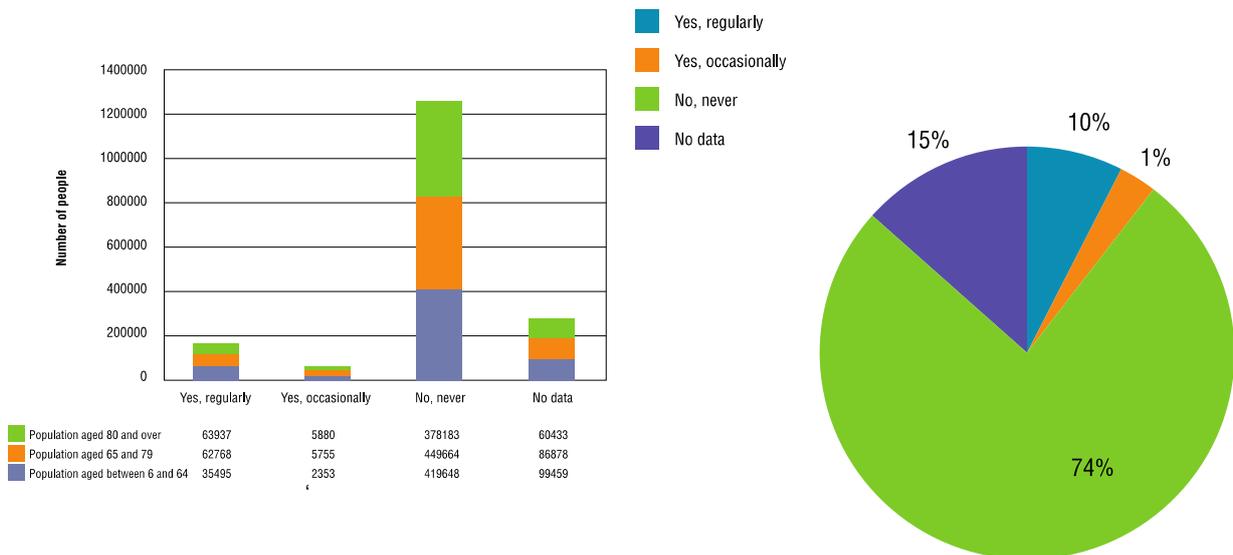




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However, “informal” support will be reduced (as this system does not seem very fair in terms of equal opportunities) until a substantial change in culture allows for the fair share of family burdens between men and women. This far, family burdens comprising “informal” support are taken on by men only in 12% of cases, and in 11% of cases when the person requiring assistance is 6-64 years old.

The Law on Dependence establishes the “**System for the Autonomy and Assistance to Dependant People**” in order to ensure the compliance of the basic conditions and the common core of the Law on Dependence, of national scope. This System will encompass the initiatives and competences of all Public Administrations as regards the promotion of personal autonomy and the assistance and protection of dependent people. It makes a better use of public and private funds, and contributes to the improvement of the quality of life of citizens. This system is a public network that integrates and coordinates both private and public services and centres³⁷.



People with disabilities receiving personal assistance, sorted by age groups and existence or not of compensation. Source: Spanish National Statistic Institute..

People with disabilities receiving personal assistance, sorted by existence or not of compensation. Source: Spanish National Statistic Institute.

³⁷ Article 13. Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.





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Local entities and Autonomous Communities are the ones that must foster public services and support the quality of life of users, caregivers and/or personal assistants.

As shown in the figures, the percentage of dependent people receiving an economic aid in order to hire a personal assistant is quite low. Before the enforcement of the law, the 74% of the population did not get any aid, and only a 10% were entitled to a regular subsidy.

The implementation of an assistance system for dependent people in rural areas represents an opportunity for the endogenous development of the area. With this system, universal coverage is granted to rural population, and their quality of life is improved. It prevents the forced uprooting of dependant people and it creates new employment opportunities in the area, which are liable to prevent and stop rural population from migrating to cities, provided such opportunities are complemented with training schemes for local population.

We are facing the transition to a new social system. We think that this is an opportunity for local entities to support these services by including them in their regular staff or by creating home assistance public enterprises.

This public service will allow users to stay in their villages, and also their assistants. Due to the complexity of the task, and in order to provide a high quality service, it is advisable that both the user and the assistant belong to the same area for them to be able to establish a close relationship.

As it is the case in most rural development projects, the collaboration among nearby villages is essential for the success of the initiative.

The maxim “united we stand” is especially true in these cases. Thus, very small villages can benefit from the assistance system thanks to joint community services, municipal consortiums and similar associations.

In rural areas, the lack of transport is in some cases a major barrier that has to be done away with. There are only a few villages with less than 1,000 inhabitants that have a public transport service.





3.2. Employment creation potential of the resource.

3.2.1. Employment creation.

The assessment of the employment creation potential in Spain is described in the **White Paper on Dependence** (Libro Blanco sobre Dependencia). The White Paper was published at the end of 2004.

The Ministry of Labour and Social Affairs commissioned the IMSERSO (Instituto de Mayores y Servicios Sociales, Institute of Elderly and Social Services) to produce it.

Employment creation potential of the resource has been assessed according to several staff ratios: The ratios used are the following:

- In regular **residential homes**, 0.5 workers per user, and 0.6 in residential homes for people with severe disabilities.
- In **day centres**, 0.35 workers per user.
- In **home assistance**, three different ratios have been used, depending on the services needed for each degree of dependence:
 - Severe dependence: 0.7 workers per user.
 - Serious dependence: 0.05 workers per user.
 - Moderate dependence: 0.21 workers per user.
- In the case of **assistance for personal autonomy**, 0.7 workers per user.
- In **tele-assistance**: 1 worker per each 100 user.

These ratios correspond to full time jobs. The schedule and working hours contemplate the different needs: morning, afternoon and evening shifts, Saturdays, Sundays and bank holidays, holidays, etc.).

Residential homes and home assistance would head the list of job creation, followed by day centres, assistance for personal autonomy and tele-assistance.

According to several studies, the demand of this type of services is expected to increase.

In fact, according to the data gathered at national level, and assuming all people with severe disabilities in rural areas benefit from home assistance, 9-17 employments would be created in rural areas per each 1,000 inhabitants.





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Most of these jobs would be part-time, which implies more employment creation and allows people with family burdens and other groups with difficulties to access the labour market.

The assistance of dependent people requires staff with some specialised knowledge.

The profiles required may be the following:

- In the first place, a large number of auxiliary nurses and caregivers with some knowledge on geriatrics or disability issues would be devoted to direct personal assistance.
- A second group of workers (less abundant than the first group) would include kitchen porters, cleaning and laundry staff and other housekeeping staff in residential homes and day centres.
- A third group would include technical staff in charge of the maintenance of centres and services, drivers, security, porters etc.
- A fourth group would include highly specialised staff: medical doctors, psychologists, social workers, physiotherapists, occupational therapists, nursery staff, instructors, etc.
- Finally, administrative staff would be required in order to manage the centres and the programmes³⁸.

³⁸ White Paper on "Attention to Dependent People in Spain".





3.2.2. Emerging professions.

Some of the main emerging professions in this sector are:

RURAL SOCIAL WORKER

The duties of social workers are the following:

- **Housekeeping tasks:**
 - Cleaning the home of the user.
 - Washing and ironing clothes.
 - Shopping.
 - Meal delivery.

- **Personal assistance duties:**
 - -Personal cleaning routines.
 - Special cleaning routines for incontinent users or users confined to bed.
 - Management and administering of medication, excluding those medicines administered intravenously or by intramuscular route, and medical dressings of all kinds.
 - Help the mobility of the user within the house: getting up, going to bed, and eating.
 - Escort services in journeys.
 - Management of several tasks as picking up and delivering of documents.
 - Contact with family members and neighbours.
 - Any other daily life activity.

- **Psychological-social tasks:**
 - Social guidance.
 - Technical and professional guidance for users to develop personal skills, promotion of self-help.
 - Involvement in educational processes and promotion of personal and social positive habits.





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Therefore, the training of these specialists should be consistent with their future tasks, which go from housekeeping to personal assistance, and promotion of the social and family relationships of the user.

DRIVER ASSISTING RURAL DEPENDENT POPULATION

The duties of Drivers assisting rural dependent population are the following:

Taking the user(s) and, whenever necessary, their social workers, to health care centres, educational centres etc.

Specific training must include techniques for transporting disabled people, guiding of non-sighted people etc.

Home assistance is not only intended to assist dependent people, it must also prevent disabilities and other conditions to appear or to get worse.

In order to achieve this objective, home assistance should be a part within a broader development plan encompassing social and health care services. Such plan would promote healthy lifestyles, prevention and rehabilitation programmes addressed to elderly people and disabled people and to those undergoing complex hospitalisation processes.

Thus, the Territorial Council of the System for the Autonomy and Assistance to Dependant People will agree on criteria, recommendations and conditions that should be included in the Plans to Prevent Dependence that each Autonomous Community will devise. Special attention should be paid to the risks and preventive initiatives addressed to elderly people³⁹.

We must stress the fact that the Law on Dependence makes reference to the permanent training of professional caregivers that will be in charge of dependence situations.

Therefore, the Government will determine which professional qualifications are necessary in order to perform these tasks. The government will promote the

³⁹ Article 21. Act 39/2006 on the Promotion of Personal Autonomy and Care of Dependent People.





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programmes and training initiatives required in order to provide the services made provision for in the Law on Dependence³³.

In order to ensure the quality of the System, the cooperation between the different Public Administrations connected with education, health care, employment and social affairs should be promoted, as well as the collaboration of all these bodies with universities, scientific societies, professional organisations, trade unions, employer's associations and third sector entities.



The social and cultural activities aimed for people at risks of becoming dependant and of dependant people are included in the dependence prevention programme.





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4. EXAMPLES OF COMPREHENSIVE RURAL DEVELOPMENT PROJECTS.

1. COUNCIL OF LEOZ, NAVARRA (SPAIN).

We will now describe an example of a comprehensive rural development project, which contemplates most of the New Sources of Employment and Emerging Professions that have been previously described.

This comprehensive project is conducted by the Council of Leoz, in Navarra (Spain). It is based on the economic resources provided by wind farms that have been erected in the area.

These wind farms have provided enough returns for the Local Government to carry out a local development plan, based on the creation of a public utility company called Orbalan, made for and by the population of the valley.

This enterprise has carried out several activities allowing for the sustainable use of the resources in the area:

- the rational silvicultural management of forests,
- the conservation of villages and their heritage,
- the creation of a plant nursery specialised on autochthonous plants, in order to counteract the impact of the wind farms,
- collaboration in local management,
- the services provided to the local population, and the support to the Basic Social Services of the area of Valdorba,
- the sustainable utilisation (both for tourist and commercial purposes) of the fungal resources of the valley, especially the truffles,
- the development of high quality active tourism activities,
- the interpretation of the natural heritage of the valley,
- other projects addressing organic production, for instance, the setting up of a windmill for organic wheat.

The creation and management of this public utility company has contributed to prevent migration, and the services it provides have improved the quality of life in the rural area.



In the installation of wind farms in the territories of the Council of Leoz priority has been given to public welfare over private interests.





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1.1. INTRODUCTION

The Council of Leoz is in the middle area of Navarra, some 30 Km. away from the main city of the county, Pamplona. Leoz belongs to the district of Valdorba, together with 6 more villages.

The Council governs a community of thirteen villages located in three natural valleys, with a total population of 273 inhabitants scattered in 9,000 hectares. The number of people actually living in the area is smaller, as many neighbours are only there during the weekends and in the summer, but they have decided to register there in order to keep their rights as neighbours.

Many people from this area migrated in the 60's; some villages were completely abandoned. The population has lived on their farms and cattle for the last 25 years, mainly thanks to the community aids under the CAP.

Nowadays, the inhabitants of the valley are mainly old retired or soon to be retired people. Nevertheless, thanks to this rural development initiative, the number of young couples with children living in the area has increased.

The Local Corporation has directed all its efforts since it was created in the 90s to manage the 13 villages and provide services as water supply, waste management, clean-up duties, telephone, and social services for elderly people etc. The Corporation has fostered new development proposals in order to prevent migration, and enable elderly people to remain in their homes and live in dignity.



The area of Valdorba is starting to revive after the decline that led to its depopulation in the 90.





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1.2. DRIVING FORCE: THE WIND

In 1995, after some negotiation with the enterprise E.H.N.S.A. a small wind farm was erected in the area of the Sierra de Guerinda. The Council of Leoz started to ponder on its resources, and realised that the wind was one of the most important ones.



The wind is one of the main resources that the Council of Leoz is making good use of.

The Council relied on this renewable energy source and in 1996 it signed collaboration agreements in order to erect the wind farm of Guerinda. This initiative intended to get funds in order to start up a local development project, which is still working and has evolved with the passing of time.

The wind farm was inaugurated in the end of 1997, and in 1998 the Council of Leoz had more than 100 wind

turbines installed. Nowadays there are more than 150.

The budget of the Council increased substantially with the erection of the wind farm, and allowed the Corporation to carry out a study on the resources of the area and make expenses estimates for the management of a sustainable development plan for the valley, in order to boost the growth of villages, involving local population.

1.3. ORBALAN

In order to carry out the local development project, the public utility company Orbalan was created.

This enterprise is owned by the Council of Leoz, and at first it was the sole partner. Nowadays also the nearby Council of Garinoain is involved. The enterprise intended to prevent the migration of population by means of a correct management the resources of the area (ruins, enterprises, art, environment, tourism) and to encourage endogenous development based on the sustainable utilisation of resources.

Thus, the corporate purpose of Orbalan is to provide public local services to the rural population by restoring the cultural and architectural heritage, and performing re-





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development works. In addition to this, it intends to carry out social and economic initiatives connected with the endogenous resources in the Orba Valley.

1.4. PROJECTS CARRIED OUT

All the projects carried out were and still are closely linked to the population of the District of Valdorba.

1. Silvicultural project

The first measure adopted by Orbalan, was the adequate management of forests, according to the guidelines in the Forest Land Use Planning of the area.

Initially, it intended to obtain sustainable and multi-purpose forests (firewood, timber, hunting, leisure, fungi, protection) and preserve the natural biodiversity of the area, by carrying out the necessary forestry works. Most of the forests within the territory of the Council of Leoz are included in the Special Protection Area of “Montes Valdorba”, where there are two Natural Reserves.

The management of community forests lead to the creation of six direct jobs for young people. At first, this initiative had environmental and economic aims. Vocational training and local employment were sought too.

Initially, these young people were not acquainted with forestry or the handling of machinery, and therefore they had to be trained in order to obtain the necessary professional qualification.

With the direct and daily contact with forests, and after four years of experience and training, five of these workers decided to set up their own enterprise: ORBASOA ZERBITZUAK, S.L.L. This enterprise was created in 2003, works mainly in the forests of Valdorba, and combines this activity with gardening services, canopy assembly services, recovery of trails and signalling and cleansing of rivers among other services.

This forest squad intends to get long-term benefits by performing several works in an area of 900 hectares: thinning of the forest (which had become overgrown with scrub) recovery of old trails, pruning of pines, partial cutting of invading trees in order to encourage the growth of commercial trees, seed gathering, reforestation with autochthonous species (and not only timber species) etc.

Most of these forests were neglected when traditional practices as grazing, charcoaling, and thinning stopped being performed in the last few decades.





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The silvicultural works performed by this enterprise ensure the conservation of the species and the long-term productivity of the forest, as well as the conservation and improvement of genetic diversification of animals and plants.

Summing up, it enables the permanent utilisation of the forest on the part of men, by conserving and improving environment.

In addition to this, this kind of initiatives contribute to the recovery and maintenance of forests, prevent forest fires and encourage the social and recreational utilisation.



The forestry works carried out by the Council of Leoz enable the ecological maintenance of forests and are a source of employment. In addition to this, the use of fossil fuels in the area is reduced.





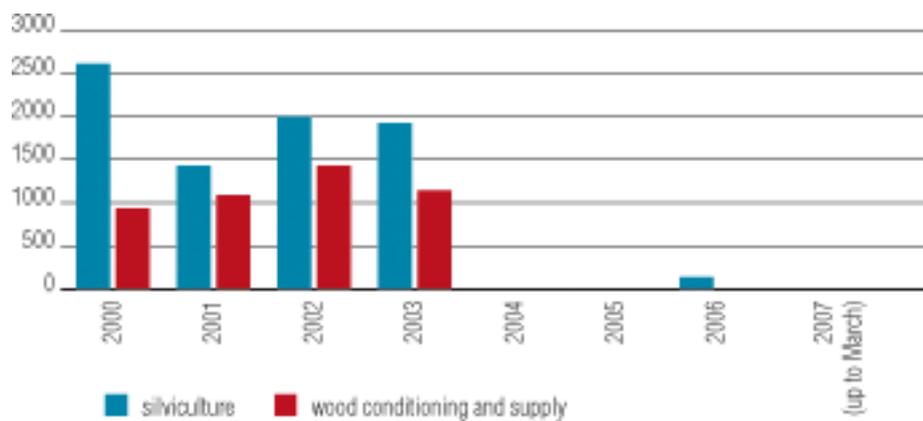
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Oakwood before clean-up.



Oakwood after clean-up.



Evolution of the workload generated within Orbalan since its creation, connected with silvicultural activities and firewood supply, measured in hours. From 2004 onwards, these duties were performed by the enterprise Orbasoa Zerbitzuak, created by the workers of the forest squad of Orbalan.





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2. Project for the maintenance of the villages

- The squad

The squad is formed by a group of people in charge of the maintenance works in the 13 villages in the municipalities of Leoz and Garínoain. At the beginning there were four workers, and now they are two more, thanks to the support provided by the Council of Garínoain (sharing of workload and economic contribution) when it entered Orbalan.

Most of the members of the squad are women (at present, the 100% of the staff with permanent contracts are women). They are in charge of cleaning the streets, gardening works, and conserving the churches and chapels (small restoration works, brickwork, painting, etc.).



The maintenance works in villages also include mowing the grass and garden maintenance.



When someone litters the streets, which they shouldn't do, they expect someone to clean it afterwards, but who does that in a village with 20 inhabitants?

This activity has improved the looks of the villages, which are now in tune with the beauty of the area of Valdorba. In view of the results, many neighbours (both those that live there permanently and the ones that go only on the weekends) have hired the squad to take care of their small plots.





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- The stone and the recovery of heritage

The second maintenance activity is connected with the utilisation of recycled stones in building works.

Up to the present, the stones of the ruins in the valley were constantly stolen, in order to use or sell them.

Now, thanks to the project, these stones are used in the restoration of different buildings of the valley (churches, Roman bridges, old buildings). These stones have been used in the building and restoration of the homes of the neighbours, when they requested them.

Thanks to the awareness achieved with the valorisation of the resources of the area, heritage in particular, the sacking of the stones of the Monastery of Donamaria has stopped; these stones were sold and used in order to build houses outside Valdorba area.



Multipurpose room Eliza Zuria, restored by Orbalan.



Recovery of the ruins of the Benegorri Church, built in Romanesque style.

Most of the cemeteries in the territories of the Council of Leoz and Garínoain have been restored, as well as the ancient washing place of Garínoain, the chapel of Eliza Zuria (converted in an exhibition room, which serves many different purposes), small fences and the ruins of San Bartolomé Church in Benegorri.

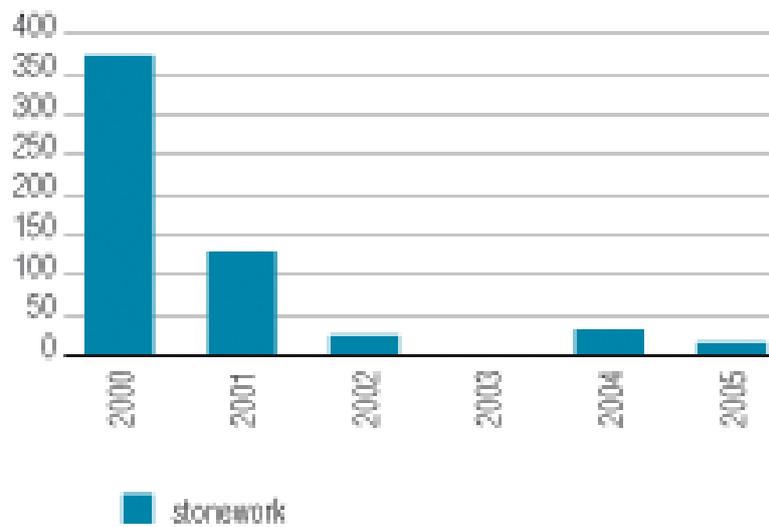


Restoration of Amatriain cemetery.





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Evolution of the workload generated within Orbalan since its creation, connected with stonework, measured in hours.

In order to ensure the technical appropriateness of the actions performed within the programme, a master builder supervises the works: the starting of the projects, the follow up of the works, and the end of the project.

She is also in charge of the monitoring of all the works performed by the Council.

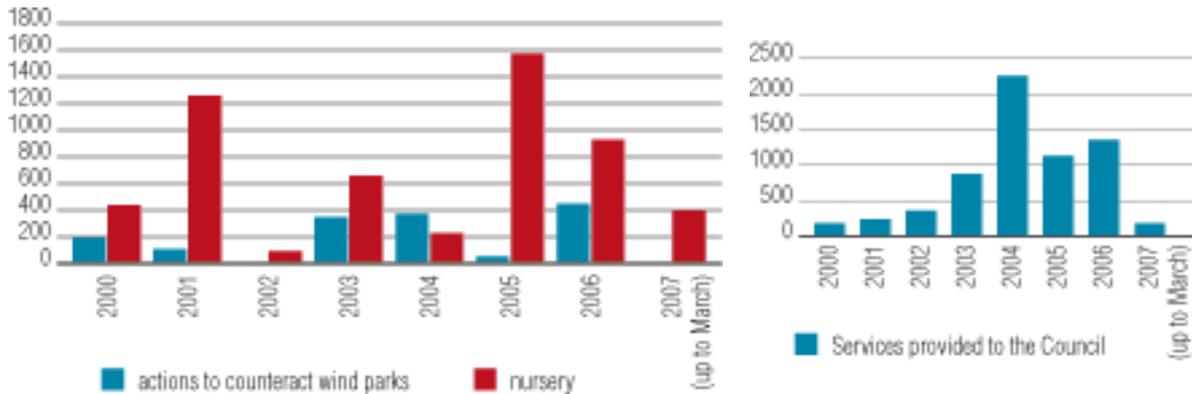




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3. Project for the reduction of the impact of wind farms actions to counteract the impact

One of the first duties of the enterprise Orbalan was to install a nursery to supply the villages of the council and nearby areas with autochthonous plants and in order to carry out the reforestation of the area where the wind farms were erected and the surrounding territories.



Evolution of the workload generated within Orbalan since its creation, connected with the actions to counteract the impact of wind farms and with the autochthonous plant-producing nursery, measured in hours.

Evolution of the workload generated within Orbalan since its creation, connected with local administration, measured in hours.

4. Project of assistance in the management of the council of Leoz

Orbalan has an administrator that deals with the administrative procedures of the Councils. This improves the quality of the services and optimises the use of public local resources. Thus, the same person that manages the administration of the public utility company deals with the administrative procedures of the Council, which were normally dealt with by the Council's Secretary.

In addition to this, the public utility company is responsible for the cleaning and maintenance of the Town Hall.





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5. Project of local people multiservice offer

The municipality service company makes it possible to provide specific services in order to improve substantially the quality of life of the inhabitants of this rural area.

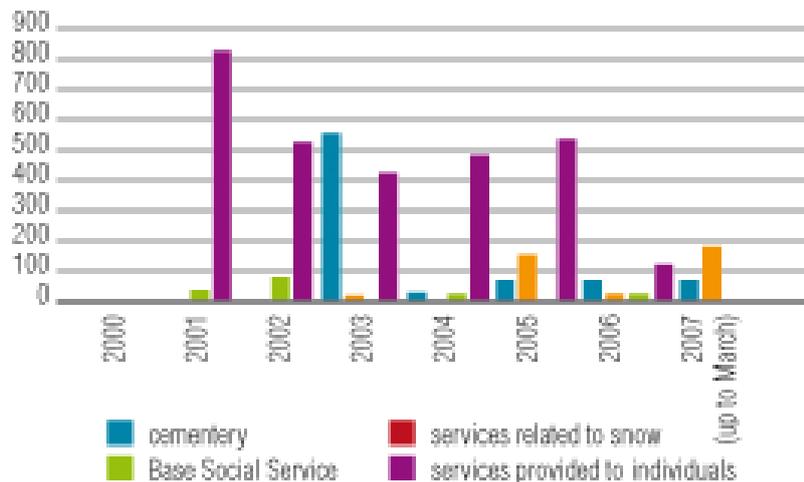
Orbalan helps people with small problems caused by weather harshness, for instance, caused by snow. The enterprise is also responsible of digging the grave when somebody passes away and wishes to be buried in their home village.

The public utility company helps in the development of social and cultural activities as festivities and other initiatives aimed to improve the social life of dependent people. On the other hand, it takes part in the activities carried out by the Basic Social Services of the area of Valdorba.



Celebration of Elderly Day. This festivity is intended to improve personal relationships among old people at risk of becoming dependent. Orbalan takes an active part in the organisation of this festivity.

In addition to this, the facilities, staff and materials of Orbalan are used in order to provide services to the neighbours that request it, such as cleaning, maintenance and brickwork.



Evolution of the workload generated within Orbalan since its creation, connected with services to local population, measured in hours.





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6. Micovaldorba Life Project: involvement in European initiatives

Orbalan was involved in a LIFE-environment project based on the utilisation of fungi, truffles in particular, as an instrument for rural development and a way to make the most of the fungi that grow in the forests of the District of Valdorba (Navarra). This project has been an example for other rural districts. It involved local population, the tourist sector, retailing enterprises and forest owners.

Micovaldorba and the local management of the Council of Leoz (the project Orbalan included) were declared by the UN as one of the 40 best practices in rural development in the world for the period 2002-2004. It has also won the price for rural development best practices in Navarra during this period. Micovaldorba won the “Best Project” award by the European Commission in 2006.

This project has devised two ways of using mushrooms in the district where it was implemented: tourism and sale of the fungal production.

- Mushroom tourist hikes in Valdorba

Seven tourist itineraries have been created in connection with mushroom picking. All the itineraries start and end in a different village of Valdorba. The itineraries cross some of the most important forests and fungi resources, and also the Romanesque architecture and other interesting buildings of the area. This joint offer is very distinctive. It is advertised on the Internet and in two publications: “Ecoturismo en Valdorba, paseos, setas y gastronomía” (ecotourism in Valdorba, hikes, mushrooms and gastronomy) and “Paseos seteros por Valdorba” (mushroom hikes in Valdorba).



These itineraries are advertised in panels and printed material made available for consultation in lodgings and on the Internet.





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Visitors can choose to eat menus based on fungi in the restaurants of the area, and stay in one of the rural lodgings in the district. There is a regulation controlling collection and pressure on fungal resources.

- Tourism and the sale of truffles

The second way to use mushrooms consists of integrating production and tourism. A model for the utilisation of truffles has been created in the district.

Producers can sell fresh truffles directly to consumers in a market selling products from Navarra. Thus, it is possible to increase the value of the product, to showcase the district and to provide a distinctive tourist offer.

This market increases the interest in truffles and its cultivation, and encourages its production. Thus, truffles become an alternative activity in rural areas.

The following initiatives have been carried out this far:

- 200 hectares of woods devoted to silvicultural production (estimated mushroom production of 20 € per hectare yearly).
- 20 hectares of truffles (estimated production of 3,000-4,500 € per hectare yearly).
- 1 pilot project of combined production of aromatic plants and truffles (yearly production of 2,000-6,000 € per hectare)
- 10 courses on truffle cultivation.
- A truffle marketing model allowing producers to get an extra 30% of benefits, as they sell truffles directly to consumers.
- Advice on truffle production to 200 landowners in Navarra.
- 1 tourist pack consisting on truffle picking, a tasting and staying at a rural lodging.





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- Truffle Fair (5 years). The two first Fairs took place in Navarra.
- Regulations in order to control truffle collection.
- New aids for truffle producers using forest and agricultural land have been encouraged.



Local and Regional authorities and popular cooks that took part in the Truffle Fair. Micovaldorba.

The total annual number of tourists visiting the area due to mushrooms and truffles is 5,000. Before the project Micovaldorba was carried out, there were no activities connected with mushrooms in the area. The average number of menus based on fungi served in restaurants is 1,000 per year.

Any other rural area can benefit from the results obtained by

Mushrooms can be integrated within other economic and tourist resources of rural areas. When starting up a similar project in other areas, the same work programme may be used: a previous study on the fungal resources and their economic potential. The tools used can also be the same: reforestation, forest management, mushroom itineraries, training, awareness, and production.

The model can focus on tourism, on production, or both. This depends on the way the resources are combined by using the different tools developed.

At present, this model is being used in other Counties, as Soria or La Rioja.





7. Tourist project for the valley

- Study of the tourist resources of the valley

In the time when Orbalan was created, tourism was not yet developed in the area of Valdorba. Therefore, this enterprise took the first steps to turn the valley into a recreational area for the tourists visiting the district, both those coming from Navarra or other Autonomous Regions.

Orbalan was the first enterprise to turn the area of Valdorba into a tourist destination. Tourist activities are now promoted by the Association for the Development of the Valley, of which Orbalan is a member.

The type of tourism sought with this approach is not massive.

This area intends to become a rural tourism destination, an alternative for those that want to spend quiet weekends or holidays, enjoying the landscape and the artistic and cultural heritage of the area.

However, in order to have a demand we must first boost the offer, which must include activities and tourist sites for potential tourists; that is, we must turn the resources into tourist products.

Orbalan carried out a study of Valdorba, in order to know the tourist potential of the area.

A fact sheet was made for each village in the Council of Leoz with the help of the neighbours, of two graduates in Media Studies and History respectively, and using the studies carried out in other valleys of Navarra as a reference. These fact sheet included information on their architecture, culture, customs lifestyle, heritage, location, number of inhabitants, available services and infrastructures (such as roads, accessibility, lodgings and restaurants etc.).





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The conclusions of the study pointed out at several positive aspects:

- the abundance of Romanesque architecture in the valley,
- landscapes,
- the interest aroused by the wind farms of Guerinda and
- the potential for many outdoor activities.

The main flaw was the lack of infrastructures, and therefore the low accessibility conditions for tourists. This lack has been corrected with the setting up of new rural lodgings and hotels and possible solutions to the lack of services in the area were found.

The study of the tourist resources of Valdorba (Eco-tourism Project, 2000) laid the foundations for the development of tourist activities in the area. These activities are currently managed by the Association of the Development of Valdorba, with the support and collaboration of Orbalan staff.

- Setting up of a Tourist Office

At first, Orbalan provided information to the visitors arriving to the valley. Therefore, its qualified staff included tourist information on leisure activities, culture and lodging among its tasks.

Then they started organising visits for tourists to see the artistic and cultural value of the area and the beauty of the landscapes, with educational purposes.

Finally, this task was assigned to the staff of the Association for the Development of Valdorba, who received specific training. At present, the central offices of the Association in Orísoain and Iratxeta provide this service.





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The recovery of the Road to Santiago as it passes through Valdorba will allow local entities and neighbours to increase the accommodation capacity of the area, with the new accommodation option of the youth hostel, which had not been developed in the area before.

- Youth & pilgrim hostel in Leoz

Another project is the building of a youth hostel in Leoz. This hostel would lodge groups of visitors in their way to Santiago, as the Road to Santiago goes by Valdorba.

The hostel would hold up to 20 people, and would be managed by the neighbours of Leoz, with the help of Orbalan staff in maintenance duties.

8. Itineraries and hikes: Trekking, mountain biking, horse riding

These activities have contributed to the recovery of some trails and tracks that were impassable or covered with undergrowth. In order to provide more leisure options in the area, a program of hikes (both on foot and on horseback) has been made available.

Thus, tourists that like trekking each weekend in different areas and visiting different routes, may decide to come to Valdorba to go for a walk, enjoy the scenery and the rural Romanesque architecture and the mills.

In this sense, and in view of the growing popularity of mountain biking and the possibilities of the valley to perform this activity, different types and categories of circuits are being designed for both amateurs and veteran bikers. These circuits may also be an opportunity to organise contests and races at different levels (regional,





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national or European).

Some of these circuits are expected to pass through the trails that take to Guerinda, in order to give people a chance to see the installations. Moreover, the works done in order to improve the accessibility to the wind farm would be very useful.



Signposting the local tracks.
the valley.

From 2004, the Association for the Development of the Valley is in charge of the management and signposting of the tracks that were designed by Orbalan.



In Valdorba, the signalling of itineraries respects the environment; the main material used is wood, in order to avoid an excessive visual impact.

Thanks to this previous work, many thematic visits to the valley are now possible:

- Visits connected with truffle production.
- Visits connected with the Romanesque architecture of

The first type of visits mentioned above has a seasonal nature, and depend on the production of fungi. The visits to Romanesque buildings started on 2006, and are being very successful. The great interest shown, together with the fact that they are not subject to seasonal changes, allows for weekly visits to be organised all year round.



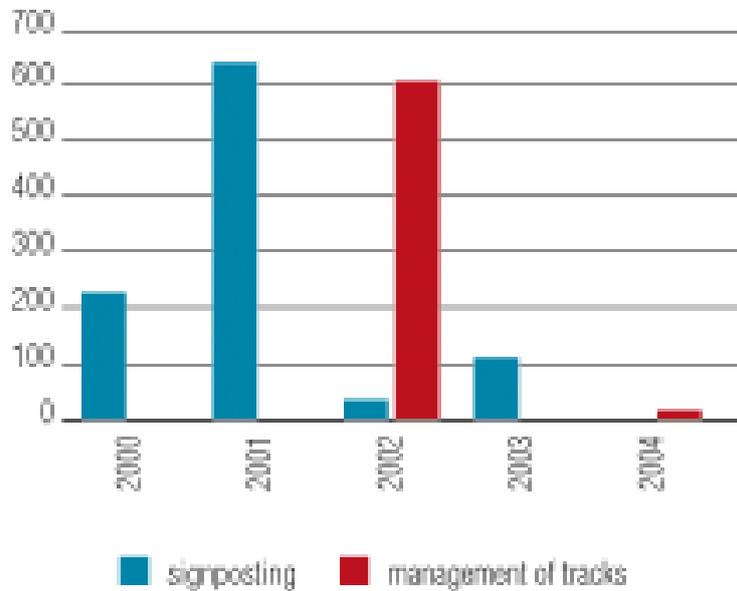
Children in a school trip to the Olive Oil press in Solchaga.
The archaeological works were carried out by Orbalan.





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Some visits have been organised for specific groups (Universities, Culture and Education Departments etc.). Recently, some itineraries have been adapted to school trips; this service is being very successful and gratifying, although also very demanding.



Evolution of the workload generated within Orbalan since its creation, connected with the signposting and management of tracks, measured in hours. From 2004 onwards, the Association for the Development of Valdorba is in charge of these tasks.





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9. The interpretation of the natural heritage of the valley: Valdorba Red Natura 2000 Exhibition

The Community Programme LEADER has funded the project consisting on a travelling exhibition on Nature Interpretation. The Association for the Development of Valdorba is in charge of the management of visits and of the facilities, and Orbalan deals with the creation, moving and maintenance of the exhibition.

The Travelling Exhibition Valdorba Red Natura 2000 was born when the natural area of “Montes de Valdorba” was listed in Navarra’s proposal of Natural Sites of Community Importance.

This project is one of the most outstanding dissemination activities organised by the Regional Environmental Division and the public utility enterprise Viveros y Repoblaciones. This project describes the natural values of the area that have made it possible to include “Montes de Valdorba” in the tentative list for Natura Network.

The exhibition is a sample of works of the naturalist sculptor Javier Murillo. It shows visitors the fauna and flora of Valdorba, which is rich and varied, as it includes species from Atlantic and Mediterranean climates.

This exhibition has been in three exhibition rooms in the valley. It complements the guided visits to Valdorba, provides information on the natural resources of the area and raises awareness among local population.



Valdorba Red Natura 2000 Exhibition.





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10. Windmill of Guerinda: Didactic interest, tourist interest and example of organic milling

This innovative project added up to the tourist sites in Valdorba. It consisted of setting up an organic windmill in the wind farm of Guerinda. At present, it is the only windmill in Europe milling organic wheat.



Flour windmill restored in the area of Sierra de Guerinda.

An old 17th century flour windmill was found while performing the works to build the wind farm of Guerinda, and it was reconstructed. The excavations performed confirmed that in the ancient times, the very spot where the wind farm of Guerinda stands today was also used for the same purpose, as several windmills were found.

It is very impressive to see how a windmill can work only with the power of the wind. This activity is an example of the benefits of wind power, a clean and non-pollutant energy source, representing a development opportunity for the village.

A shelter has been built near the windmill for visitors to take refuge from the wind. This shelter will be devoted to more activities in the future, as an observatory for people to watch and study the bird species in the area.





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11. Other projects concerning organic farming and cattle raising

A group of farmers and cattle-raisers in the area of Leoz formed the Cooperative “Trigo Limpio” (Clean Wheat).

Several projects may be carried out in connection with organic agriculture and cattle raising, in order to develop new employment niches, such as snail farms or organic chicken farms using outdoor systems.

These activities would have two objectives:

- Economic: cattle raising and marketing.
- Social: creation of part-time jobs, mainly for women living in the valley aged over 40.





1.5. ANALYSIS OF THE STAFF OF THE ENTERPRISE

The average permanence period is 1.4 years.

From its creation, 41 people have worked in Orbalan, 41% women and 59% men.

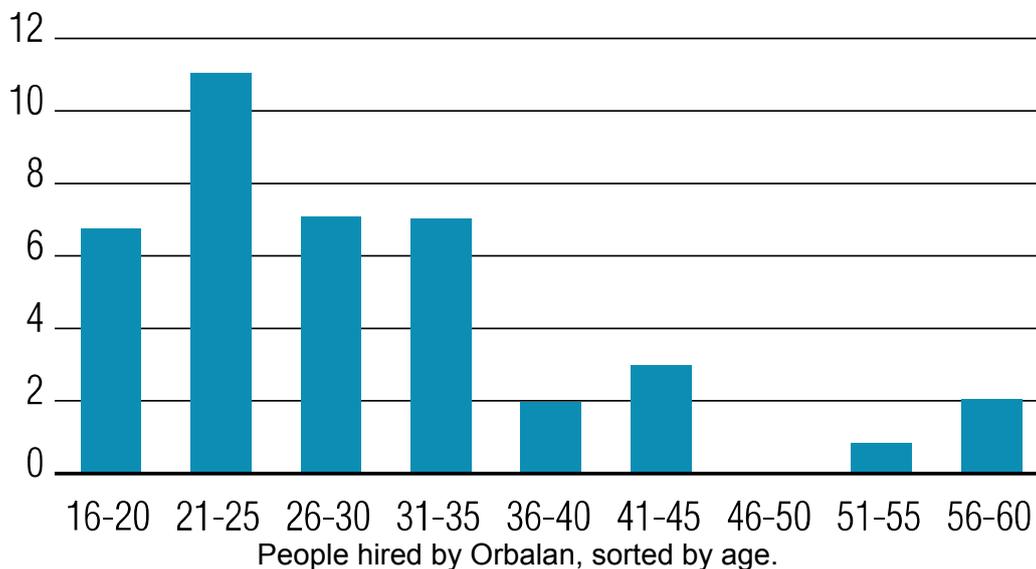
This percentage is even closer to equality if we take into account the permanence period (46% women, 54% men). In most cases workers left the enterprise voluntarily or after their contract expired.

Their category within the enterprise changes depending on the tasks they perform. 23 bricklayers and 4 managers were hired, as well as 2 specialist bricklayers, 2 administrators, 3 clerks, 1 engineer and 2 technical engineers, 1 journalist, 1 local



Members of Orbalan squad in 2006.

development agent and 2 trainees. The average age of workers when they entered Orbalan is 30, and the age range goes from 16 to 57 years old.





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	2000	2001	2002	2003	2004	2005	2006	2007 (up to march)
Environmental works	4295	3781	3472	4049	629	1610	1506	424
Land management	254	644	634	106	25		26	
Services to the population	16	22	570	43	232	116	250	
Maintenance and recovery of rural architectural heritage	1359	1170	766	86	1330	1259	3008	805
Cleaning of streets and gardens	2398	899	1091	1062	2377	2240	24	248
Culture	168	157	562	616	122	64	68	
Ecotourism project	233	443	141	4		682	1	
Subsidy application procedures	29	31	117	162	78			
Tourism	1018	462	483	600	52			
Management of the enterprise	644	1359	1387	1208	695	612	2958	146
Council Services	209	251	409	840	2140	1188	1257	240
Works for individuals	1	813	541	429	487	539	114	
Other tasks	155	274	62	48		234		31
YEARLY TOTALS	10761	10299	9688	9777	7977	8658	9077	2143

Evolution of the workload generated within Orbalan since its creation, connected with all the activities carried out.





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1.6. CONCLUSIONS.

The activities carried out within this comprehensive development project are innovative because of their nature, the way they were performed, the objectives sought and the entity that promoted them.

At present, two councils are involved in Orbalan, and the two main objectives have been achieved:

- encouraging the creation of enterprises in the valley,
- expanding its activities to other councils in the valley.

We also intend to provide the necessary funding and training to make these activities independent from the council, as it was the case with Orbasoa Zerbitzuak.

This comprehensive project was funded by the Council of Leoz with the collaboration of E.H.N.S.A. (the enterprise that erected the wind farms) the Association Cederna Garalur and several divisions of the Regional Government of Navarra (Environment, Tourism and Local Administration).

This project can be replicated in other rural regions. The economic resources of councils with more than 500 inhabitants are normally enough to carry out these initiatives, with the cooperation of regional administrations, if several villages of the area with similar internal structure work together as a single community.

Councils with scattered population and less number of inhabitants may try to find an endogenous source in order to finance the project.

The utilisation of endogenous products in rural areas is a good example of sustainable development. In the case of Leoz, financing “came with the wind”, but in other councils it may be solar energy, the utilisation of forestry resources, tourism, or a combination of different resources.





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2. RURAL TOURISM, ORGANIC AGRICULTURE AND STOCK FARMING, BASKETWORK, HERITAGE RECOVERY OF RURAL BUILT HERITAGE AND INTERPRETATION IN RURAL AREAS. MONÓN – ASTURIAS (SPAIN).

This example shows how to take advantage of endogenous resources in rural areas to generate quality employment. This is the case of Elías and Laura, a couple who, tired of urban areas and big cities, decided to return to the small village where Elías was born to start a new life project.



Elías left his village in the mountains of Allande, Monón, at the age of 16 years, following the path that had already started his brothers and sisters (8 in total), and that it was later followed by his parents, leaving their house empty.



For 20 years he worked in the central area of Asturias, in the hotel business sector, becoming the manager of a hotel. However, a dozen years ago, they decided to change their lifestyle and return, along with their two sons, to Elías native village (in which only three neighbours remained) to start a new activity.





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They reopened the family home and started breeding goats, an activity that continued for about 3 years, gradually switching to beef cattle; meanwhile they acquired an abandoned house in the village and proceeded to his renovation to convert it into a rural tourism establishment and also their home. Later they renovated two more houses for rural tourism and built a small bar-restaurant.



own bread.

To fulfil their offer of tourism they have organic agriculture, and based on seasonal production, they prepare meals with these products for their guests and/or those people visiting Monón. They also sell meat from organic stock farming and products of their vegetable garden and make their



Visitors are also welcomed to participate in the activities of organic farming, cattle feeding, moving cattle between grassfields, etc., as well as to work in his organic vegetable garden.



Another added value in this small family business is the sale of baskets, hand made with chestnut wood.

Elías also works part-time as a gamekeeper, during the hunting season, so he knows perfectly the territory and the surrounding nature, and he offers detailed explanations to visitors about the rural world. Besides, he is responsible for the creation of two short hiking trails in the municipality of Allande, the AS-PR-254 and AS-PR-255, which have significantly increased the number of visitors in the area.

Thus they have managed to create two full time jobs and they also hire part - time people throughout the year. It is an example of how to exploit existing synergies in rural areas to





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generate employment and added value, revitalizing in this way a village and avoiding its depopulation and disappearance.

More information can be found in: www.casacorral.es



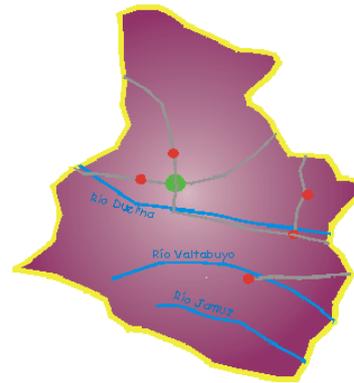


3. TABUYO DEL MONTE, LEÓN (SPAIN).

The locality of Tabuyo del Monte, belongs to the Municipality of Luyego (León), which includes six different populations. In this City Council more than 40 enterprises are located, being some of them cooperatives.



Province of León



Territory of the City Council of Luyego

Tabuyo del Monte, with around 290 people, is located in the hillside of the Teleno Mount. The territory contains big forest areas of cluster pines, which have been the basis for the locality success during the 20th century and which are nowadays one of its main heritage elements.

These pine forests and the pine forest of Puebla de Lillo, are the only ones which are autochthonous of the province of León. The natural origin of this pine forest is doubtless, as it has unique morphological characteristics and as there is documentation that assures that there was *Pinus pinaster* in this area already in the 1st century.

Nowadays, the total surface of the pine forest is around 15.000 ha, from which 3.200 ha correspond to Tabuyo. The main exploitation of these forests is the use of wood, being the amount obtained around 1,5 m³ per hectare. Another important activity is mushroom picking, mainly *Boletus pinicola* and in smaller amounts milk caps (*Lactarius deliciosus*). The heather plants are also exploited but for different uses than in the past centuries.

As we can see, the forest resources have been always very important in the area. In the past, the forests have not been deeply exploited, but they have been always used and carefully protected, as they were important resource sources.





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Nowadays, the main uses of forests have evolved, as fungi have become a very valuable resource that can be exploited in a sustainable way, always respecting, cleaning and taking care of the forest at the same time.

The population of Tabuyo del Monte (mainly women) is a good example of the entrepreneurial initiatives that have been developed in the area. These initiatives intend to achieve an integrated and sustainable development of the locality, basing all their activities on the environmental respect.

Below, some of the initiatives that have promoted the dynamization of the territory and have intended to stop unemployment and depopulation in the area are described:

- Del Monte de Tabuyo

Silvestres del Teleno and its associated entity, Del Monte de Tabuyo S.L., form a cooperative society which is member of the Labour Cooperative Union of León, Ulecoop, and member also of the Labour Cooperative Federation of Castilla y León.

This cooperative was created by five entrepreneurial women, with the aim of promoting the products of the area (fungi, asparagus, raspberries...) by picking up and/or growing them and by offering them as natural food products (jams vegetables, sauces, paté, pickled products...) and as elements of the menu of their own restaurant, "Comedor del Monte".

The products used for the different activities are directly picked or harvested in the forests, or in close agriculture areas where the products are grown through traditional and organic agriculture techniques. This is the case of the Cooperative of Agriculture Products Montañas del Teleno. The facilities of the cooperative are placed in the close locality of Priaranza de la Valduerna, where raspberries have been harvested for 7 years. The cooperative has 25 partners (more than half of them are women) that cultivate raspberries in 22 ha. distributed among the localities of Priaranza, Castrillo de la Valduerna, Destriana, Tabuyo and Luyego, with a production of 50 tons/year. The cooperative has promoted the development in the whole region.



The facilities of the cooperative and the enterprise use biomass as energy source. This biomass is obtained from the cleaning and preservation works carried out in the forests and also from the residual seeds and materials of the product manufacturing process. The





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residues obtained are also used as manure. Thus, this is a process, which uses the territory resources in a totally sustainable way.

The brand name of these products is “Del Monte de Tabuyo” and the products are traditionally elaborated, so the great quality of the products and dishes offered is assured. These products can be bought both in the locality and through Internet.



The Cooperative Del Monte de Tabuyo has contributed to the development of the region, being also an example of rural women integration, employment creation and innovation in the rural areas. This cooperative is supported by different associations, such as the Rural Women Confederation (CERES) and the Coordination Entity of the Farmer and Stockbreeder Organisations (COAG).

As an example of its important tasks in the area, the Women Cooperative of Tabuyo del Monte has received during the year 2011:

- the Excellency Award – Innovation for Rural Women, for their work in the re-activation of rural areas in the region of Teleno, awarded by the Ministry of Environment and Rural and Marine Affairs.
- the First Award, in the modality of Entrepreneurial Initiative and in the category “From Action to Sustainability”, in the contest organised by the Regional Government of Castilla y León to celebrate the World Environment Day. The prize was awarded to them, among other reasons, for their contribution to create employment and for their valorisation of the endogenous resources of their area, which has led to stop the depopulation in the locality.

- Mycological Interpretation Centre

The centre offers information about the environment and the diversity of mycological species in the area.

It organises conferences, workshops and courses on mycology and offers different mycological routes in the surroundings.



Different enterprises, restaurants and people of the area participate in the mycological workshops.





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- Honey Museum

The Honey Museum of Tabuyo del Monte intends to show the apiculture world and to promote tourism in the region of Maragatería. The museum offers an informative path since the pre-historical period to the current days and shows the different advances that have been achieved regarding the tools and materials used to collect honey.



The information is given in a clear and didactic way, paying special attention to the children that visit the facilities. Besides, the museum has a shop where the different honey products can be bought.



- Rural Tourism Centre “La Casa del Herrero”

It is a rural tourism centre managed by a woman, which offers both accommodation and restaurant services. This restaurant has been honoured and designated as “mycological restaurant” by the government of Castilla y León, since 2005. During one of the autumn months, they organise mycological workshops during the weekends, offering tasting mycological menus.

- Hostel and Nature Study Centre

The creation of the hostel and the nature study centre near the sport centre area and close to the village threshing floors, was possible thanks to an Interreg European project that was developed in collaboration with some other populations from Zamora and Portugal.

The facilities are used to accommodate students, camp participants, hunters and other users that want to enjoy the natural and rich landscapes of Tabuyo.

These facilities intend to be a sort of forest farm-school in which visitors can enjoy and know the forests, mounts and their resources.

- Cooperative Society Teleno Forestal

It carries out forest activities such as pruning, clearing actions, fire extinctions, etc. Besides, it produces fence materials, natural covers, etc., using heather plants. The cooperative consists of 7 partners and has a variable number of workers between 7 and 11.





4. TERME SNOVIK SPA (SLOVENIA).

As an example of an integrated development plan in Slovenia Terme Snovik spa was chosen as it combines different aspects of tourism, hospitality, renewable energy, self-sufficiency in food and community involvement. Tourism, which is closely connected to the hospitality industry, has become one of the key industries in the municipality.

Small, friendly, hospitable, superb, almost brand new and for many domestic and foreign tourists still undiscovered: Terme Snovik is the spa in Tuhinjški Valley situated between Kamnik and Vransko, at the foot of Kamnik Savinja Alps in the Central Slovenia. The spa with the highest altitude in Slovenia is environmentally friendly and boasts a new apartment complex. Several years in a row it has been selected the best swimming pool in its category in Slovenia.



Terme Snovik

Terme Snovik has indoor and outdoor thermal pools covering an area of around 1000 m². Thermal water has healing properties and beneficially affects bones, skin





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and digestion. Additionally a wide number of massages, physiotherapy, solarium, herbal aromatherapy sauna (Finnish, Turkish, ice sauna, pools for Kneipp cure hydrotherapy) is available. Exclusive offer includes exotic baths in the paradise apartment.

For a longer stay, four-star apartments are available. All apartments have a view of an outdoor swimming pool or of the whole thermal-recreational facility. They are equipped with a telephone, satellite TV, an internet access and air-condition. Beds have organic mattresses, the kitchen stove has a glass-ceramic plate, and each bathroom has a bidet ... Several other details ensure a luxury stay. Apartments bear tree names; Spruce (Slovenian: smreka) is intended for disabled, while pets are welcome at Pine (Slovenian: bor).



Apartment complex in Terme Snovik

Next to the pool complex, Potočka Restaurant is located. It offers wide selection of dishes with the specialty being trout dishes.

For the young, creative workshops, picturesque camps, water attractions (carpets for water-walking, water trampoline) and many playing facilities are available. The location of Terme Snovik is ideal for hiking and biking (to Velika planina,





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Kamniška Bistrica), walking and playing golf at the nearby Volčji Potok. Tuhinj Valley is an excellent starting point to discover unspoiled nature (mountain biking, Nordic walking). You can also take a look at the organic farms, baroque churches, or visit a local inn (called gostilna in Slovenia). In the old town of Kamnik guests can visit museums and the castle.

Terme Snovik is an excellent example of interaction and cooperation with local environment:

- Terme Snovik set up the Tuhinj Valley Tourist Association, with the aim of increasing integration with the surrounding spa tourism providers;
- The Tourist Association arranged hiking and biking trails;
- Once a week, the Tourist Association organizes eco market stall at Terme Snovik, where local food and products are sold;
- The Tourist Association organizes ethnological events at the spa, including the live nativity scene and several other events;
- Thanks to Terme Snovik several new restaurants and bars, sports facilities and private apartments began to open in the area;
- The surrounding area is being arranged in traditional rustic style.



Cooperation with local communities in Tuhinj Valley is of great importance, since it adds value to Terme Snovik spa





5. SLĪTERE NATIONAL PARK (LATVIA).

Sustainable tourism destination was developed in the Slītere National Park as a model in Latvia in 2008-2011. The aim of the sustainable tourism model is to ensure continuous balance between economic development of the territory and nature conservation through involvement of the local community.

The Slītere National Park was formed in 1957 as a nature reserve. In 2000 it was reorganised as a national park. In 1945 – 1993 the area was a borderland, and a restricted military zone. The national park covers an area of 16,360 ha on land and 10,130 ha in the sea. Located in the Kolka and Dundaga parishes of the Dundaga administrative district in Kurzeme region. Status: especially protected nature territory, Natura2000 site, Important Bird Area. Sustainable tourism destination was developed on the following background: growing public interest in the former closed military zone, increasing numbers of visits, lack of visitor management, general public belief that Slītere is a nature reserve and a restricted access territory. Visitors are mostly in transit, making a stop-over to see the Cape Kolka, poor tourism infrastructure and services due to low and seasonal demand, conflicts involving the national park's administration, the local municipality, local community, businesses, lack of local cooperation and common effort for territory development planning.

Sustainable tourism destination was developed in the following process:

1. Develop the concept of the sustainable tourism destination.



1.1. Local community involvement:

All stakeholders - local residents, businesses, administration of the national park, municipality are invited at the round table to assess the situation, formulate common interests, and agree upon the goals and actions. During stakeholder meetings the benefits sustainable tourism development can bring to the

territory/local society are demonstrated. The meeting participants are asked to express their





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opinions, name existing problems, objections and interests to involve in tourism. Discussions start about the vision of what kind of tourism the stakeholders would like to develop. Several local meetings are required to involve the local society. During these meetings, gradually the common goals and interests are found, common trust is built and willingness to work together is born. Every meeting ends up with practical conclusions and setting next tasks with deadlines. The task achievement is assessed at the next meeting. The most active community members form an initiative group and involve the rest of people in activities.

1.2. Inventory of the local tourism resources:



After the local initiative group is formed, the next task is to take stock of all tourism resources available in the territory (natural, economical and human resources) in order to take a decision about what kind of tourism products shall be developed. Local people are involved in collection of information. The stress is put on things that are important and seem attractive to the locals – stories, legends, events, hobbies, local foods, private collections, like, in case of Slitere, old household things, objects washed ashore, etc. Local visits take place to the existing and potential tourism objects, photos are taken, their related information collected from local sources and inserted in a structured database. Review of all available publications, research and other literature is done to learn about the values and unique features in the territory and highlight them in destination promotion. It is important to involve experts of tourism, cultural history and others in the process in order to assess the situation objectively and professionally. Problems and obstacles to tourism development are recognised, like, the lack of infrastructure, specific restrictions to economic activities, local conflicts, etc.

1.3. Sustainable tourism development proposals – a vision.



Individual interviews with local people, businesses, municipality, SNP administration and other stakeholders are done to find out the directions for tourism development and willingness to actually engage in it. Information, knowledge and expertise is gathered from outside the project territory – the results of other projects, development visions, interviews with relevant people and similar





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activities to obtain opinions and ideas in wider context and generate a broad vision for development.

Visitor opinions and demands are found out (interviews, surveys, feedback on site and during tourism fairs). Visitor needs and interests are specified to develop the territory accordingly. Based on the summary of the collected information, a descriptive document is drafted to look at all resources in complementary and destination context. The document offers a vision – a description of what the territory could look like if developed as a tourist destination using all exiting opportunities. The vision or proposal document presents a common goal and context where each player clearly sees its role as well as the role of other players and the ways to cooperate and work together to achieve the goal. Each tourism object, the available and potential service is analysed individually, pointing at its strengths and weaknesses, the necessary improvements to make it attractive to visitors. The infrastructure in which all the separate objects function is analysed as well as it is important for the territory as a whole destination. A separate chapter in the document describes the recommended actions, implementing actors, responsible bodies, partners, priority levels and deadlines. The Proposal document is presented to the local community, and is first sent electronically to all stakeholders asking for their comments. The draft version is discussed in a stakeholder meeting, the comments and recommendations are incorporated into the final version. This way, it is achieved that tourism development is not imposed from outside. The local society accepts it, involves and contributes. The main purpose of the Sustainable tourism development proposal document is to clearly define what tourism products should be developed to meet the market demand.





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1.5. Route marking.

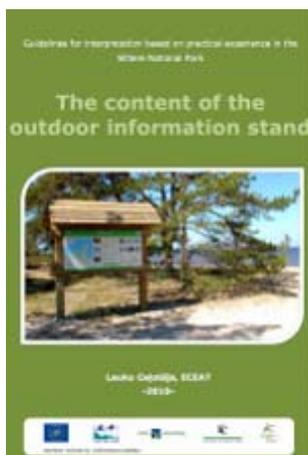


The aim of marking of the touring routes is to maintain the routes in action and to ensure that tourists, following descriptions and maps, would not get lost. Choosing paints and marking symbols it is possible to rely upon the local experience as well as upon experience from different countries. The route has to be negotiated with the managers and owners of land (municipality,

businesses, administration, etc.). Getting the tools and materials – paintbrushes, paints and other. The costs of marking are low, therefore routes can be marked when necessary, as part of local cooperation, and without any funding support from the local municipality or other. In the process of marking, certain uniform routing principles have to be observed. Regular inspections of the route and renovation of marking signs have to be done according to the need.

The marking symbols and colours have to be explained in the web and printed descriptions of the routes. Advantages of marking with paint: low costs (no need to manufacture special plates or other signs); the marking is put on already existing objects in appropriate places, like trees, stones, poles, etc., colour marking is simple and efficient.

1.6. Outdoor interpretation: stands and signposts.



The goal of outdoor interpretation is to inform about tourism products in visitor friendly, attractive and informative way, avoiding abundance of scientific terms. Information should cover natural, cultural and social values of the territory. Our outdoor interpretation stand concept includes a map, photos of the objects, texts, pictograms, headings, the logos of the territory's protected status and of funding institutions to stress that the territory is important from the point of view of biodiversity. It is essential to include such information which is useful to visitors at the moment they find





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themselves in front of the stand, namely, a possibly comprehensive list of all kinds of service providers should be enlisted. At this point, it is not so important to stress who is the financier and owner of the stand (municipality, protected area administration, private business, etc.).

Steps in developing outdoor interpretation:

- ✓ Conceptual agreement on location and contents of outdoor stands.
- ✓ Careful elaboration of information contents for each outdoor stand and defining a clear message to be delivered to visitors by means of each outdoor stand.
- ✓ Prepare text, maps and photos. Basic information is drafted by tourism professionals, consulting with experts in, e.g., botany, zoology, etc., for specific parts.
- ✓ Make a list of services (accommodations, shops, catering, tourist information, equipment rent, etc.) and mark them on the map.
- ✓ Edit information and translate the text. The stand information is also checked and approved with the local community taking into account their corrections and suggestions.
- ✓ Layout design of the outdoor information stand.
- ✓ Layout editing.
- ✓ Approval of the layout final version with the manager and owner of the territory (park administration, municipality, private land owners, etc.).

Outdoor interpretation contents should include:

- ✓ High quality maps;
- ✓ Information about the territory, objects, nature values, services, rules to be observed, and funding bodies;
- ✓ Each outdoor stand should include unique information and combination of facts to avoid overlapping with other outdoor stands;
- ✓ Illustrative photos should be added to the text;
- ✓ The stand should include information, preferably in pictograms, about what visitors are allowed and what they are not allowed to do in the protected area. The information should focus on possibilities and facilities, not only restrictions;
- ✓ Present the information in two languages – the national language and in one of the foreign languages the majority of visitors would understand.





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2. Service provider training.



First the training needs of the local service providers are found out (e.g., development and improvement of specific services, customer relations, etc.);

Training program is set up and lecturers/trainers found who are practitioners in the respective field. Usually it is worth to involve also a

marketing specialist to look at the topics from the perspective of the market demand;

The necessary technical equipment and handouts are specified;

Costs are calculated and budget is set up;

Training dates are set taking into account the local conditions, availability of training facilities, catering options and needs, and the most convenient time for the target audience;

Training events are announced, with the program, date and place, through all the available information channels: e-mail, local newspapers, municipality, tourist information centre, formal and informal contacts;

Assessment forms of the training event are distributed to participants. They are asked to return the forms and give their suggestions for the next training themes and events;

Seminar participants sign in the participant list and leave their contact details;

It is worth to develop handouts or some training literature on the training topic for individual reading;

It is advisable to combine classroom lecture with practical training (e.g., for nature tourism product development, it is recommended that the trainer takes the group out and explains things in natural environment).

As a follow-up, assessment forms are analysed to see the need for further training seminars and topics.





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3. Conservation of the authentic environment and traditional architecture

3.1. Traditional architecture.

Traditional architecture is one of the most visible expressions of the identity of the place. If the local residents are aware of the unique local identity as one of the values attracting visitors, they try to maintain it, building and renovating their homes and arranging the yards according to the traditional character of the place. Descendants of the families having lived in the area since generations have an inherited sense of how a homestead and the yard should look. Still knowledge and practical advice is required, therefore it is advisable to develop guidelines explaining the elements of the traditional architecture and their use in modern context.

The following measures are taken:

- ✓ The territory is explored involving experts in architecture and/or cultural heritage. The collected information is summarised to give an insight in the history of the traditional architecture, principles of courtyard planning, types and design of buildings, factors influencing architecture style, construction elements, building and finishing materials, recommendations for reconstruction and new constructions;
- ✓ The document is presented to the local community and local level institutions to build acceptance and make the document „viable”. Comments from the local community and local level institutions are incorporated in the final version of the document;
- ✓ The document is presented to the relevant national institutions responsible for conservation of cultural heritage. Their recommendations are incorporated;
- ✓ The final version of the document is presented to public at large and distributed to all interested bodies. If it is not possible to distribute a printed version, the document is sent electronically.

3.2. Conservation of the local cultural environment

The goal is to show the unique identity of the place, to relate it to the present day, and to catch interest of visitors. If a little-known language or a dialect exists in the territory, it is interesting from the aspect of cultural history. It is advisable to collect words and phrases that are used in everyday situations and can be useful to visitors in the area. The local names can be used, with explanations, in the environment – signposts, information stands, menus,





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the names of guest houses and other businesses, in travel guides, etc. It helps to highlight the identity of the place, catches interest, and contributes in conservation of the local cultural environment.

Steps to follow:

- ✓ Involve the most active representatives of the cultural environment in drawing up the dictionary and set deadlines;
- ✓ Develop the concept – the volume, content, etc;
- ✓ Select and translate the vocabulary items;
- ✓ Present the dictionary to the local community, invite to use it in tourism products, agree about specific cases of use (e.g., signposts in the respective language) and deadlines;
- ✓ Distribute the dictionary to the local tourism businesses and other interested bodies.

3.3. Nature values

The aim is to show and explain in everyday language the surrounding nature values that are not especially protected, hereby increasing visitor interest and respect to nature and its processes. For that purpose, a plant finder or similar publication can be produced.

- ✓ The concept of the publication – contents, volume, etc. It can be a demonstration of plants growing in the territory of a single farmstead or in wider surroundings. It can be a simple plant finder on one A4 sheet, or it can be a whole guidebook. It is important to stick to the principle of simplicity and catch visitor interest to learn about nature;
- ✓ The list of species (plants, birds, animals, mushrooms, etc.). It is worth to involve nature specialists to make professional and correct list of species;
- ✓ Photos and information. The principle: to source and use attractive facts related to the use of a plant or its specific features both today and earlier. Descriptions should be written in everyday language avoiding the use of scientific terms;
- ✓ The publication can be translated in one of foreign languages, which is understood by the majority of foreign guests. It can be, as well, only in one language, targeted at the domestic market. It is worth to provide the Latin names of plants, birds and animals;
- ✓ The publication is distributed or demonstrated in outlets where it is accessible to visitors walking and hiking in the local area (tourist information centres, travel agencies, etc.);





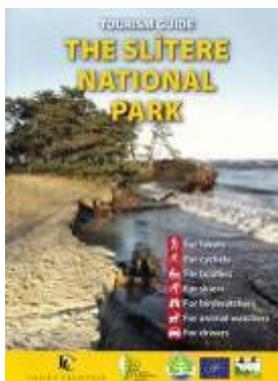
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- ✓ The publication can be used by the local guides who offer nature excursions. Sheets can be copied and distributed to excursion group to put down their individual observations. Optionally, the sheets are distributed to the group for the use during excursion to help recognise the plants, and are returned to the guide after excursion;
- ✓ It is worth to point out the locations where particular species or groups of species can be observed. Possibly, it is worth to set up a nature watching route or trail.
- ✓ It is worth to do observations and make notes – this way you can inspire your visitors for new observations and to inform precisely about the best time each species can be observed.

4. Travel guide of the territory.

The goal is to provide visitors with practical and quality information on the territory as a whole – nature, history, tourist services, touring around, etc.

Key steps in production of the travel guide:



- ✓ Development of the structure and contents of the guide. The contents are developed by tourism professionals. It is worth to find 5-10 key values („pearls” or „treasures”) in the territory – usually particular sights, natural or cultural attractions, people and the values they have created, things that are associated with the given territory. This works well in marketing.
- ✓ Regular visits in the area, to the objects and attractions there, collecting information from the local population. This way the authors of the guide have an objective and updated idea of what is going on in the territory in all seasons of a year.
- ✓ Involving municipality or other administration for approval of information contents.
- ✓ Involvement of the local businesses, tourist information centre, regional researchers and other local players.
- ✓ Development of touring routes for the guidebook. Active touring routes can be included which are developed together with local players (see „10 steps in building a touring route”).
- ✓ Development of the guide contents.





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- ✓ Approval of the layout version with possibly wide stakeholder representation. The layout and contents are approved with the national park administration or municipality and its tourist information centre as well as with local regional researchers and service providers. All the constructive suggestions, corrections and additions are included in the guide.
- ✓ To gain local acceptance, the guidebook should be presented to the local community as well as to public at large. You can also send a press release and free copies of the guidebook to media. It is advisable to put online the electronic version of the guidebook for better public accessibility.
- ✓ Joining in wider marketing and promotional actions (national, regional, Baltic region or other).
- ✓ The territory is included as one of the destinations in a wider tourism offer. This way more trust and recognition is achieved in the target audience. It also helps to reach larger target audience which is not possible and cannot be adequately done by individual service providers or even the whole destination. Options are following:
 - ✓ Theme publications – for example, national, regional or European, and similar guidebooks;
 - ✓ Involve in marketing campaigns organised by national tourism organisations;
 - ✓ Develop such destination's tourism offer which is relevant to include in larger touring routes. It can be done in consultation with the travel agencies in the country or international tour operators who are selling similar travel packages or tours to similar destinations;
 - ✓ Invite mass media, organise fam days and fam trips.
 - ✓ Invite tourism professionals – agencies, operators, accommodations, guides and others to a fam trip for professionals. From them you can learn a lot about how to make tourism products in your destination;
 - ✓ Develop and maintain the destination's web site with updated information on services available;
 - ✓ Involve in international marketing organisations and associations.

5. Participation in travel fairs and exhibitions

Participating in travel fairs you get in direct contact with eventual visitors of your destination. During fairs you can understand visitor expectations and ideas about your destination which



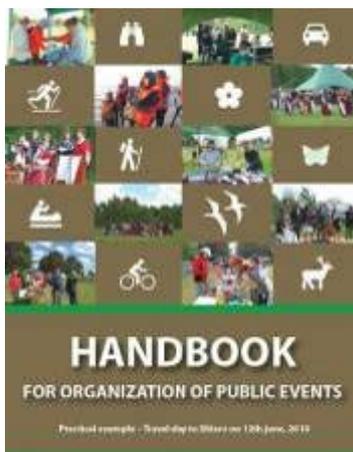


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helps to develop relevant tourism offer. Travel fairs represent an opportunity to inform travellers personally about what they can expect and experience in your destination. Steps to do:

- ✓ Develop the concept of your travel fair stand presenting the image and products, inviting to visit your sustainable tourism destination;
- ✓ Develop stand design and technical specification. The stand consists of the basic construction and changeable/removable elements which can be renewed as necessary at low cost or can be used separately from the whole stand in other promotional events;
- ✓ The stand concept should be possibly open and democratic stressing accessibility and hospitality of the destination;
- ✓ The stand should demonstrate the key values – nature, culture, people, etc. The stand should illustrate that the services are really based on the local society. The values should be communicated in simple, understandable and brief form to catch visitor attention and interest. The values should be integrated in the services and routes so that the visitors could easily enjoy them getting impressions and memories of the destination.
- ✓ Choose the manufacturer and place an order for the exhibition stand.
- ✓ Participate in travel fair.

6. Visitor events



The goal is to present the tourism products, services, local produce and the destination as a whole to large public audience and media. Another goal of such event is also to consolidate the local society and institutions, to generate ideas, to design and shape the tourism offer for the season. All involved stakeholders have a common goal and a lot of work to achieve it. There is no time for conflicts.

In the first event (if the event is to become regular) the tourist services (guided excursions, entrances) should be offered free of charge to attract more visitors. Do not plan to present services of high costs, like, the local transport. Food services should be available for pay, however, it is recommended to put a





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low profit margin and choose local foods. If the budget allows, it is advisable to provide a simple meal, for example, a soup free of charge for visitors.

At later stage, when the visitors know the event as a regular one, you can ask small fees for services to cover costs. Still it has to be remembered that the goal of the event is promotion of the destination, therefore it cannot be viewed as the right time and place to make profit.

It is recommended to involve a marketing company or specialist in organisation of the promotional event. There is a high competition between a number of events, and, especially as your event is promoting specific non-mass product, professional knowledge is required to address and attract the target audience in relevant way.

It is important to stress the uniqueness of the destination in your marketing message. Sustainability should also be stressed (but avoid using this professional term in marketing!). This way you will prepare the visitors to really learn about the destination and behave responsibly.

Steps in organising a promotional event:

- ✓ Make preliminary investigation and take decisions;
- ✓ Get familiar with the legislation concerning event organisation;
- ✓ Involve cooperation partners;
- ✓ Involve sponsors and informational support;
- ✓ Make inventory of the available and required resources;
- ✓ Write the program and scenario of the event;
- ✓ Calculate the event budget;
- ✓ Make the list of operational tasks;
- ✓ Write the communication plan;
- ✓ Use social networks to get publicity;
- ✓ Involve local community and businesses;
- ✓ Establish communication with media;
- ✓ Establish communication with politicians and the relevant institutions;
- ✓ Start communication with the event participants;
- ✓ Run and manage the event;
- ✓ Do the event follow-up.

7. Visitor monitoring





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Visitor monitoring is necessary to monitor the anthropogenic load on the nature objects, follow the dynamics of visitor numbers, make conclusions about the most visited/loaded sites and services, efficiency of events, the necessity to manage visitor flow, and to demonstrate to the stakeholders social and economic impact of tourism in the territory.

Steps to follow:

- ✓ Review and select the most appropriate visitor monitoring methods (e.g., survey, interviews, visitor counting using electronic counters and entrance tickets, photo monitoring of the objects, sample plots in attraction sites to observe trample, etc.);
- ✓ Set the monitoring period and points of reference;
- ✓ Carry out monitoring activities;
- ✓ Analyse monitoring data;
- ✓ Present monitoring results to the local society at the evaluation events of the sustainable tourism model operation.
- ✓ Use monitoring data in planning of further activities regarding the required improvements, tourism products and services, visitor flow management, infrastructure development, cooperation between all interested parties.
- ✓ Surveys
- ✓ Formulate questions and design a survey form to get the required data;
- ✓ Decide how to distribute the survey form according to survey specifics: on-site survey during events, survey campaigns with the help of volunteers, distributing survey forms in guest houses, tourist information centres and other places where possible. On-line survey is done via the destination's web site and/or related web sites. Respondent motivation can be achieved offering a prize lottery.
- ✓ Make the summary and analysis of results.
- ✓ Electronic visitor counting
- ✓ Select objects and locations to install electronic visitor counters;
- ✓ Select electronic visitor counters according to the specifics of the place (infrared, radio wave, etc.);





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- ✓ Purchase and install electronic counters, train the service staff;
- ✓ Organise regular data reading and analysis.

8. Conclusions

The model is sustainable as it caters for the interests of all stakeholders. They have clear motivation to involve, cooperate and keep the model running for the development of local economy and nature conservation:

The local community appreciates the nature as the main visitor attraction to the destination, and the opportunities to develop tourism services to gain economic benefits. The national park is regarded as a resource for local economy and represents a high quality living environment. Without proper visitor management, uncontrolled and growing visitor flow would generate inadequately heavy anthropogenic load on this protected nature area;

Stakeholder cooperation is efficient as there is a specified and achievable goal set, where all the involved parties see their benefits;

Marketing activities are there to promote the destination as a whole, not only individual services or the national park from the nature protection aspect. The Slītere National Park is included in the Baltic National Parks' Guide and is promoted in the Baltic context as a single destination. Tour operators are addressed, their advice and specifications are used to develop competitive and demanded tourism products;

The visitor event „Travel Day to Slītere” has become a tradition. The day not only promotes the SNP as a destination, but also stimulates the local community to improve the local knowledge and awareness through involvement of the local people in development of new tourist services, touring routes and gathering information for promotional publications. Through this process, the local people learn a lot about the nature, culture and history, strengthen social values like the sense of local identity and belonging, self-esteem.

ALL STAKEHOLDERS:

- Accept tourism development in the area;
- Involve in providing tourist services and/or development and maintenance of tourism infrastructure;
- Practice regular communication, take common decisions, coordinate activities;
- Are direct beneficiaries from tourism economically and socially.





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The key principle of the sustainable tourism model - constructive and continuous local cooperation between equal partners.

Several guideline documents have been drafted as documentation of experience in the process of building a sustainable tourism destination: tourism product development, event organization, marketing, visitor monitoring and other tasks. The guidelines describe how the sustainable tourism model can be implemented in practice. Download the guidelines from http://www.celotajs.lv/cont/prof/proj/PolProp/PolProp_results_en.html.





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6. INFOCENTER EOOD (BULGARIA).

MUNICIPALITY OF TRYAVNA

DEVELOPMENT PRIORITIES AND MEASURES

Municipality of Tryavna development priorities have been defined on the grounds of the Regional Development Strategy for the period 2007-2015, in conformity with Republic of Bulgaria National Regional Development Strategy, European Union Regional Policies for the period 2007-2015, as well as on the grounds of analysis of the situation.



Important priorities are:

- Sustainable development of competitive economy;
- Increase of social and employment opportunities;
- Modernization, innovations and high technologies encouragement;
- Investment into human resources.

SOCIAL ACTIVITIES WITHIN MUNICIPALITY. SOCIAL INTEGRATION AND REHABILITATION CENTER (SIRC)

People with disabilities in the Municipality of Tryavna

A Total of 1281 people live on the municipality's territory with different degrees of disablement and different levels of disability, 220 of them need personal assistance.

There are 33 children with disabilities living in our municipality, also with different levels of disabilities.

SIRC and Tryavna Municipality work actively to increase employment and social inclusion opportunities for these people.





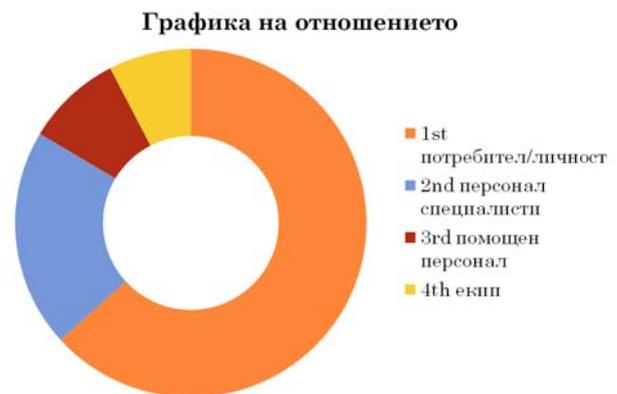
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People with Disabilities Municipal Organization

There is an accessible multifunctional Club for people with disabilities. A disabled person is employed there and is responsible of Club's activities and arrangements. There are 217 members of the Club in total. The organization works in close collaboration with the Social Integration and Rehabilitation Center

The following social services and specialized institutions are present in Tryavna Municipality:

Social Integration and Rehabilitation Center – community social service for 40 attendants and 8 employed persons situated in the Social Complex building. The service has been started as a state vicarious activity in the month of February 2005. The staff consists of social workers, psychologists, rehabilitators, pedagogues, and labor therapist.



STAFF / USER REGARDING chart

Orange - user
 Blue - professional staff
 Red - supporting staff
 Yellow - team

The Center offers the following services:

- psychological, social, and pedagogical consulting /individual and group/ for persons with communication difficulties, children at risk, people with disabilities;
- opportunities for people with disabilities and children at risk to acquire computer skills;
- rehabilitation courses in therapeutic physical training hall and at home;
- help with institutions dealing with disabled people's social integration and professional realization;
- help with schools: consulting, mediation, space for preparation for school;
- inclusion into club workshops and activities depending on consumers' interests;
- focus on people with disabilities and children at risk is a priority.

Total number of users served daily is 40 people this under the standards and criteria provides employment to 8 people as follows:

- Main Expert in Social Services – 1
- Rehabilitators - 2





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- Social Worker – 1
- Computer Hall Organizer – 1
- Psychologist – 1
- Cultural and Pedagogical Activity Expert – 1



HOUSE FOR ELDERLY PEOPLE – specialized institution for a short-term service (one to three months) for 40 users and 18 staff members. The service has been started as a state-funded activity in the month of February 2006.

This service is situated in the Social Complex Building which is very well equipped. There are single, double, and triple rooms. The customers are offered social program corresponding to their desires and possibilities.





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People fulfilling the requirements for accommodation but living in the Municipality of Tryavna are also eligible to use the service.

TRYAVNA SOS CHILDREN'S VILLAGE is a residential type of social service. It offers conditions similar to traditional family environment based in separate residences with 7 to 10 children with necessary staff taking care of them. The children age 0 to 18 from institutions are accommodated there. The complex offers very good micro climate and equipment for the target group.

Services offered by NGOs:

There are two non-governmental organizations, Chance and Support Association and Faith Foundation in the city of Tryavna experienced in working on the social field and under national and international partner projects, as well as in providing services for people with disabilities and children at risk.





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MORE IMPORTANT PROJECTS

- Virtual Exchange Information Center, funded by Tryavna Public Forum
Main Idea: to provide better contact and communication between people with disabilities and potential employers, giving information about groups at risk /people with disabilities, people of working age, long-time unemployed who have not been offered adapted working places/; to increase mobility of people with disabilities creating an accessible place for consulting and direct contact with Center's officers.
- Home Care Center for Independent Life for People with different disabilities and living alone – Domestic Help and Social Assistant Activities, Tryavna Municipality – funded by Human Resources Development Operational Programme.

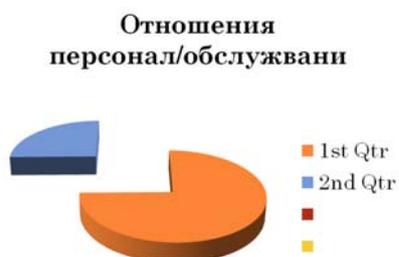
Project's general objective is to improve the quality of life for people/children with disabilities and elderly people living alone on the territory of the Municipality of Tryavna.

- Personal and Social Assistant Programs

Social assistants' bank serving specified target group in their homes: people with disabilities, elderly people living alone.

Working: 15 Social Assistants and 12 Personal Assistants serving 80 persons total.

Relationship staff/customers





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The blue part shows the percentage of served people, and the orange part shows staff percentage.

Day Care Center for Adults with Disabilities – Social Investment Fund



It was made under the Social Investment Fund Project including construction of two separate house type buildings equipped under all modern requirements for accessible architecture environment. Each of them is equipped; there are solar collectors and outside insulation. Project's total cost is 240 000 BGN.

The houses have been furnished as Day Care Center for adults with disabilities and started to be used as a social service in the community (vicarious from state activity for 20 people: day care for 6 people and week-long care for 4 people). The service





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includes medical, social, and rehabilitation services for people in nonequivalent situation in conditions similar to traditional family environment. It aims people's maximum integration and social inclusion, while at the same time their relatives would work untroubled, would not worry, and undertake the cares for them.

Staff:

- Nurses – 2
- Social Worker – 1
- Driver-Maintenance 1
- Therapeutic Activities Organizer – 1
- Health-Officer – 1

Due to the fact that people with different type and level of disability are very interested in this service the Municipality of Tryavna applied again for Beautiful Bulgaria Project and as a consequence two more buildings equal to the existing ones have been constructed meeting all the requirements and standards for accessible environment. Again, there are solar collectors. Project's total cost is 220 000 BGN.

36 people with disabilities from different age groups have passed through the Day Care Center during the first year of its work. Many of them with hard motor difficulties.

The service improves and the demand for it grows.

- Construction of a solar system in Tryavna Social Complex - Social Assistance Fund

A year-round solar installation was built in Tryavna Social Complex under this project. It provides warm water for the people living in the House for Elderly People and Center for Social Rehabilitation and Integration of Disabled buildings all-year-round.

Another important purpose and feature is to save energy and decrease the expenses.

Project's cost is 28 097.40 BGN.





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Some statistics:

The period correspondent services had been introduced and improved is 2005-2011.

Number of employed people to provide personal services:

Type of Service	Number of Employed	Number of People Being Served
House for Elderly People	18	40
SIRC	8	40
Day Care Center	8	20
Social Assistants	15	65
Personal Assistants	12	12
TOTAL	66	177





CONCLUSION

The social approach is focused on acknowledgement of the person's VALUE. The core of the problem with disability and old age is that the individual has not equal possibilities while having equal rights. The people providing social services /social worker, social assistant, domestic assistant, etc./ use a model aiming to take into consideration individual needs and build equal relations.

A good example for innovative social approach is user's inclusion – depending on their abilities – into the process of providing social services.

Activities fulfilled under the projects and programs described above are, in their nature, way of implementation and purposes, innovative models for social and employment inclusion which effectively contribute to sustainable development.



Day Care Center for Disabled People





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SIR

SIRC's Event

Photographs: Infocenter EOOD and SIRC, Tryavna





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7. VÄXHUSET (SWEDEN).

Växhuset Eco Centre is an organic development and demonstration project in Mobodarne in Söderhamn. Växhuset's ambition is work for increased growth, both in terms of knowledge as well as increased awareness regarding the production of food.

They work in different ways, in theory and practice, for sustainable development. Inspired by permaculture, a concept that comes from permanent agriculture, i.e. sustainable farming, they want to work for a sustainable and equal future for both man and environment.



Växhuset Eco Centre includes both woodland, arable land and building plots on a lake called Edesjön. The business has steadily been built up over the years and today the centre consists of a study centre, café, shop, twelve-angular hostel and a summer and winter greenhouse. Everything is built with great care and with materials selected to avoid destroying people and environment.

Heating is done exclusively with solar energy and wood. Some of the electricity production comes from solar cells and there is a customized eco-system for water and sewage.

Café and shop

In the café homemade cakes and vegetarian meals are served to visitors, as well as breakfast for hostel guests. Most of the vegetables served are organically produced in the centre's own garden. The shop sells items such as teas, spices, chocolate and crafts.

Conference Activities





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Växhuset offers a beautiful and peaceful conference environment year round. They arrange their own conferences and training courses in permaculture and sustainable development, and let the premises for rent. The conference hall can accommodate up to 30 people and the kitchen serves an organic, vegetarian lunch buffet based on vegetables from their own plantations.



Energy Solutions



In order to secure the energy supply several systems have been installed to meet the needs during the different periods of the year. On the roof of the main building there are solar panels warming up meeting rooms, café and shop. In periods when the heat is not sufficient, they complement the solar energy by burning wood.

As the building's south side consists of a greenhouse, plenty of heat is produced during the greater part of the

year under the window panes, which spreads to the rest of the building.

To get the best effect out of the sun's energy, they also use accumulation tanks, solar air heaters and an air intake through the land, which provides the house with fresh air of constant temperature.





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Hostel

The hostel is today run in cooperation with the Swedish Tourist Association and is open during the summer season and offers accommodation based on ecological thinking. Last year it was appointed “Eco-hostel 2010” by the Swedish Tourist Association.



The hostel is built as a unique, twelve-angular building with small rooms in each corner, where there are cabins of different sizes with several beds, which can accommodate a total of 18 people. It offers guests a basic standard with shared shower and toilet.

The reason for building a house with twelve corners was that the almost round shape provides energy-related benefits. With a fireplace in the middle of the building, the whole house is easily heated. The distance from the fireplace to any room in the house is the same and it is easy to keep it warm and avoid cold corners. In addition, the exterior wall area is smaller per square foot of floor space than in a square or rectangular house, which saves energy.

Here guests can stay in a thoroughly ecological environment. Electricity for lighting comes from solar panels on the roof, the shower is solar heated and composting toilets are used instead of conventional toilets.



Activities

Canoes and rowing boats are for hire, as well as bicycles for exploring the surrounding area. One popular destination is the trail up to the Deep Valley Mountain with the exciting Troll Cave. Coffee or lunch baskets are available for purchase in the café. Quiz walks and permaculture walks are also organised.

Labour market measures



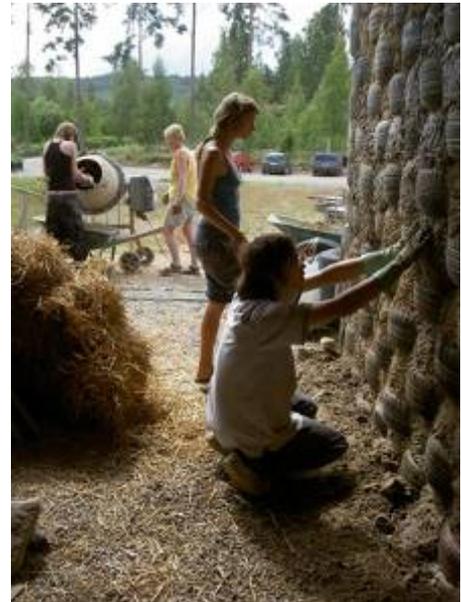


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Växhuset cooperates with the employment services in the province of Hälsingland and several people involved in labour market measures come to the centre, which has resulted in many valuable contacts and skilled hands that have helped building up the centre.

Volunteering

During several summers volunteers have been received from both Sweden and Europe. One of the volunteer projects has been an "earth ship" now called "The Sunship", inspired by similar models in New Mexico among other places. It is still an ongoing project, but the vision of the sunship is to build a house, entirely powered by energy from the sun, which can help spread knowledge with the sun as main theme.



Climate compensation

Visitors are offered to compensate for the emissions of their journey to and from Växhuset by carbonising wood and ploughing it down in the fields, and thus improving the soil. At the same time the carbon content of the atmosphere is reduced with as much carbon as the total emission during the journey. (1 kg of charcoal is equivalent to more than 1 l petrol and for a modern car it will then cost about 0.03 € / kilometre).

The vision of the good village

The vision is to create an ecological community, supplying as many residents as possible with a minimum input of energy and resources from the environment. It will be a village, where permaculture is used to create a sustainable supply, without breaking into other people's ability to meet their legitimate needs. It is hoped that the Växhuset eco-village will serve as a driving force for sustainable development, while offering its members a rich social life.





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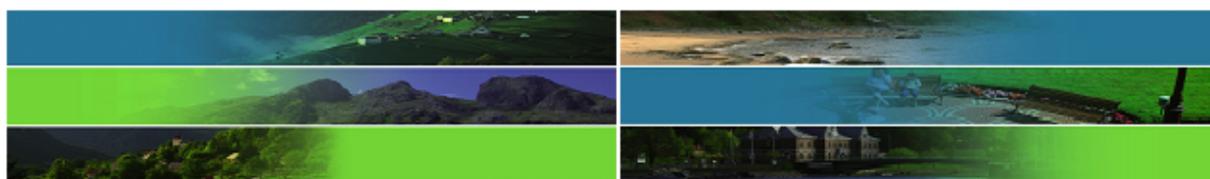
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