RESOR

Renewable Energy Sources as a Chance for Development for the Rural Areas

Training Methodology

Developed by Defoin

Defoin
Formación para el Desarrollo
y la Inserción

RESOR - **R**enewable **E**nergy **So**urces
as a Chance for Development for the
Rural Areas

Executive summary

This document has been prepared in order to define and describe the training activities foreseen in RESOR project. Defoin from Spain is coordinating the activity of developing the training methodology in the context of the base for all further activities done in the project. On the other hand, the contribution of the other partners is foreseen in terms of responsibilities for national content and development.

The training activities are developed in order to assure the relevance of the developed materials, to adjust them accordingly to stakeholders' feedback and to start creating training activities. As stated in the application, four products are foreseen to be developed within the RESOR project:

1. OUTPUT 1 - Innovative curricula of the training of RES

The purpose of this output is to highlight the development of the curricula which will be decisive point for building the whole structure of the training, its length in time, the range of information, which will be presented to trainees.

The new curricula which will be elaborated within the project realization it's a primary task and one of the main project results. The curricula will describe amount of information as well as its distribution according to the time schedule.

2. OUTPUT 2 - The training content prepared for integration with e-learning platform.

The purpose of this output is to develop the training materials which will be written in English by the different partners in charge of the chapters and then, once tested, evaluated and agreed, translated into national languages for piloting tests and the final release.

3. OUTPUT 3 - Pilot testing and evaluation report

A centralized pilot testing with skilled farmers and experts will be performed by all the partners. The test will be based on the training platform including teaching materials before definitive approval and translation into national languages by the partners. The

evaluation methodology will be based on a questionnaire on internal satisfaction and discussion with skilled farmers and experts.

4. OUTPUT 4 - European RES handbook

The purpose of the European RES handbook is to help understand and provide knowledge about green energy by providing practical examples. RESOR handbook for RES is an attempt to respond to the needs of people who work in agriculture, and want to develop their business using clean, renewable energy.

This deliverable summarizes the main information on the RESOR training methodology, a combination of modules delivered on the E-learning Plataform and the European RES Handbook, with the aim of helping partners, institutional stakeholders and other relevant parties implementing an outline Training based on RESOR developments.

Chapter 1, *Introduction*, explains in more detail the subject of this document, how the training activities will be developed, and presents methodologies and didactical structures.

Chapter 2, *Learners*. It explains who are the target group of the project and what should be the target audience and other relevant specifications. Trainees' characteristics, competences and skills are also defined.

Chapter 3, *Modules*, gives more details about the training structure, module topics and learning specifications.

Chapter 4, *Materials*, presents the typologies of materials and documentation to be utilized and produced during the training course.

The various criteria adopted to evaluate the course results through the training activities are described in **Chapter 5,** *Success indicators***.**

CHAPTER 1: Introduction

Taking in consideration the **Principles of adult learning:**

from easy to difficult

from the simple to the complex
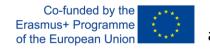
from general to detail

from the known to the unknown

and also how the adult people learn, the RESOR training methods will be adapted to trainees abilities ,learning experiences and working conditions.

According to the Application form the training materials will be developed both in national language of partners and in English language then teaching materials will be integrated and implemented with the E-learning Platform and the European RES Handbook.

This package' activities will include improving and updating of the training methodology, updating and developing a content of subject concerned will develop a curriculum for biomass energy trainers and the development of the vocational skills for waste-to-energy which will help to reduce effect on environment, unemployment and migration. The effect of this package will be the curriculum and training materials for RESOR.

The RESOR training methods will be adapted to target group abilities, learning experiences and working conditions. It is noticed that structured and logically related material is absorbed better in order to lead to a high level of performance. The methods/instruments/materials of training must take into account the characteristics of specific target group.

RESOR - **R**enewable **E**nergy **So**urces
as a Chance for Development for the
Rural Areas

1.1 Overall Training Methodology

Two major targets need to be addressed for training preparation: the definition of the training structure and methodology and the development of training modules. The training methodology is the base for all further activities done in the project. The training activities contribute to the professional training of the involved actors.

Beneficiaries from rural areas, and voivodships or regions with majority of the rural areas surrounding bigger cities, countries involved into the project will be the main indicators for impact on geographical areas.
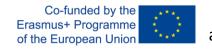
But all materials will be available under the creative common license and target to teachers consultants, students, trainers, stakeholders throughout Europe. The project will be made known through European conferences, environmental protection events and publications.

The main characteristics of the RESOR training are:

- Simple in form;

- Friendly in access;

- Possible integration between modules;

- Focused materials, feedback and support;

- Ideal for target group and representatives;

- Customization of modules program and training design;

- Provide ongoing guidance and support;

- Provide step-by-step, research-proven materials.

It is essential to select the structure and methodology that will be the most effective for its training environment.

The overall training objectives: what is expected to be achieved through training? In our case the training resources will support the main objective of this project which is to

RESOR - **R**enewable **E**nergy **So**urces
as a Chance for Development for the
Rural Areas

raise awareness of rural communities in the countries covered by the project about how to improve the life in rural areas through the correct use of renewable energy resources.

This objective will be achieved by providing training for stakeholders from rural areas in the topic of RES and Agricultural Waste Managment and equipping them with training materials that they will use to help people from these areas.

The project responds to awareness and education gap that is the most serious within rural areas. The training will put particular focus to empower creativity and innovation, to learn new technologies and methods to participate in positive visions regarding the topic of RES.

Who needs the training: *and any categories of trainees that will increase training effectiveness?* In our case the training is needed by farmers, employees, municipal utilities, environmental foundations, rural development agents, and other stakeholders equipping them with training materials that they will use to improve the impact of RES in rural areas.

The expected learning outcomes: what each trained person is expected to do and expect to know, in different stages and at the end of the training. Depending on the level of intensity of the training and the content of the modules, participants are now expected to know the correct use of RES and Agricultural Waste Management, which gives them the opportunity to improve life and environmental impact in rural areas, as well as for the creation of new employment opportunities for young people.

The scope of the training methods, such as face-to-face intensive sessions, provision of reference/specific materials, online available material and courses on an e-learning platform. In the training of RESOR project, the consortium decided to go with the on-line learning method as ensuring easy access to training materials, as well as with the European RES Handbook, to facilitate access to online content since in the rural areas, in many, not everyone knows how to use internet or have access to it.

It can be highlight that the online learning program of the training course aims to provide:

RESOR - **R**enewable **E**nergy **So**urces
as a Chance for Development for the
Rural Areas

• **Competency** to analyzing and identifying needs of representatives of target group; take responsibility of planning development of the main steps for the training program; prepare plan of RES and AW; choose proper range of use positive attitude; to adapt own behavior to circumstances in identifying and solving problems, prepare plan of using suitable instruments for delivering the training activities/methods;

• A **professional and performance training** component that integrates European data and development in to the organization of local activities/actions;

• A good **opportunity to develop practical skills and abilities** in the area of lifelong learning adapted to the requirements of creating new opportunities in rural areas with a positive environment impact.

The training contents is being satisfactory adapted to each country needs and to the European context.

At the end of the online learning experience an RESOR certificate of attendance will be distributed to the trainees.

1.2 Training Objectives

Overall objective: The RESOR project is aimed to develop new training methodology, materials for training and integrate into the new curriculum.

This objective will be achieved by providing training for people from rural areas in the topic of RES and equipping them with training materials that they will use to create new opportunities and chances for the development.

Specific objectives:

- support knowledge about RES

- to support entrepreneurship on the rural areas

RESOR - **R**enewable **E**nergy **So**urces
as a Chance for Development for the
Rural Areas

- to support improvement of effectiveness of RES and waste management sector related businesses;

- to support transfer of innovations to the RES and waste management related companies;

- to support improvement of quality of life in rural areas;

- to support employment in rural areas;

- development of new vocational skills

- to support innovations in rural areas

- to support awareness of an environment protection

All training materials have to contain information useful for residents of rural areas. It was emphasized – as a guideline that the training content must be concentrated on the modern technologies in the context of the farm leading.
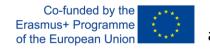
Trainees should gain at the end of the training experience solid improvement, as a direct result from the learning activity, in problem solving and decision making in several aspects related to the renewable energy sources and the waste management.

1.3 Training provision

The training materials will be developed both in national language of the partners and in English language then teaching materials will be integrated and implemented with e-learning platform.

This package of activities will include improving and updating of the training methodology, updating and developing a content of subject. The effect of this package will be the curriculum and training materials for RESOR.

All modules in national language version must be tested during pilot testing. It means that each partner will test the modules in national language. To consider someone as a

trained person, it is obligatory for the person/student/trainee to go through and pass the assessment of these modules.

- **Training provision**

The agreed proposal was to develop 8 modules:

O2/A0 - Introduction to Renewable Energy Sources GB (TR)

O2/A1 - Essay of the biomass energy module GB (TR)

O2/A2 -Essay of the solar energy module UU (TR)

O2/A3 -Essay of the photovoltaic energy module UU (TR)

O2/A4- Essay of the wind energy module BDIVE (HU)

O2/A5- Essay of the geothermal energy module EUC (CZ)

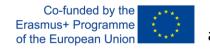O2/A6- Essay of the hydroelectric energy module DEFOIN (ES)

O2/A7-Essay of the biogas energy module ARID (PL).

There was agree that pilot trainings will involve between 10-15 people in each participating country. All modules in national language version as we mentioned before must be tested during pilot testing. It means that each partner will test 7 modules in national language.

- **The on-line environment**

The transfer of innovations from RESOR project are based on the transfer of the training resources - power point, word format, web portal and related training methodologies also the contents of the package activities will be integrated into the curriculum.

The volume of the training materials content should be comparable to the one of the RESOR project, which means that upper limit of the 15 pages for the word document and 25 slides for the PPT material

RESOR - **R**enewable **E**nergy **So**urces
as a Chance for Development for the
Rural Areas

. Also for providing attractiveness materials should contain interactive illustrations/images/schemes.

- **Expected results**

The training courses are intended to provide an intensive and interdisciplinary sequence of on-line work. At the end of the course, participants should be able to:

• Use the RESOR learning environment/training program and to export the learning experience through their daily activities;

• Ensure an operative integration of RESOR knowledge into rural areas;

• Communicate the RESOR knowledge acquired through learning experience/training program to other stakeholders in the area.

CHAPTER 2: Learners

2.1 The target group

The training activities that will be carried out within the RESOR project addresses a wide spectrum of target groups from the rural areas field. As we agreed in the application the project identified the users and their knowledge level in regards to the RES and the waste management.

The main targets are farmers, employees, municipal utilities, environmental foundations, rural development agents, waste disposal services, biomass energy providers, agricultural engineers or consultants, trainers in VET and stakeholders throughout Europe.

The form of training materials should be processed through usual technologies and requirements – using multimedia elements and Web technologies, mainly social

networks. In terms of the content, the processed information should be brief, clear and pertinent in order to obtain the expected results.

2.2 The trainees/representatives

Project consortium includes all the skills, recognized expertise and competencies required to carry out all aspects of the project work plan.

This product's goal will be to help people from rural areas to know how they can create new opportunities through the RES and the waste management.

The RESOR project will involve various participants from the beginning. Stakeholders will be involved for methodological consultation during elaboration of the first intellectual output - curriculum. The main involvement of stakeholders will be executed during pilot testing. Each partner will involve at least 10-15 people and will do the pilot testing training.

After that participants will fill the evaluation questionnaires and according to the outputs of this survey training content will be improved.

The biggest involvement of participants will be during multiplier events. Each partner will invite minimum 20 participants for workshop and will present and discussed elaborated products.

The strongest and direct involvement will take place during pilot session, when all testers will have a chance to express their opinion and feedback about training materials, functionality of e-learning platform. At this stage participation of end users/learners is especially important because of the provided opinions, which will help to keep the project outputs at highest level.

In addition, thanks to dissemination via social media, potential users will have occasion to communicate with project consortium and to suggest own ideas.

More than a simple visit, the website enables visitors to learn more about the project, consult/login/download Intellectual Outputs and most importantly interact with the

training content of RESOR project. On the other hand, the project will inform relevant partners from other EU projects about own outcomes.

CHAPTER 3: Modules

3.1 Training Structure

The objective of the training is to provide participants with the required knowledge and practice to use the RESOR knowledge and components as needed.

The European Qualifications Framework are to be considered, as described in the approved project, necessary to define the level of difficulty and competence for each module.

It can be noticed that this is the main reason why all existing materials and new methods/instruments have to be developed and adapted to the requirements of the target group.

According to the common decision training content transferred from base RESOR project has to be updated in the context of target group's needs, which means that all training materials have to contain information useful for residents of rural areas.

It was emphasized – as a guideline that the training content must be concentrated on the modern methods/instruments in the context of the quality of the air and its effects.

The materials will be designed in the attractive and usable way and integrated into the e-learning platform, available to download on creative common license. The extended curriculum will be made available in English language and all partner languages. The project's web site will be developed as a portal RESOR.

ICT resources will be updated according to the latest trends to follow the updated training methodology and to support attractiveness and simple access to the training.

Training needs will be investigated to adapt a vocational training platform oriented to the EU priority improving quality assurance systems in VET, also with a focus on new skills requested for green jobs.

RESOR - **R**enewable **E**nergy **So**urces
as a Chance for Development for the
Rural Areas

The training materials will be written in English by the different partners in charge of the chapters and then, once tested, evaluated and agreed, translated into national languages for piloting tests and the final release.

All partners will start to work on preparation relevant training materials. It will be prepared on the common templates and there will be limited amount of the high quality content. After preparation of this content there will be executed quality cross checking done by responsible partners.

With the purpose to achieve a high level on interest and performance the training materials will be in compliance with definitions for the trainees' achievements (EQF - European Qualifications Framework definitions).

The result will be an e-learning platform with a general Module of level 2 and level 3 of EQF and a detailed module of level 4 of EQF for the production and management of biomass, with an introduction to management of biogas plants.

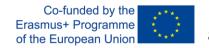- **Descriptors defining levels in the European Qualifications Framework (EQF)**

Level	Knowledge	Skills	Competence	Example
Level 2	Basic factual knowledge of a field of work or study	basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools	work or study under supervision with some autonomy	lower secondary school (FI)
Level 3	Knowledge of facts, principles, processes and general	a range of cognitive and practical skills required to accomplish tasks	take responsibility for completion of tasks in work or study; adapt own behavior to circumstances	(GCSE Grades A*-C UK)

RESOR - **R**enewable **E**nergy **So**urces
as a Chance for Development for the
Rural Areas

	concepts, in a field of work or study	and solve problems by selecting and applying basic methods, tools, materials and information	in solving problems	
Level 4	Factual and theoretical knowledge in broad contexts within a field of work or study	a range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study	exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change; supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities	Abitur, vocational school

"Learning outcomes":	Statements of what a learner knows, understands and is able to do on completion of a learning process and which are defined in terms of knowledge, skills and competence
"Knowledge":	The outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study. In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual.
"Skills":	The ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the European Qualifications Framework, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments).

RESOR - **R**enewable **E**nergy **So**urces
as a Chance for Development for the
Rural Areas

"Competence":	The proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy.

3.2 Module design

After having evaluated the potential participants' needs and interest level, the training modules have been developed to be accessed in a flexible and customable manner.

Also in according with the Training Need Report The online model will be designed interactive, also including a sequence of significant answer/response enabling the user to improve progressively own competence and obtain the relevant level certification (from level 2 to level 4).

The topics to be covered during the training are mentioned in the Training Provision point.

Each "Module" will be made of two parts, the first one "basic", Level 2 and 3 the second one "expert" Level 3. After having carefully read the first part, a test based on 10 questions will be available and, in case of successful performance, a certificate will be released, corresponding to the acquired competence level. The same procedure will be followed for the second part.

One significant case study will be provided by each partner for each module and duly presented, based on a template with description of the didactic process and related competencies (EQF 2, 3 and 4), also including pictures and, if available, short video clips.

Defoin will provide a template for development of the training user case study, elaborated from the case study template and made interactive.

Therefore the proposed model should be constituted as follows:

RESOR Training Modules.

RESOR - **R**enewable **E**nergy **So**urces
as a Chance for Development for the
Rural Areas

- Each partner will be responsible for translations in own mother tongue and piloting tests on the teaching materials, by organizing sessions with target groups.

- Each partner will be also responsible for dissemination of the project activities at national (or international whenever possible).

- ARID will provide a model of leaflet presenting the Program and RESOR project objectives and outputs.

3.3 Structure of the modules:

Module 0: Introduction to Renewable Energy Sources

- General
- Specific Topics
- Summary
- Learning Outcomes
- Guiding Concepts
- Guiding Questions
- Anchor Text
- Vocabulary
- Resources & Links
- Questions for Self Evaluation

MODULE 1: BIOGAS ENERGY MODULE
- General
- Specific Topics
- Summary
- Learning Outcomes
- Guiding Concepts
- Guiding Questions
- Anchor Text
- Vocabulary
- Resources & Links
- Case Study
- Questions for Self Evaluation

MODULE 2: SOLAR ENERGY MODULE

- General
- Specific Topics
- Summary
- Learning Outcomes
- Guiding Concepts
- Guiding Questions
- Anchor Text
- Vocabulary
- Resources & Links
- Case Study
- Questions for Self Evaluation

MODULE 3: PHOTOVOLTAIC ENERGY MODULE

- General
- Specific Topics
- Summary
- Learning Outcomes
- Guiding Concepts
- Guiding Questions
- Anchor Text
- Vocabulary
- Resources & Links
- Case Study
- Questions for Self Evaluation

MODULE 4: WIND ENERGY MODULE

- General
- Specific Topics
- Summary
- Learning Outcomes
- Guiding Concepts
- Guiding Questions
- Anchor Text
- Vocabulary
- Resources & Links
- Case Study
- Questions for Self Evaluation

MODULE 5: GEOTHERMAL ENERGY MODULE
- General
- Specific Topics
- Summary
- Learning Outcomes
- Guiding Concepts
- Guiding Questions
- Anchor Text
- Vocabulary
- Resources & Links
- Case Study
- Questions for Self Evaluation

MODULE 6: HYDROELECTRIC ENERGY MODULE
- General
- Specific Topics
- Summary
- Learning Outcomes
- Guiding Concepts
- Guiding Questions
- Anchor Text
- Vocabulary
- Resources & Links
- Case Study
- Questions for Self Evaluation

MODULE 7: BIOGAS ENERGY MODULE
- General
- Specific Topics
- Summary
- Learning Outcomes
- Guiding Concepts
- Guiding Questions
- Anchor Text
- Vocabulary
- Resources & Links
- Case Study
- Questions for Self Evaluation

RESOR - **R**enewable **E**nergy **So**urces
as a Chance for Development for the
Rural Areas

CHAPTER 4: Training materials

The transfer of innovations from RESOR project are based on the transfer of the training resources - power point, word format, web portal and related training methodologies also the contents of the package activities will be integrated into the curriculum. All materials will be produced by the partners and will be delivered by the common creative license.

The volume of the training materials content should be comparable to the one of the RESOR project, which means that upper limit of the 15 pages for the word document and 25 slides the ppt Also is important for providing attractiveness include materials should contain interactive illustrations/images/schemes

Taking into consideration the Application form the training materials will be developed both in national language of partners and in English language then teaching materials will be integrated and implemented with e-learning platform.
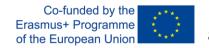
CHAPTER 5: Success indicators

In the evaluation process we will follow Donald L Kirkpatrick's training evaluation model - the four levels of learning evaluation. This task involves the definition of the evaluation criteria and how the success of the training will be measured.

An assessment questionnaire based on multiple choice questions will be developed, in order to evaluate the knowledge that has been acquired through the course and the trainees' overall performance capacity. The assessment will take place on the on-line environment, at the last of each module.

A specific user's satisfaction questionnaire will also be employed in order to check the understanding acquired by participants. This will be especially useful during the piloting and first editions of training, in order to eventually the correct and redesign in preparation for further editions.

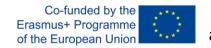| Evaluation level and	Evaluation description and characteristics	Examples of evaluation tools and	Relevance and practicability

RESOR - **R**enewable **E**nergy **So**urces
as a Chance for Development for the
Rural Areas

type		methods	
1. Reaction	**Reaction evaluation** is **how the delegates felt**, and their **personal reactions to the training or learning experience**, for example: Did the trainees like and enjoy the training? Did they consider the training relevant? Was it a good use of their time? Level of effort required to make the most of the learning. Perceived practicability and potential for applying the learning.	Typically 'happy sheets'. Feedback forms based on subjective personal reaction to the training experience. Post-training surveys or questionnaires. Online evaluation or grading by delegates.	Can be done immediately the training ends. Very easy to obtain reaction feedback Important to know that people were not upset or disappointed. Important that people give a positive impression when relating their experience to others who might be deciding whether to experience same.
2. Learning	**Learning evaluation** is the measurement of the **increase in knowledge or intellectual capability** from before to after the learning experience: Did the trainees learn what intended to be taught? Did the trainee experience what was intended for them to experience? What is the extent of advancement or change in the trainees after the training, in the direction or area that was intended?	Typically assessments or tests before and after the training. Methods of assessment need to be closely related to the aims of the learning. Measurement and analysis is possible and easy on a group scale. Reliable, clear scoring and measurements need to be established, so as to limit the risk of inconsistent	Relatively simple to set up, but more investment and thought required than reaction evaluation. Highly relevant and clear-cut for certain training such as quantifiable or technical skills. Less easy for more complex learning such as attitudinal development, this is famously difficult to assess.

		assessment.	
3. Behavior	**Behavior evaluation** is the extent to which the trainees **applied the learning** and **changed their behavior**, and this can be immediately and several months after the training, depending on the situation: Did the trainees put their learning into effect when back on the job? Were the relevant skills and knowledge used Was there noticeable and measurable change in the activity and performance of the trainees when back in their roles? Was the change in behavior and new level of knowledge sustained? Would the trainee be able to transfer their learning to another person? Is the trainee aware of their change in behavior, knowledge, skill level?	Observation and interview over time are required to assess change, relevance of change, and sustainability of change. Assessments need to be subtle and ongoing, and then transferred to a suitable analysis tool. Assessments need to be designed to reduce subjective judgment of the observer or interviewer, which is a variable factor that can affect reliability and consistency of measurements. The opinion of the trainee, which is a relevant indicator, is also subjective and unreliable, and so needs to be measured in a consistent defined way. Assessments can be designed around relevant performance scenarios, and specific key performance indicators or criteria.	Measurement of behavior change is less easy to quantify and interpret than reaction and learning evaluation. Simple quick response systems unlikely to be adequate. Management and analysis of ongoing subtle assessments are difficult, and virtually impossible without a well-designed system from the beginning. Evaluation of implementation and application is an extremely important assessment - there is little point in a good reaction and good increase in capability if nothing changes back in the job, therefore evaluation in this area is vital, albeit challenging. Behavior change evaluation is possible given good support and involvement from line managers or trainees, so it is helpful to involve them from the start, and to identify benefits for them, which links to the level 4 evaluation below.

| 4. Results | **Results evaluation** is the **effect on the business or environment** resulting from the improved performance of the trainee - it is the acid test.

Measures would typically be business or organizational key performance indicators, such as:

Volumes, values, percentages, timescales, return on investment, and other quantifiable aspects of organizational performance, for instance; numbers of complaints, staff turnover, attrition, failures, wastage, non-compliance, quality ratings, achievement of standards and accreditations, growth, retention, etc. | It is possible that many of these measures are already in place via normal management systems and reporting.

The challenge is to identify which and how relate to the trainee's input and influence.

Therefore it is important to identify and agree accountability and relevance with the trainee at the start of the training, so they understand what is to be measured.

This process overlays normal good management practice - it simply needs linking to the training input. | Individually, results evaluation is not particularly difficult; across an entire organization it becomes very much more challenging, not least because of the reliance on line-management, and the frequency and scale of changing structures, responsibilities and roles, which complicates the process of attributing clear accountability.

Also, external factors greatly affect organizational and business performance, which cloud the true cause of good or poor results. |