



Erasmus+



CLEAN kWAT

Integrating Environmental Considerations into Energy Systems Development

ERASMUS+ KA2

Cooperation and Innovation for Good Practices

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Introduction

In Turkey and in Europe, number of institutional and legislative elements of environmental reform, as well as the infrastructure development, have been put on the agenda as part of the environmental planning and education where development of energy systems that protect the environment is an important part. Since energy systems, especially fossil fueled, leads to global warming, the energy systems designs must be done according to the rules of environmental protection and prevent the destruction of natural resources.

In the energy departments in many universities in Turkey there are no obligatory courses related to environmental impact of energy supply. Since the departments for energy systems engineering show increasing trend in recent years, there is a need for supporting education with training materials, especially with innovative ones. Therefore, the main target group of this project is energy systems designers and engineering students in related departments mainly in energy systems engineering.

The European Qualification Framework (EQF) aims to make National Qualification (NQF) understandable in Europe, allow mobility of workers between countries and develop common learning system. It is necessary to enhance the quality and performance of VET system through improving guidance systems, promoting creativity, innovation and sharing EU experience in the field of education and training.

The CLEAN-kWAT project will address these issues through development of Learning Outcomes based training systems and redefinition of competence standards. It will highlight required skills and competences for working in energy supply sector and adapt the e-learning training modules according to them.





Project Partners

The Project Partners are recognized as experts in the fields of education, energy and environment. The Consortium consists of universities (two from Turkey and one from Serbia), international companies, training center, non-governmental organization and non-profit organizations related to renewables. All partners have significant experience in energy and environment related project and they represent great pool for exchanging know-how between European countries.



Giresun University is one of the reputable universities in Black Sea region with 13 faculties, 3 Institutes, 6 Higher Schools, 11 Vocational Higher Schools and a State Conservatory. It has important research capacity with 9 Research Centers (Continuing Education Research, Problems of Women, Career Guidance, Environmental Research, Application and Clean Production Center, etc.)

www.giresun.edu.tr



Orkon is an international engineering, training, consulting and project design organization in Turkey. It works in infrastructure, electrical, water, environmental and transportation projects, etc. It uses and combines its engineering experience in the European Union projects and puts great effort in Life Long Learning, providing a high quality service throughout partnership, transfer and development of innovation.

www.orkon.info





Project Partners



Gazi University, with 80,000 students, is one of the few universities whose history dates back to 1920s in Turkey. It is one of the largest universities with faculties from education to communication, fine arts, engineering, sports, economics, technology. The educational facilities are spread out in five different campuses. Gazi is very ambitious in fulfilling the requirements of the Bologna Process.

www.gazi.edu.tr



KALIENERGY aims to find the best solutions which fulfill latest technical and contractual standards in power supply industry and infrastructure sectors, which are economically and ecologically sound, socio-politically meaningful and which ensure long-term sustainability. In order to raise awareness on the carbon agenda, climate change and sustainability, Kali works in cooperation with both the national and international enterprises.

www.kalienrji.com





Project Partners



University of Belgrade, which enrolls 89,000 students, is ranked among top 500 universities in Shanghai University list in 2017 (position 201-300). It has 89,000 students and 4,500 teaching staff and associates. Faculty of Mechanical Engineering performs basic, applied, development and scientific research in order to improve education and science in various engineering fields. Their expertise is related to organizing scientific conferences and seminars, collaboration with industry and various institutions, solving applied scientific problems, studies and expertise.

www.bg.ac.rs



Asociacion Amigos de Europa Leonardo da Vinci (AELV) is a non-profit association. Their mission is the exchange of young people in EU and other countries, to promote training, support and technical expertise, social and political awareness as well as putting them together with institutions, companies and other entities to encourage and support integration of these individuals in the labour market. Their goal is to raise awareness based on training and promoting activities consistent with the conservation of nature and the promotion of the sustainable development.

www.aelv.org





Project Partners



The Renewables Academy AG (RENAC), based in Berlin, Germany, is one of the leading international providers of education and training in the fields of renewable energy (RE) and energy efficiency (EE). Their workshops and courses cover the whole value chain of renewable energy technologies and energy efficiency measures (topics and skills needed from financing, managing, engineering, assessing, implementing, designing and maintaining renewable energy systems. Their goal is to equip the course participants for the challenges of real projects through an intense and absorbing training experience.

<http://www.renac.de/en>



Energiaklub is an environmental association. It is a leading “think and do” organization in sustainable energy in Hungary. Its work concentrates on climate and energy policy by addressing energy efficiency, renewable energy sources, climate mitigation and adaptation, conventional energy sources, as well as good governance in these fields. They conduct research activities, develop local and regional Sustainable Energy Action Plans and climate strategies, provide training courses/counselling.

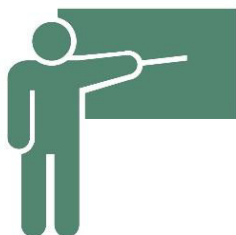
www.energiaklub.hu

Project Results

Here are the most important results of CLEAN-kWAT Project:



- Book on „Integrating Environmental Considerations into Energy Systems“
- Booklet on EQF and ECVET Definitions



- Training materials
- Videos (Documentaries based on the Book chapters)
- Knowledge-base Website
- Moodle e-learning Portal



- Multiplier events where all the products are presented and discussed
- Strategic Partnership

Book on "Integrating Environmental Considerations into Energy Systems Development"



The Training book will cover technological and environmental impacts of conventional and renewable energy systems

- **Introduction to Energy, environment and ecosystem relations**
This chapter will provide the definition of some basic ecological terms and describe the relationship between energy, environment and sustainability
- **Conventional energy production systems and environmental effects**
Here are described terms like „ecological and environmental footprint“ and some calculation principles of carbon footprints are presented
- **Technological and Environmental Effects of Energy Systems**
 - Nuclear Power Plants
 - Solar energy and Environmental effects
 - Wave and Tidal Energy
 - Geothermal Energy
 - Hydrogen gas
 - Biomass
 - Small and Large-Scale Hydropower
- **Case studies**



Booklet on ECF and ECVET

Description of Qualifications, Learning Objectives and European components will be set by defining the descriptions of the selected professions in the energy field, making the content definitions of EQF, Learning objectives and European components and defining Knowledge, Skills and Wider Competences for the levels 6 and 7 for the five preselected professions in the environment and energy field.

The built comprehensive learning outcome based units are designed to give detailed view of knowledge, skills and wider competence required for the target groups. The knowledge will be available as Learning Pathways (LPs) designed to match EQF levels 6 and 7, and weighed through ECVET. The qualification description will be made in accordance to ISCO/ESCO system.

The aim is to adapt a competence standard procedure for international transfer of acquired qualification in the field of sustainable environmentalist energy management. The work package applies the ECVET based concept and processes for establishment of common and user-friendly 'language' for transparency, transfer and recognition of learning outcomes.





Training material

Visual training materials are very important in effective learning. The documentaries will be produced for each chapter of the book and be a part of training material in e-learning portal. The content will be taken from the training modules. Knowledge given in each chapter of the book will be visualized through documentaries.

E-learning Portal

The e-portal is organized as flexible e-medium providing competence based carrier development. It will be available in EN and partner language It also acts as knowledge data base, providing relevant information in the project subject area, as well as experience exchange platform within and It will provide:

- General information about the project (aims, deliverables and impacts)
- Free access information resources and functional tools (national and international events in the project field, FAQ, relevant policy documents and country specific social practices, etc.)
- Interactive learning environment where users can benefit from the training courses on the web portal after registration.

The e-portal provides several key actions:

- Device for information Exchange that allows spreading of experience and ideas within and outside the project network
- It ensures project and post-project life actions via dissemination and exploitation of project outcomes





Multiplier Events

There will be 11 multiplier events organized in 5 different countries where interested people can find out more about CLEAN-kWAT project as well as see and evaluate the achieved results. There will also be one Web-based seminar which can reach people from all over the world, without the necessity of travel.

The first set of events (Evaluation Assembly) will happen in end of 2017 and beginning of 2018, and it will be held separately in Turkey, Serbia, Hungary, Germany and Spain. The participants whose professional background and personal demands fit the project objectives will get together and actively test, evaluate and help in tuning of the project results.

Congresses for the Finalization of the products will be organized in second half of 2018. This workshop will be devoted to dissemination of developed project intellectual outputs to target audience and interested stakeholders. Specialists working at the project relevant sector will be invited as guest lecturers, as well as representatives from national VET education structures.





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