The Strategic Energy Technology Plan

The SET (Strategic Energy Technology) Plan was launched in January 2007 after acknowledging the need to reshape the European energy sector in order to make it possible to face the important challenges that come with the climate change. Its main objectives are to lower the cost of clean energy and to allow Europe to play a key role in the low-carbon technology scenario.

The SET plan is envisioned to be instrumental in funding Research and Innovation (R&I) activities by promoting a targeted and efficient spending, and by driving national and private financial sources.

It consists of the SET Plan Steering Group, the European Technology and Innovation Platforms (ETIPs), the European Energy Research Alliance (EERA), and the SET Plan Information System (SETIS).

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Reflections and Roadmap for education and training

The SET Plan conducted a study on Energy Education and Training in Europe in 2014. Working Groups compiled assessment reports in twelve key low-carbon energy fields (such as "Electricity grids" and "Energy Storage") and also on horizontal issues shedding light in four directions: "Current Situation", "Ongoing Actions", "Needs and gaps, in particular main barriers or bottlenecks for the different sectors and their markets" and "Recommendations at EU and Member State level within specific target dates".

Those assessment reports were published autonomously under the title "SET Plan Study on Energy Education and Training in Europe, Assessment Reports of the Expert Working Groups" and were also used to create the "Roadmap on Education and Training, Availability and Mobilization of appropriately skilled human resources".

One of the key pillars recognized by SET Plan in advancing the energy technology innovation is the availability and mobilization of appropriately skilled human resources.

The paradigm shift that happens in the energy field calls for multidisciplinary and system integration education. That means that the specialists need to understand how their work interacts with the other technical fields and the managerial decisions and the planners and managers need to have a strong technical background.

The three objectives of the SET Plan Roadmap, are the following:

- To address knowledge, skills and competences needs and gaps via building networks, pooling capacities and allowing quick and wide replication.
- To reinforce the education and training system's link with the business and research environment.
- To plan and enable skill development and mutual recognition, while simultaneously facilitating the dissemination of new knowledge, techniques and tools.

Objective 1: Knowledge, Skills and Competences gap

The main recommendation for this objective is to fill the gaps via building networks, pooling resources and aim for all solutions to allow quick scale-up. Thus, it is encouraged to build Networks of Universities with links to Business and Research and Vocational Education and Training networks.

Network of Universities will help in the development of new curricula, the upgrade of the existing and the adoption of those changes. They will also facilitate the creation of joint degree programs that have the integration of the accreditation systems, the learning material etc, as a prerequisite. The connection between universities and research centres will open the way for a more advanced training for both the students and the staff.

VET Networks will involve many different actors like technical training centres, companies from related industries, vocational career guidance bodies, and bodies that handle the certification. They will have as key objective to enable the existing workforce to reskill and upskill by creating new curricula and upgrade the existing as well as strengthen the element of practical education preferably in the business setting.

The Master and PhD programs as outcomes of the networks, should follow the innovative educational methods that have a holistic approach and include not only technical but also human related skills. The Networks should involve as much as possible the European bodies with relevant expertise and create curricula that are open to neighbouring countries through e-learning.

Objective 2: Reinforce the connection between the education and Business/Research

The two types of actions for this objective include Mobility and Cooperation Partnerships among Academia, Research institutes and Businesses and Infrastructure Support to Education and Vocational Training.

Through the Mobility and Cooperation Partnerships the students can acquire valuable practical experience and the teaching staff can exchange knowledge and know-how with the researchers and business staff. This procedure will also bring the curricula closer to the needs of the labour market.

Through Infrastructure Support to Higher Education and Vocational Training the aim is to give access to laboratories, demo sites, and research infrastructure facilities either standalone or as part of an industry. A platform can be created in order to enable practice in education in multiple levels, not only for the students but also for the research and business staff.

Objective 3: Planning and enabling skills development, transfer and recognition

The types of actions under this objective include Virtual Learning and Information Platforms, KSC Recognition and Transfer Programs and Human Resources and Skills Observatories. Those actions are the more closely connected with the field of Digitalization.

The Virtual Learning and Information Platforms will enable few highly specialized experts reach not only the widespread group of students (either pre- or post- graduates) but also the general public that have an interest to be aware of the new energy technologies. The possibility of remote access is not only a way to better connect with infrastructures and data but it has become essential due to the Covid-19 crisis.

The Knowledge, Skills and Competences Recognition and Transfer Programs should define the learning outcomes for all the EQF levels and aim on the application of the ECVET and ECTS. As a result, the mobility will be made easier and developing countries can have access to already established programs.

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The Human Resources and Skills Observatories can be of many kinds with different focuses. They can include a database of the needed human resources and be a point of reference of learning outcomes thus enabling both the cooperation between different educational systems and the tracking of applied changes.

Other Recommendations and Best Practices

Energy efficiency and sustainability with respect to the environment should be a core part of all the educational programs of the future. In order to inspire younger generations to be part of the energy field workforce, informational campaigns can be arranged which can also be used to let the general public know how they can implement the new technologies locally.

Transition from analysis to action

In 2016, 154 umbrella organizations were involved in the formulation of a set of targets for the low-carbon energy sectors and other energy topics. The commitment to meeting these targets has then been framed into 13 implementation plans, each of which is devoted to the low-carbon energy sectors.

The implementation plans are joined in by a subset of the participant countries while one or two of them act as chairs of the working group who specify the volume of investment to be mobilized as well as a clear list of R&I activities where the R&I efforts are to be focused.

Goals and implementation plans can be accessed on the SETIS system.

Considerations in the perspective of university

The transition to a clean energy sector is leading to a new employment scenario in the EU. As a result, new profiles at all EQF levels are required. Universities, mainly in charge of the education of EQF levels 6-8, must be involved in the implementation plans, and should work on designing an efficient system that allows the conversion of the knowledge generated in the R&I activities into education programs.

To optimize the talent/skill generation process, programs must be flexible, otherwise they will not be able to adapt to the rapidly changing needs of an energy industry in transition to a still-to-be-defined scenario.

In addition, as already highlighted by the reports on education by the SET plan, it is of paramount importance that universities across Europe promote networks or alliances, which will be translated into more rational and standardized curricula, easier interaction and thus knowledge transfer between European regions, etc.