

*EVS27 Symposium
Barcelona, Spain, November 17-20, 2013*

Assessment of life-cycle skills and training needs in the renewable and energy efficiency sectors: the cases of the wind energy and electric mobility and smart grids.

Ana Cláudia Valente¹, Cândida Soares¹, Gabriela Prata Dias², Irene Correa³, Peter van den Bossche⁴, Tomás B. Ramos⁵.

¹*Centro de Estudos dos Povos e Culturas de Expressão Portuguesa, Universidade Católica Portuguesa, Rua Palma de Cima, 1649-023 Lisboa, Portugal, cepcep@fch.lisboa.ucp.pt*

²*Energy Charter Secretariat, Boulevard de la Woluwe, 56, 1200 Brussels, Belgium, gabriela.prata.dias@encharter.org*

³*Ci3T – Centro de Investigación Internacional en Inteligencia Territorial, Universidad de Huelva, Campus de El Carmen, Pabellón 7, 21071 Huelva, Spain, irene@uhu.es*

⁴*MOBI – Mobility, Logistics and Automotive Technology Research Centre, Electrical Engineering and Energy Technology, Vrije Universiteit Brussel, Faculty of Engineering Sciences, Pleinlaan 2, 1050 Elsene, Belgium, pvdhos@vub.ac.be*

⁵*CENSE - Center for Environmental and Sustainability Research, Departamento de Ciências e Engenharia do Ambiente, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Campus da Caparica, 2829-516 Caparica, Portugal, tabr@fct.unl.pt*

Short Abstract

This paper analyses the results of a project developed with the support of the European Commission, Directorate General for Employment Social Affairs and Inclusion, which comprises a short study detailing the assessment of the skills, qualifications and training needs within the wind energy and electric mobility sectors. We will analyze the skills, qualifications, training and retraining needs in every stage of technology implementation. The final results expected include exchange of good practices and the strategic recommendations for policy makers for training developments as anticipation of relevant factors in the future.

1. Introduction and Objectives

The Reskills project will comprise a study detailing the assessment of the skills, qualifications and training needs within the renewable energy and energy efficiency sectors. A technological life-cycle analysis of the human capital will be developed in detail for the wind energy (both on-shore and off-shore) and for the electric mobility (including smart electricity grids). The assessment will be developed using a cradle to grade methodology, i.e. through the phases of planning, manufacturing, construction, operation, maintenance and decommissioning of technologies. The project will analyze the skills, qualifications, training and retraining needs in every stage of technology implementation. The project will collect information from stakeholders (technology providers, installers, manufacturers, local authorities, academia, social partners, non-governmental organizations, among others), through interviews. Three missions with local site visits and focus groups will be organized for exchange of good practices and discussion of results. The

final results expected include exchange of good practices and the strategic recommendations for policy makers for training developments as anticipation of relevant factors in the future.

The aim of the project is to make an overall evaluation of every stage of implementation of technologies in order to assess if there are specific lack of skills, qualifications, training or re-training opportunities in the wind and e-mobility sectors and if this represents a barrier to their development. This action includes the assessment of the existing skills, qualifications and training opportunities (anticipation) for professionals, as well as identification of good practices on how education and training is responding to the greening of occupations. Another specific objective is the strategic impact evaluation of the development of these industries, namely through policies and practices and the type of skills available in Europe, in the frame of sustainable growth and with a cross gender approach. Specific attention will be paid to vocational training centres and their role on anticipation. Low skilled, old workers and the gender aspect will be of specific analysis given the role of companies in the restructuring processes caused by transformation to a green economy.

2. Targeted groups

The technology of wind was chosen as a mature green technology which is entering a phase of dealing with maintenance issues as well as decommission or renovation of old sites and electric vehicles and smart grids as a state-of-the-art sustainable mobility and efficiency related technologies.

Wind energy is technologically a sector entering the maturity learning curve and where Europe assumes leadership not only in installed capacity terms but also in manufacturing capacity, therefore in employment, skills and qualifications. A strong construction phase of wind farms is undergoing currently and it is foreseen that in a ten-year time there will be strong concerns on operation and maintenance of wind farms as well as decommissioning/renovation. Specific skills are therefore needed then and others will be significantly less demanded or exported. On the other hand, electric mobility is a state-of-the-art sector where great expectations exist at the moment on its development and deployment across the globe. Europe is also trying leadership in this area, mostly through specific Member States initiatives (e.g. MOBI.E in Portugal, MOVELE in Spain and the e-mobility living lab in the Flanders region in Belgium). This is not a mature and established market and everything still needs to be done, on the contrary to the status of the wind energy sector.

3. Transnational dimension

The advance brought about by this project requires a European focus because it is to a large extent through the comparative nature and framework of the project – focusing on three different regions in two different sectors – that new knowledge and perspectives on skills development will be created as detailed above. Other national and international technical and research activities on relevant themes or developing similarly useful perspectives will be closely monitored via regular surveying of scientific publications, attendance at national and international seminars and conferences, sustaining close links and cooperations with existing and new contacts and colleagues, and through the development of the missions and focus groups, through which other teams, public and private actors and practitioners are meant to share and discuss information and experiences. The countries that will be involved are Portugal, Spain and Belgium, where the most interesting achievements are being reached at clustering both on wind and e-mobility. However most of them in a very early stage of development so, exchange of experiences and the outcomes of the project could be of great importance to them and to other EU Member countries.

4. Added value and innovativeness

Added value and innovativeness will be reached through the contribution to reporting on the implementation of EU relevant legislation and policies and to promoting policy transfer and mutual learning through best practices in the framework of the Open Method of Coordination among Member States. Renewable energy and energy efficiency are one of the most active sectors towards innovation. Although not much information exists on the impact on skills training and education, information from

these sectors provide us that good practices in training for new skills exist. The final purpose of this research is to contribute to a general green skills framework at European and national level: defining technical and generic green skills required to work in green sectors.

The question of how to address polarization of skills profiles and the less favourable effects on low-skilled workers coming from the “greening” of economic activities: shedding light on how enterprises and education and training providers can both avoid high social and economic costs. Distinct skills needs and training strategies will be considered for three main qualifications levels (low, medium and high skilled workers) within a life-cycle approach (by workforce age groups), improving employment opportunities.

It is also intended to address the education and training strategies for green occupations and skills within a lifelong learning framework: including not only formal education taking place in the education system but also non-formal learning happening in highly innovative and changing work contexts. Prospects for informal learning of green skills will also be assessed.

Finally, it is our intention to provide sound information on how education and training can respond to the greening of occupations: considering in particular the existence of skills needs anticipation practices, fine tuning programs and curriculum design, teacher and trainers’ training, and collaboration arrangements involving green sector associations and enterprises.

5. Expected results

As a final result it is expected that new training opportunities will be identified, as well as new skills needed for these “new jobs”, the need to re-design the existing training opportunities by training level, and assess the local level implication of the development of these sustainable growth technologies.

A set of missions and site visits will be organized for the purpose of exchange of good practices and dissemination. Two site visits will be dedicated to wind energy: to Portugal to the ENEOP wind industrial cluster and Belgium. Concerning the electric mobility and smart grids, site visits will be made to Spain, Portugal and Belgium.

Therefore, the project’s expected main results will be the following: (i) draw conclusions on how the greening of the occupations occur in two strategic economic sectors: wind energy and e-mobility sector & smart grids; (ii) identify examples of good practices on how education and training is responding to the greening of occupations; (iii) discuss policies and practices implications to the education and training system in order to best fit the “greening” change; (iv) discuss particularly the enterprise role in employment and training for green occupations and skills, especially in handling with low-skilled workers and older workers in the context of restructuring processes caused by environmental standards or green technologies adoption; and (v) discuss particularly the education and training system role dealing with a new and demanding green change that affects training provision (early identification of appropriate skills needs, programs and curriculum design, teacher’s training and openness to green business sector).

Authors

Ana Cláudia Valente has a degree in Sociology by the Universidade Nova de Lisboa, a post graduation in Economics and Public Policy and a Masters in Policy and Human Resource Management by ISCTE. She is currently doing a PhD in Economics, also in ISCTE - Lisbon University Institute. From 1996 to 2004 she was Coordinator of Prospective Sectoral Studies at INOFOR. She is a researcher in Dinâmia-CET (ISCTE) and CEPCEP (UCP). Since June 2010, is also a member of the Board of CEPCEP. Her research areas are education and training policies, skills anticipation, human capital, innovation and economic growth.

Cândida Soares is acting as consultant in the Human Resources area (planning, employment, training) for Portuguese Catholic University/CEPCEP(research centre) and for some private companies since 2010. She has 25 years of experience among the leadership staff in the Portuguese Labour Ministry, namely focusing on employment and training policies. She guaranteed the representation of the Portuguese Government in several international organisations such as the European Commission, OECD, ILO, ETF. She is also author and co-author of several publications, being the most recent ones (2011/2012) “Portugal 2020: Skill needs anticipation” and “New jobs and competencies in the fields of health and social services in the context of aging and Social Economy as a social inclusion factor”.

Gabriela Prata Dias is acting as Senior Expert for Energy Efficiency at the Energy Charter Secretariat, since 2011. Has 20 years professional experience in the energy field, namely focusing on energy efficiency and renewable

energies. She holds a BSc. Degree in Geography and Regional Planning and an MSc. In Energy and Environmental Economics and Policy. She is also member of the Mobility Knowledge Network of the World Energy Council and is founding member of the Portuguese Platform for Sustainable Growth.

Irene Correa holds a degree in Economics and Business from the University of Huelva, a Master of Environment and Water Management from the Business School Foundation of Andalusia (ESNA) and is Doctor with European mention by the University of Huelva. She is Director since 2011 of the Sustainability lecture at the University of Huelva. She participated in different projects and is author or co-author of numerous scientific publications. Her research has focused on the area of sustainable and environmental development.

Tomás B. Ramos is Assistant Professor at New University of Lisbon, Faculty of Sciences and Technology, Department of Environmental Sciences and Engineering. He holds a B.Sc. in Environmental Engineering, a M.Sc. in Coastal Sciences and a Ph.D. in Environmental Engineering (Environmental Performance Evaluation). His research activity is carried out within environmental/sustainability assessment and management (impact assessment, performance evaluation and management, indicators, strategic monitoring; national, regional and corporate sustainability reporting). He has published widely on these topics in international journals (e.g. Journal of Environmental Management, Journal of Cleaner Production, Ecological Indicators, Sustainable Development, Land Use Policy, Business Strategy and the Environment). He is member of the Editorial Board of the Journal of Cleaner Production, Elsevier

Peter Van den Bossche promoted in Engineering Sciences from the Vrije Universiteit Brussel on a thesis "The Electric vehicle, raising the standards". He is currently lecturer at the Erasmushogeschool Brussel and the Vrije Universiteit Brussel. Since more than 15 years he is active in several international standardization committees, currently acting as Secretary of IEC TC69. He has been closely involved in electric vehicle research and demonstration programmes in collaboration with the Vrije Universiteit Brussel and the international associations AVERE and CITELEC, and is now coordinating research projects on battery modelling, always observing the link to standardization development in the field.