

Establishing master of expert study program for industry in West-Balkan

Thor Henning Gulbrandsen
New Energy Performance (NEPAS)
Norway
gulbrandsen@nepas.no

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Abstract

Training and skill upgrading of key personnel in industry is an excellent way to raise the efficiency in processes and achieve more competitiveness in commercial business. Based on this fact a Master of Expert Program (MEE) is developed in West-Balkan and successfully been undertaken at universities and at a number of industrial organisations in this region.

1. The MEE program is based on six different modules focusing on topics, which are connected to the technical and economical strategy for the beneficiary companies preferably defined in a company policy and energy planning scheme.

This will give the candidates possibilities to influence the production lines, quality of the products, energy use, awareness and market understanding.

2. The program applies to people in technical positions and put technology and economy into a managerial framework.

3. Efficiency in industry is a continuously process and most people in industrial organisations have to be trained and prepared for a flexible production scheme and to adapt the process lines to new technologies and different market situations through a company planning scheme.

4. The program performance is partly theoretical and practical and to keep a high standard on the training courses, the program is linked to higher educational institutions, using skilled professors and experts from industry to deliver the lectures.

5. The MEE program has been running for five years in the West-Balkan region and more than 50 candidates has been ed-

ucated and received their Certificate of Expertise after a written and oral exam. This allow the candidates to earn 7 ECTS (European Credit Transfer System)

6. Also many ordinary students found the MEE training courses complementary to their MSc or BSc study and apply to participate in some of the six modules as a part of their diploma curriculum.

7. The MEE study program has been reported as an efficient short term training program with an immediate impact to technical and economical issues in industry, by students, universities and the sponsors.

Introduction

The previous beneficiary countries for the MEE study program are in an exceptional position concerning energy saving potential, potential of environmental improvement and possibility for using renewable energy sources.

The industrial economical growth in West-Balkan is below most of the other European countries and this lead to poor investment and new business initiatives, which is crucial for economic growth and to fight poverty.

If we are looking back to the situation before 1990 and the framework which exist at that time, we can still find many industrial managers in the MEE impact area, which have difficulties to see the holistic view of modern business development, company culture, management and administration issues.

The MEE is adapted to the industrial – and service sectors in these countries focusing on skill upgrading by giving theoretical and practical lectures in management, economy, financing, maintenance and operational procedures and raising awareness for a better individual contribution to cost reduction. To

achieve a complete success with the MEE program implementation, a binding energy planning set-up scheme ought to be undertaken in the participating organisations in order to oblige the management and other key personnel to be involved.

The MEE project

Working with energy experts in industry and service sector makes it clear that a managerial outline and company policy have to be developed in order to use the achievement from the MEE training sessions in a proper way.

Based on these facts, an energy planning scheme ought to be made as a tool for sustainable development and for energy and environmental policy-making in parallel with the MEE training program.

The MEE training program consists of six individual modules, focusing on management, investment, economy, renewable energy systems, best practise, environmental issues, and practical auditing on site level. Each module is designed for a 24 hours work load and each MEE candidate earn 7 ECTS (european credit transfer system) credits after an oral and written exam.

The objective is to train the key personnel in industry and public sector and nearby settlements to develop business opportunities and to be aware of cost reduction in all levels of the beneficiary institutions.

NEPAS has been undertaking a number of projects in East- and Central Europe and one of the long term energy planning initiative is also in progress in the Republic of Ukraine.

Many years of implementation of energy planning tools, taught us that preparation and skill upgrading is crucial for success in business development and market clearing.

Most of the projects are based upon requests from regional authorities for a long- term impact of energy efficiency, energy production improvement, fuel switch, energy distribution and energy consumption issues in public and private sectors.

The scope of work will be implemented by use of best practise methods and mechanisms and modern data based planning tools for comprehensive analysis and simulations of the potential for improvement in the energy sector, and for national and local priorities.

The MEE program takes into account all parameters necessary for local planning and appraise different energy carriers with regards to energy tariffs, environmental impact taxes and cost issues. Due to these facts, all data gathered for simulations and analysis must be of high quality, like energy carriers and consumption figures, industrial production figures, meteorological data, building standard figures, water consumption, population figures, future refurbishing etc.

This approach is an efficient tool for decision makers to see the overall connection between important aspects within energy production, energy use, building construction and issues connected to pollution to air and soil.

It also consider existing rules and building regulations, energy supply, energy saving potential and energy intensive industrial production, in order to identify the best options for renewable energy planning, heat recovery and identification of financial sources for cost estimation and investment. All these issues are covered in the MEE study program.

In Norway local energy planning is obligatory to achieve territorial concession for energy sale and service in the market, and is now a specific topic at universities and technical schools for engineers and economists.

After the project is terminated dissemination of the results will be published in order to give so many potential users in the region the opportunity to undertake profitable energy measures in a long term perspective in local and regional energy supply systems.

Those plans must be linked up to national and international energy- and environmental agreements and satisfy the demand from the EC directives.

The MEE project implementation requires multidisciplinary competence within organisation and management, energy -and environmental technology.

To achieve a reliable view of all the different aspects with the MEE impact and to ensure a professional implementation in a proper sequence, the work will be divided into different achievements.

1. The local partners will focus on fieldwork while NEPAS will adapt best practice methods and mechanisms for facilitating data gathering, analysis, simulations, and reporting.
2. NEPAS will be in charge for the MEE program establishment and operation, which we consider as a crucial contribution for using the energy plan properly and raise the awareness of energy use. The MEE study program is tailor made for that purpose.

SOCIO-ECONOMIC ISSUES IN THE MEE PROGRAM

The integrated energy planning as a part of the MEE study program has to cover socio-economic issues in all aspects in industry, infrastructure, agricultural issues and energy sector but also in the market economical aspects like electricity supply, renewable energy systems, biomass supply etc.

A holistic process to develop a MEE training program by integrating different macro and micro economical sectors are linked to three main pillars which are crucial for sustainable development, social aspects, economical - and environmental aspects.

Energy training and planning must have a wide vision with a clear strategy how to reach the objectives, and in many countries environment and poverty are more important than savings. Our impact must comprise a complete value chain, which will end up in the stated objectives.

Most municipalities, regions and industrial companies use to have an energy policy plan including business opportunities and investment scheme as a working document for progress in energy production, energy infrastructure and in the end use sector, but few are using it as a strategic document.

This policy must focus on management, energy efficiency, renewable energy sources, best practise, new technology and training, including an investment framework.

Energy policy planning, comprise a great number of topics and individual professions. Close links to local - and political management is important for a successful energy planning output.

Thus it is important to establish a group of well trained people with responsibility for carrying out the work with focus

on partner institutions, awareness, individual skill upgrading, technical and economical framework for implementation of measures.

Many data - based software programs are developed for energy planning purposes, but lessons learned, indicates clear that individual competence on software operating and reliable data input must be ensured before using that kind of tools.

NEPAS is therefore emphasising within the framework of the MEE on individual training and awareness issues before implementing computer based data tools. The results achieved will be the basis for a feasibility assessment for a long term planning policy.

The MEE program must look at human aspects, especially countries in transition. Persistent poverty, the impact of globalisation and wrestling with natural disasters are items, which will influence the progress for prosperity, although we have to stick to the basic issues concerning sustainable development with respect to cost efficiency, efficiency in energy production and use, increase use of renewable energy and reducing energy intensive processes in industry.

In this regard, a proper district is required as an appropriate area for a MEE program establishment and planning site and with a proper potential for skill upgrading. Planned actions to reduce energy shortage can take various forms such as energy efficiency through promotion and use of energy efficient stoves for cooking and water heating, compact fluorescent bulbs replacing ordinary bulbs, energy supply expansions by use of different bio fuel and renewable energy sources such as small hydro power plants, wind, solar and biomass based systems. Ecologically development of a region is possible when energy needs are integrated with the environmental concerns at the local and global levels.

Survey carried out in villages in rural areas reveals that level of energy consumption and adoption of energy efficient technologies depends on level of education of end users of energy, land holding and finally to some extent, community. This endeavour helps to identify hydro sites for electricity generation in a decentralized market, assessment to wind energy, photo voltaic resources, agro-ecological zones helps in demarking degraded land, which helps planners to promote cultivating plants for energy purpose in order to meet the fuel requirement of the region, mapping renewable energy sources and sector-wise energy demand and resource demand balancing by modelling.

These facts are also raising questions to be addressed in the MEE skill upgrading programs.

Skill upgrading and energy planning endeavour involves finding a set of renewable energy sources and technology for conversion to energy - and environmental friendly solutions so as to meet the energy demand and environmental requirements for local environment mitigation in an optimal manner. This optimality depends on the objective; such as to minimise the total annual costs of energy or minimisation of non local resources or maximisation of system overall efficiency. Factors such as availability and reliability of resources in the impact region and energy requirements impose constraints on the regional energy planning exercise. Thus, the regional energy planning turns out to be a constrained optimisation problem.

This exercise describes an optimal energy allocation based on skill upgrading and an integrated energy planning approach, and makes a satisfying energy allocation plan for the years to come.

Energy availability and demand situation may be projected for various scenarios (base case scenario, high energy intensity, transformation, state growth scenarios in order to get a glimpse of future patterns and assess the likely impacts of energy policies. The MEE program takes these issues into account in order to reveal the best options to address socio-economic barriers.

THE MEE OBJECTIVES

The MEE main target is to give the regional industry the opportunity to be more cost efficient and market oriented in order to survive in the increasing European market competition and to be aware of the opportunities for business development.

Many industrial managers emphasise on problems, which they believe will avoid economic growth and business opportunities. The MEE initiative is focusing on problem - solving, and regional value chain by developing methods and mechanisms for efficient energy use, improvement of industrial processes and environment awareness.

These issues are put together in a managerial approach where management, financing, economy, sales and promotion, awareness and technology are the basic substance of the training program for graduating candidates with a holistic understanding of the methods and mechanisms for future business success and market understanding.

Secondary goals

1. Facilitate communication between universities and institutions and net-work building with other countries in the region. (This point is specifically highlighted by the sponsors of this project).
2. Give the industry sectors specific training in using different tools to promote energy planning schemes, energy efficiency programs, assessment of renewable energy sources and to do financial and economical exercises.
3. Information concerning relevant EU programs and directives.
4. Give the candidates information concerning bench-marks and indicators in order to measure the "health" of the industrial processes. This will set the focus on all energy-and environment related cost elements in the company and the logistic aspects.
5. Raise the competence and awareness at the sub-contractor level and in the service sector.

THE IMPACT OF THE WORK

The impact of the skill upgrading in industry is immediate. The MEE candidates can use their skill short after returning to their jobs.

For the MEE candidates, the recently acquired knowledge is fresh, because many of the MEE candidates are graduated in the sixties and seventies when these topics were not available on the university curriculum.

Also candidates from other countries in the region had access to the study program.

SUCCESS INDICATORS

1. Employing personnel and organisations, which are interested and motivated for management, economy and technology as a tool to raise economic growth in industry and local communities and improve the socio-economic situation on local level.
2. Develop communication lines across the borders in the Balkan area in order to develop network and clearing houses for collaboration and development on long term.

TARGET GROUPS

The target groups were basically energy and environmental experts from the Balkan industry and public sectors, but the interest from other groups like the service sector, consulting engineers, suppliers and ordinary BSc/MSc students gave these groups access to the lectures and field work.

RESULTS

The basic objective with the MEE was to give the regional industry the opportunity to be more cost efficient and market oriented in order to survive in the increasing European market competition and to be aware of the opportunities for business development.

79 students have been participating in our West Balkan training program. 39 candidates have received their MEE certificate and 18 students have finished their MSc diploma.

Most of them are to day employed in industry and in service sector in West Balkan countries.

18 scientific papers are published and 41 professors from Norway and West- Balkan have participated in the training program.

15 professors have been visited the collaborating universities in Norway. More than 35 companies and institutions in Croatia, Serbia, Kosovo, Bosnia-Herzegovina, Moldova and Norway have been involved in the training studies in West Balkan.

10 different faculties have worked together successfully with this project.

SUMMARY

A successful implementation of training programs in industry and in public sector, need a comprehensive understanding of the end users demand for new expertise, opportunities and barriers for business development.

Most of the countries we are involved with are countries in economical transition, where focus is set on economical growth, not only to wrestle for international economic standard but most of all to fight the poverty by establishing a sustainable economical middle class.

Socio-economic issues are therefore a crucial input to this effort. The MEE training program is addressing those problems by emphasising on the total value chain in energy production, energy infrastructure and in the end use sector.

A regional energy plan together with the MEE study program gave the region an excellent opportunity to facilitate the

implementation of methods for a sustainable development and economic growth.

Finally, the training programs have been a great communication catalyser between countries in the former Yugoslavia and contributed to building up new network in the region and establishing reliable contacts across the borders.