Eco-innovative solutions for revigorating the rural communities in the Black Sea region

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The proposed research paper has been developed under the frame of the BSUN Regional MSc Program on the Management of Renewable Energy Sources that involves students from 5 Universities from the Black Sea Region.

The research subject aims the evaluation of the impact of national policies related to the support and promotion of projects on renewable energy in the Black Sea region countries and the analysis of the key factors that could contribute to the sustainable development of rural areas.

The research team is proposing a reference methodology that could be used in the multi criteria decision phase of renewable energy projects proposed to be developed in the rural areas.

Three case studies are developed for comparative analysis between Romania, Moldova and Ukraine. Using the results of the comparative analysis there are proposed possible pathways and actions to enhance the policies and action plans at the national and local levels.

The case studies have been developed following the below mentioned phases:

a. Evaluation of ecosystem factors in selected areas: land, water, forest, solar, wind, etc.
b. Analysis of the demographics and social conditions
c. Opportunities for economic development
d. Selection of the key development factors
e. Definition of the eco-innovative solutions
f. Life cycle assessment for each solution
g. Economical assessment for each solution
h. Value engineering of the selected solutions
i. Multi criteria decision for the selection of the optimal solution

For the purpose of the present study there were selected three generic countries as follows:

ROMANIA – is a EU member country that ranked as the seventh in terms of population, with the significant list of natural resources as: (agriculture land – 14,7 mil ha, oil and gas reserves – covering 70% of the needs) but also the GDP per capita of 12 808 $ at around half of EU 27 average.

UKRAINE is a former Soviet Union member country with significant resources in terms of agriculture land (42 mil ha), iron ore, coal, uranium and the competitive heavy industries. The GDP per capita is 7374 $.
MOLDOVA is a EU neighbouring country, negotiating at present the status of candidate country to the EU. The GDP per capita is 3415 $, and also it has very poor resources. Moldova is considered to be very vulnerable to the stability of the workforce.

The assumptions that have been used in the three cases consist in the similarities between the three countries in terms of costs of equipment and labour. The similarities in terms of cost of equipment is the result of the de-industrialization that followed the same pattern in all three countries in the last 20 years. As a result of this process all three countries are dependent on equipment manufactured abroad.

In terms of renewable energy sources, we have three situations: Romania with the most generous system of subsidies based on Green Certificates, Ukraine following the system of feed in tariff and Moldova that has not yet implemented but is envisaging a scheme with feed in tariffs. In the case of Romania, there are no correlations with other policies like industrial policy or agriculture policy. In the case of Ukraine, there is a system of offset conditioning that is imposing a contribution of local economy and is mainly targeting the industry.

Analysing the results of the three cases it might be seen that the best solution does not consist in the isolated exploitation of renewable energy. In each of the three cases the best solutions are related to the integration of renewable energy into a factor for developing the local economy: wind energy for irrigation in Tataru, the neutralization of biomass residues for the production of heat and power in Septelici and the development of tourism opportunities by using the local biomass resources in Luchiste.

As a consequence, we may say that a major conclusion of this project might be a recommendation for developing countries interested in the support of rural communities to use the policies on sustainable energy intimately connected with the policies related to agriculture, tourism and rural development.

Acknowledgment

The current research activity has been carried out under the framework of the project "BSUN JOINT MASTER DEGREE STUDY PROGRAM ON THE MANAGEMENT OF RENEWABLE ENERGY SOURCES – ARGOS", financed through the Joint Operational Programme "BLACK SEA BASIN 2007-2013" by the European Union, contract 1.3.1.66334.127, MIS-ETC 277, no.44553/08.06.2011