

Valentinas Klevas¹, Kestutis Biekša², Audrone Kleviene³, Mindaugas Stankevicius⁴

REGIONAL APPROACH OF SUSTAINABLE ENERGY DEVELOPMENT

¹ Lithuanian Energy Institute, + 370 (37) 401936; klevas@mail.lei.lt;

² Lithuanian Energy Institute +370(37) 401936; biekša@mail.lei.lt;

³ Lithuanian Energy Institute +370(37) 401982; audrone@mail.lei.lt;

⁴ Lithuanian Energy Institute, +370(37) 401936; stankevicius@mail.lei.l

OVERVIEW

Policies and measures aiming to enhance use of renewable energy sources, increasing energy efficiency etc. are mainly driven by EU accession requirements. Lithuania has already implemented all EU directives targeting to enhance use of renewable energy sources.

However the interplay of new technologies and the environment involves the interaction of two sets of market failures. The result of these interactions is that the rate of investments in environmentally friendly technologies, including use of RES, is below the socially optimal level because of the absence of public policy [1].

The main idea of the paper is that implementation the EU directives and reducing of GHG emissions can be guaranteed through a range of policies and measures, such as diversification of supply system, using a mix of fuel types from a range of sources, and a variety of supply routes and sources for imports. Municipalities may play considerable role by promoting sustainable energy because of local authorities are fulfilling their functions in the energy sector via number of roles. The threat of energy supply interruptions can be minimized through the maintenance of energy infrastructure, reliable plant and effective back-up systems. Encouraging energy efficiency among consumers to reduce overall demand, and the effective management of demand to reduce the difference between peak and low energy use assists in reducing the threat of short term interruptions in energy supply that can be caused by high demand.

However local development experts, responsible for a large part of the innovative actions at local and/or regional level, are unaware of the potentialities of clean energy technologies for the local sustainable development, creation of new enterprises, job creation, and the development of sound initiatives with local resources [2].

Sustainable development needs organizing institutions, actors, support measures, etc. Municipal sustainable energy policy should be based on a covenant between central government and representative bodies from the municipalities.

Integration of energy projects into local development process may create an external positive effect concerning environmental and other national sustainable development goals. The examples of EU-15 countries (United Kingdom, Austria, The Netherlands) implementing their sustainable energy development and climate change mitigation policies on local level can be successfully applied in Lithuania and other countries.

METHODS

Scientific problem is to define the economic background for support for RES implementation. It is necessary to analyze economic support forms for creation and mastering of RES technologies to make them competitive with technologies of traditional fuels and make them sensible according to actual purpose, need and possible effect. All support schemes must form uniform, systematic and blameless economic whole. In principle meaning this support scheme

must make RES competitiveness conditions the same but not protect them against other sorts of energy and technologies. Finally they all must have one or another uniform systematic whole. Methodology is devised both for identifying and for quantifying energy market distortions that lead to inefficient resource allocation. Methodology of cost-benefit analysis of the positive or negative effects of increasing energy supply security, social, environmental, economic impacts was applied [1].

The methodology of integration of sustainable energy projects into local/regional development programs is a key to formation of scenarios concerning financing of RES projects, integrated into the regional deployment level.

Local development scenarios approach has been applied for identifying directions and projects to be implemented to ensure realisation of targets and goals of National Sustainable development programme.

RESULTS

Methodology of municipal energy development scenarios has been elaborated which can link National sustainable development policy to local relevant issues. Municipal energy development scenarios enables the municipality to give shape to sustainable, realistic aims within a clearly defined structure.

Establishing a local or major regional market rather than separate renewable energy projects could help to ensure a market of a sufficient size and enhance competition. In addition, a regional approach could be an important element in the Kyoto follow-up work.

The elaboration of local energy development scenarios have to start from a clear strategic idea which establishes links between strategic national and local goals.

The energy aspects have to be integrated in a clear development idea, capable of convincing the politicians of the benefits for the local/regional business community.

Energy has to consider also the social aspects, particularly in less favoured areas.

Municipalities could play a key role when it comes to energy saving in existing housing, through:

1. Helping develop planning guidelines in all local planning authorities for RE in all new industrial buildings.
2. Developing a financial scheme to assist with the capital costs of installation.

The relationship with the functionaries in charge of the local economic planning must be based on a clear co-operation, where the energy experts give their support without substituting the economists.

The gradual development of innovative programmes requires the respect of all the necessary phases: the elaboration of the concepts, the experimental applications.

Enhanced financing of environmentally friendly technologies by using RES is necessary seeking to overcome energy market failures and barriers. Very effective tool from this point are financial sources from EU Structural Funds. These funds can be used effectively by municipalities to overcome a set of market failures by financing of innovations and diffusion of new environmentally friendly technologies.

CONCLUSIONS

- The sustainability assessment using regional social-economic-environmental indicators, as new jobs, new enterprises, additional economic product, greenhouse gas reduction, is the main key to integrate sustainable energy in the programme deployment level. The indicators to be used should describe the contribution of energy programmes to a

sustainable economic development, the medium- and long-term trends and the inter-relationship between them and the typical energy indicators (saved toe, improved energy efficiency, percentage of RES).

- Municipalities could play a considerable role by promoting sustainable energy because local authorities are fulfilling their functions in the energy sector via a number of roles.
- Integration of energy projects into the local development process may create an external positive effect concerning increased energy security and other national development goals.
- Sustainable energy investment projects, characterized by a positive local environmental development impact, can be brought up to the level of implementation, using the contribution from the Structural Funds or other regional public resources.
- The need for formation of single energy policy with RES economic support system as one of compounds is notified for several years already. It is impossible without single attitude to the perspectives of the use of separate types of fuels and sorts of energy in making strategic decisions as well as in implementing them.
- It is necessary to separate two main support groups concerning RES:
 - a) Energy producers and suppliers, which must integrate into operating energy system to compete with main types of fuel – natural gas, oil (heavy oil fuel), coal.
 - b) Energy consumers to whom RES without additional support and establishment of infrastructure cannot afford most demand defining factors – acceptable price and security of supply.
- However, the use of RES is related to additional public benefit, which is not evaluated in individual business decision making.

REFERENCES

1. Klevas V., Štreimikienė D., Klevienė A. Sustainability assessment of the energy project implementation in regional scale // Renewable and Sustainable Energy Reviews. ISSN 1364-0321.- 2009.- Vol. 13.- Nr.1.- P. 155-166.
2. Klevas V., Antinucci M. (2004). Integration of national and regional energy development programs in Baltic States. Energy Policy, vol. 32, pp. 345-355.