ENERGY EFFICIENCY DEVELOPMENT

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Annotation

The focus of this article is energy efficiency development in the context of Russia. The purpose of the paper is to report on energy efficiency and to give an overview of energy efficiency development in Russia.

Key words: energy efficiency, renewable technologies, energy resources, «cutting-edge» technologies,national economy.

The scientists of United National Industrial Development Organizations (Africa) state that «Energy efficiency is understood to mean the utilization of energy in the most cost effective manner to carry out a manufacturing process or provide a service, whereby energy waste is minimized and the overall consumption of primary energy resources is reduced. In other words, energy efficient practices or systems will seek to use less energy while conducting any energy-dependent activity: at the same time, the corresponding (negative) environmental impacts of energy consumption are minimized.»

The impacts of energy use affect all of us and consequently, we should all be concerned about how to use energy more efficiently. However, the main bodies responsible for defining national approaches to energy efficiency are typically government agencies, whose responsibilities will usually include:

1. Enacting legislation which relate to energy efficiency if required, including defining an oversight role for energy regulators, when relevant.
2. Deciding the state budget for promoting and conducting energy efficiency activities and programmes for the general public, including tax or other incentives when appropriate.
3. Promoting energy awareness and disseminating useful information on energy efficiency measures and on recommended procedures for all sectors of the economy .
4. Allocating the budget and carrying out energy efficiency programmes in relation to government-owned assets, e.g. government buildings, vehicle fleets. These actions will serve as examples of good practices for others to follow.

Renewable energy technologies tend to have a higher profile than energy efficiency actions. This is mainly for the obvious reason that they are more visible as new installations and perceived as more «cutting-edge» technologies. This occurs even though they often have higher initial capital costs than energy efficiency measures (and may have less favorable operating costs too). However, one of the benefits of adopting renewables is the ensuing increase in awareness of energy production and consumption in the owner of the installation and also often with the public who can see or might interact with the technology. For example, solar PV or solar water heating panels on a public building raises the awareness of renewable energy use in the

building users and other members of the public [1].

This increased awareness of energy consumption may be used to stimulate awareness of energy efficiency by introducing energy efficiency measures simultaneously with a new renewable energy installation. As the renewable energy installation has a significant capital costs people can become more sensitive to the idea of «wasting» the energy from the system, especially if they feel a strong level of ownership of the renewable energy system.

In addition, a renewable energy system supplier/installer could make recommendations on how to use the energy produced in the most efficient manner, so output from the system could generate the most benefit in terms of services to the end-users. This is often a good opportunity to introduce demand-side energy savings measures.

From the supply-side perspective, a switch to renewables supports sustainable energy generation and contributes to reducing dependency on imported energy. For large scale operations, currently available renewable technologies are bio - mass-based cogeneration for electricity generation, on-shore and off-shore wind, geothermal energy and large-scale hydro. For small-scale side installations, the following types of technologies can offset the need for electricity or gas taken from a national grid:

1. Solar water heaters for water heating;
2. Small-scale wind generators and mini-hydro systems for electricity;
3. Solar PV for electricity;
4. Small-scale biomass technologies for heat and electricity.

Barriers to achieving a good level of energy efficiency improvement include the lack of policy or regulatory measures, the lack of information and awareness of potential benefits, a failure to emphasize good energy management, and a lack of technical capacity to identify, evaluate and implement energy efficiency measures. Technology and financing barriers are also seen in some situations. Of these barriers, the failure to practise good energy management is typically one of the most important factors for enterprises. Improving energy management is almost always a low-cost action that achieves valuable benefits in the short term. Maintaining good management ensures these benefits are continually contributing to enterprise profits (and the national economy) in the long term. [2]

Energy efficiency development in Russia

Alexander Gusev asserts that «Russian policy on energy efficiency has been moving slower than the EU had expected. The process is being slowed by the lack of coherent policies on the federal and regional levels as well as by an insufficient and ill-informed legal basis.»

The quality and timeliness of the necessary amendments will play a large role in the success or failure of policy on energy efficiency in the following years. Bilateral projects between Russia and EU countries mostly face problems such as an incomplete legal basis, administrative and technological issues, and difficulties in negotiations with municipal and regional authorities. However, due to public-private partnerships or project-financing mechanisms, it is possible to avoid or to diminish the impact of such problems. In this respect, namely Raiffeisen Bank has had successful experiences in working with regional authorities in Russia. The projects financed by the international (International Finance Corporation, European Bank for Reconstruction and

Development, Nordic Environment Finance Corporation) and European institutions (KfW) make a considerable and practical contribution toward increasing energy efficiency in Russia, mostly because they offer "cheaper money" with longer payoff periods; in addition, they are starting to offer special credit lines for households. Russian banks, on the contrary, underline that households may use consumer credits for energy-saving purposes. However, informational work on existing programs for companies and households should be carried out more actively by international and European organizations. For example, very few companies know about the programs supported by the German Federal Environment Ministry, such as ecological consultations, climate initiatives and an initiative on the export of renewable technologies and equipment.

Rising prices for electricity also increase the attractiveness and profitability of projects for foreign investors. At the same time, the increase in prices will force Russian companies and the general population to think about energy efficiency. Consequently, European solutions and know-how will be in great demand. In addition, the lack of generating capacities in Russia and increasing electricity consumption create excellent opportunities for investments in construction of combined heating/cooling plants and transformer substations. In terms of decentralized generation development, the Russian market presents excellent opportunities for the export of European technologies and solutions in the mid-term. At present, Russian banks and companies are interested in European experiences and know-how regarding decentralized generation, as well as cooperation with engineering companies and producers of related equipment. Collaboration on the construction and use of decentralized generation in distant areas should also be considered. Moreover, the development of decentralized generation in Russia would contribute to increases in energy efficiency as well as reductions in CO2 emissions and gas flaring. [3]

In conclusion, Germany, France, Denmark, Finland, Italy and Norway are currently running projects on energy efficiency, electricity and renewable energy in Russia, such as:

1. Standards and Labels for Promoting Energy Efficiency in Russia

ongoing, Full-sized project: USD 7,810,000 (Global Environment Facility)

2. Transforming the Market for Efficient Lighting

ongoing, Full-sized project: USD 7,020,000 (Global Environment Facility)

3. Building energy efficiency in the North West of Russia

ongoing, Full-sized project: USD 5,840,000 (Global Environment Facility)

And others. [4]

Energy efficiency in Russia is increasing slower than in Euro United. But the Russian government understands that this problem is really serious, and plans to reach the level of the European Union in the energy efficiency development by implementing a lot of new programmes.

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