

On November 15 2005 the national workshop on **Economics incentives, institutional design and legal aspects of energy generation from biogas** was organized at *Centre of Energy Efficiency of Institute Jozef Stefan* at Dol by Ljubljana as a part of national desk of **REALISE Forum**. This was the third and the last in a series of national workshops on energy from biogas that were carried out by *Slovenski E-forum* in Autumn of 2005. In addition to economic incentives for generation of electricity from biogas, legal framework of production of biogas and (missing) institutional design for support of electricity generation from biogas plants also the findings from previous workshops were presented and discussed by renewable energy experts, investors, engineering companies, equipment sellers and representatives of Environmental Found of RS.

### **Key findings from the discussion:**

1. After Slovenia fully joined the EU on May 1st of 2004 the import tax duties for biogas production and (CHP) electricity generation equipment from the EU countries were completely abolished. In addition the EU directives on prohibition of feeding of the live stock with slops and other food wastes and on limited imissions of nitrogen into soil contributed to increased attractiveness of biogas plants as facilities for appropriate treatment of bio-degradable wastes and provides of a nitrogen poor manure. First on this background the feed-in tariff - issued by Government of RS in March of 2004 – at the level of 12 Eurocents per generated kWh of electricity proved to be attractive for investors and **the interest for production of biogas and generation of electricity from biogas trough CHP technologies is rapidly increasing.**
2. Currently **the first large biogas plant** (1 MWe) that is planned to sell the electricity to the public grid **is in construction**. In different stages of a planning and permitting process are six biogas plants with total planned capacities between 7 and 8 MW. Thus it can be expected that **within next three years total installed generation capacities** from biogas plants will reach respectively exceed **10 MWe**. In most cases these will be **large and complex installations equipped with hygienization units** that would enable treatment of side animal products that are not purposed to serve for human nutrition or will use high energy content bio-degradable wastes for food, milk and beverage industry.
3. **Favourable feed-in tariff** (12 Eurocent per kWh) **is the key factor of economics of the planned biogas plants**, although attractive market price for certain types of of bio-wastes with high energy potential respectively reduced costs of bio-wastes treatment and dumping are playing an important role in economics of certain types of biogas plants. It is however expected that within few years **the dynamics of development of bio-degradable wastes in the country will significantly change** and expected surplus of treatment facilities might force the operators to pay instead of charge for taking over energy »rich« bio degradable (animal) wastes. Thus stable feed in tariff is the key parameter of stability for investments that will facing turbulences on the bio-waste market.

4. Investors might also be challenged by **increased costs of social acceptance** due to BSE (»mad cow diseases«) and bird flue that might raise scepticism and even resistance of the neighbouring residents against the facilities that are treating animal wastes, including biogas plants. They are currently however paying few or not any attention on need for strategic communication with other stakeholders (local inhabitants, NGOs etc.). This might lead toward unexpected but costly demand on communication prior to or in the middle of the construction phase. There is already empirical evidence in the country that also biogas plants cannot be constructed against the will of local inhabitants!
5. **Current feed-in tariff** is however **not enough stimulative for biogas plants under 250 kWe and biogas plants that would only use co-substrates from agriculture** (maize and grass silage, agricultural wastes etc.), especially if we are taking into account high transaction costs that are needed to get all necessary consents and permits for construction and operation of biogas plant. Slovene farmers are till 2008 not eligible to get any direct investment subsidies for construction of »agricultural« biogas plants from EU structural and cohesion fund nor there are any investments subsidies from the national agricultural sector. In this respect the Government respectively the *Ministry of Economy of RS* **should consider to introduce differentiated feed-in tariff** on the base of the size of the biogas plant and the type of (major) co-substrates for production of biogas. This should be however done hand in hand with the *Ministry of agriculture, forestry and food of RS* in order to avoid unjustifiable cross-subsidizing of »agricultural« biogas based electricity generating facilities.
6. There are additional **windows of opportunities** for improving economic performance of biogas plants, at very first by **direct and in-direct sells of the generated surplus of a generated heat**. It is also expected that the development of the market of equipment for biogas plants as well as planning, engineering and maintenance services will lead toward reduced prices.
7. **The largest obstacles** for larger and faster generation of electricity from biogas **is the administrative process** of obtaining different spatial, environmental, nature protection, health risks preventing and veterinary consents, permissions, concessions and licenses. The administrative process is far of being smooth, investor friendly and in practice even non consistent with the provisions of general administrative procedure act. It is extremely time and nerves consuming while the delays or uncertainties of the procedure can directly affect economics of the projects also because favourable credits of national Environmental fund might be postponed or restricted due to administrative delays or non-issuance.
8. **The number of companies in the field** of planning, engineering and construction services for biogas plants and/or selling the equipment in Slovenia **is rapidly increasing**. Most of the companies have strong and experienced partners from abroad, especially from Germany and Austria. The companies are however not familiar enough with all relevant legislation and its details. Except of *Veterinary Direction of RS* no other administrative

institution is willing and/or capable to provide (potential) investors with basic information and instructions on legislative requirements.

9. It seems that the **knowledge on new biogas production technologies** that will be based on combination of enzyme and methane processes **is quite limited**. This is also true for technologies for purification and de-condensation of biogas and for use of biogas in (local) pipelines and as fuel in transport as well for simple and cheap solutions that are based on upgrade of existing manure containers on the farms, modular approach in heat and electricity generation units and on philosophy of cheap (self) maintenance based on simple and robust technology design.