Market-Support for Biogas Development in Central and Eastern Europe

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Abstract
Germany, Austria, Denmark, Italy, and The Netherlands have been experiencing continuous development in the biogas market, thus, being today the top 5 EU biogas countries.. In contrast, biogas market development in Central and Eastern Europe (CEE) is at its very beginning or even non existent. Although biogas can be produced from various feedstock (landfill gas, waste sludge from waste water treatment plants, and other organic substances) the focus of this article is on biogas market development based on the feedstock mainly originated from agriculture and agro-food industry. CEE has a large potential for biogas production and utilisation due to its significant agricultural sector and due to its large amounts of energetically untapped organic waste. This fact has been already proven by significant interest in biogas related activities. Biogas markets in CEE share the common barrier for its development: lack of suitable framework conditions for the set-up of new biogas plants. Therefore, the European Commission (EC) supported the BiG>East project "Promoting Biogas in Eastern Europe – Mobilization of Decision Makers and Training for Farmers" in the framework of the Intelligent Energy for Europe Programme from 2007 to 2010. The general objective of BiG>East was to promote the production and use of biogas as a secure and sustainable energy source in six target countries of Eastern and Southern Europe: Bulgaria, Croatia, Latvia, Romania, Slovenia, and Greece (BiG>East target countries). As a follow-up project of BiG>East, the BiogasIN project "Development of sustainable biogas markets in Central and Eastern Europe" is supported in the same programme of the EC from 2010 to 2012. The objective of BiogasIN is to address the main barriers against biogas development in Bulgaria, Croatia, Czech Republic, Greece, Latvia, Romania and Slovenia (BiogasIN target countries): lack of suitable policies and legislation, high administrative burdens (permission procedures), and difficult access to financing sources. The following paper presents the BiG>East and BiogasIN projects and their activities to boost the biogas market in CEE.

Introduction
The top 5 EU countries in the field of biogas production are currently Germany, Austria, Denmark, Italy and The Netherlands. The total numbers of installed biogas plants in these countries are approximately: Germany (about 5000 agricultural biogas plants), Austria (320 biogas plants), Denmark (about 22 co-operated and 60 farm scaled biogas plants), the Netherlands (about 90 agricultural biogas plants) and Italy (150 farm based biogas plants).

In contrast to these countries, Central and Eastern Europe (CEE) is just at the beginning of its biogas development. CEE has a large potential for biogas production and utilisation due to its significant agricultural sector and due to its large amounts of energetically untapped organic waste. This potential is recognised by investors with numerous biogas projects being stuck in the pipeline. In Croatia alone, there is only one 1 MW_{el} agricultural biogas plant operating while 21 biogas projects with total 32.99 MW are in the pipeline, some even from October 2007. Inadequate framework conditions for biogas market development in Croatia are hampering about 99 million Euro of investment.

The production and wide-range utilisation of biogas could offer many benefits for CEE, contributing to national and European legislation and targets as included in the Directives on: nitrate (Council Directive 91/676/EEC), fertilizers (2003/2003/EC), waste (2006/12/EC), and landfill of waste (1999/31/EC). The production of biogas in CEE may especially contribute towards the 20% renewable energy target of the Directive “on the promotion of the use of energy from renewable sources” (RED) (2009/28/EC) which recognises that “the use of agricultural material such as manure, slurry and other animal and organic waste for biogas production has, in view of the high greenhouse gas emission saving potential, significant environmental advantages in terms of heat and power production and its use as biofuel. Biogas installations can, as a result of their decentralised nature and the regional investment structure, contribute significantly to sustainable development in rural areas and offer farmers new income opportunities”.

Biogas markets in CEE are not yet fully developed since they share the same main barrier for its development: lack of suitable framework conditions for the set-up of new biogas plants. These missing framework conditions are related to three main areas:

- Lack of suitable policies and legislation
- High administrative burdens
- Difficult access to financing sources

In addition to these barriers, also the lack of knowledge and experience is a barrier against biogas development in CEE. Furthermore, consulting, engineering, and project development companies specialised on biogas plants are missing.

If these barriers are not removed, the biogas market development in CEE risks to remain small. Suitable measures to overcome these barriers have the potential to stimulate biogas development with relatively low efforts, leveraging the overall success of biogas.

Therefore, the European Commission (EC) supported the BiG>East and BiogasIN projects which are described in this paper.

The BiG>East Project

In order to support the biogas market in Southern and Eastern Europe the BiG>East project "Promoting Biogas in Eastern Europe – Mobilization of Decision Makers and Training for Farmers" was supported by the European Commission under the Intelligent Energy for Europe Programme. The general objective of BiG>East was to promote the production and use of biogas as a secure and sustainable energy source in six target countries of Eastern and Southern Europe: Bulgaria, Croatia, Latvia, Romania, Slovenia, and Greece (BiG>East target countries).

The BiG>East project aimed to build capacities and transfer knowledge from project partners of Western Europe with extensive, long-term expertise to farmers, biogas plant operators, and decision makers in Southern and Eastern Europe. This was achieved by the organisation of 13 mobilisation campaigns for decision makers, 19 training courses for farmers, and several study tours. Show cases were elaborated to support the mobilisation campaigns, and training material (biogas handbooks) was prepared for the training courses. Furthermore, studies on national legislations, but also on biogas potential, agricultural structures, and policies in the BiG>East target countries were elaborated.

The BiG>East project (Contract No. IEE/07/214) was coordinated by WIP Renewable Energies and included twelve organisations which elaborated the following tasks of the BiG>East project:

- Studies on the biogas potential and barriers in the target countries
- Development of training handbooks for farmers in English and national languages
- Implementation of pilot training courses for farmers
- Identification of promising sites for the set-up of new biogas plants
- Organisation of mobilization campaigns for decision makers and funding bodies
- Dissemination of project results via workshops, technical study tours and presentations

Figure 1: BiG>East logo

Generally, the BiG>East project was a great success. The timing of the project start coincided with the start of the first developments on biogas activities in the target countries (except Romania which has already a long history in biogas). Thus, BiG>East supported the efforts in the creation of these new markets.

One of the outstanding and long lasting impacts of BiG>East was the development of the biogas handbook in English and in national languages. In most of the target countries, the translated handbook represented the first biogas handbook in national language. Since the handbook is available for free also in electronic version on the website, it will even have a long-term impact beyond the project lifetime.

Generally, large translation efforts were needed, not only for the handbooks, but also for the implementation of the other BiG>East activities in the target countries. This included the development of national biogas terminologies, the translation of training material, and (simultaneous) translation during the presentations of foreign biogas experts for the training courses and mobilisation campaigns.

In the framework of the biogas training courses, farmers, but also other stakeholders, were trained. However, while implementing the BiG>East project, also the project participants themselves were trained about biogas concepts, technologies, frameworks, and markets. This contributed to national capacity building on biogas production and utilisation in Eastern Europe.

19 training courses were successfully implemented in the target countries. In many cases, the duration of the training courses largely exceeded the schedules due to the high interest and motivation of the participants. In total, more than 300 participants attended the training courses.

The BiG>East Show Cases were elaborated in order to detect potentially suitable sites for biogas production, and to promote these examples among decision makers in so-called mobilisation campaigns. The Show Cases prepared the way for the implementation of several biogas plants. Especially in Greece, Bulgaria, and Romania the Show Cases contributed to project realisations.

13 mobilisation campaigns were successfully implemented informing more than 400 decision makers about biogas. National bodies and local authorities, as well as potential plant operators and investors were the main groups of participants. At the Mobilisation Campaign in Bulgaria, the participants expressed the need to establish a Bulgarian Biogas Association and initiated first preparatory steps. At the 2nd mobilisation campaign in Croatia, the idea of establishing a biogas lobbying group was introduced. Several months later, in November 2009, the Biogas Group at the Association of RES at the Croatian Chamber of Economy was formally established.

BiG>East activities showed that there is very high general interest in biogas production in the target countries. Stakeholders made large efforts to gain information about biogas (some farmers travelled more than 1,200 km by car to attend the study tour). More then 1,000 stakeholders participated at various BiG>East events and provided feedback on opportunities and barriers on biogas development in Eastern Europe.

Although BiG>East was very successful, one of the main outcomes was that the main barriers against biogas development in the target countries are, on the one hand still the unsuitable frameworks (administrative burdens of permitting procedures, lack of financing, lack of policies, feed-in tariffs, etc.), but on the other hand also the lack of capacity on biogas production and use (lack of pilot plants, lack of knowledge and awareness, lack of skilled personnel). These issues have to be tackled in more detail in future projects.

Since BiG>East was one of the first projects in the target countries supported by public funds and since it initiated great interest among the involved partners and participants, there is urgent need to continue the biogas activities in the target countries in order to positively improve the framework conditions for biogas development.

Figure 2: Visits of the first Latvian agricultural biogas plants by BiG>East members, and by participants of the mobilisation campaigns and training courses

The BiogasIN Project

Responding to the experience of BiG>East and with regard to the renewable energy targets of the European Renewable Energy Directive (2009/28/EC) and other European targets on GHG, nitrate, fertilizers, waste, etc., the BiogasIN project has committed itself to effectively improve the framework conditions for the installation of new biogas plants in 7 CEE countries: Bulgaria, Croatia, Czech Republic, Greece, Latvia, Romania and Slovenia (BiogasIN target countries).

This is achieved by a well-balanced set of different measures at local, regional and national level, including the organisation of close to 80 events. As core of the BiogasIN project, capacity building training courses on biogas are organised for administrative bodies involved in permitting procedures and financing bodies (banks, credit institutes). Further courses on permitting procedures and on financing options are offered to biogas investors and farmers. These training courses are framed by the implementation of interactive forum events, study tours and high level conferences in CEE for politicians, decision-makers and important stakeholders involved in tailoring the national biogas policies.

The events are accompanied by the elaboration of several studies on framework conditions in CEE which are compared to the framework conditions in the top 5 EU biogas countries. Furthermore, a pan-European survey on biogas permitting procedures and financing options is implemented.

The BiogasIN project "Development of sustainable biogas markets in Central and Eastern Europe" (Contract No. IEE/09/848) is supported by the European Commission in the "Intelligent Energy for Europe Program" and runs from May 2010 to October 2012. It is coordinated by the Hrvoje Pozar Energy Institute, Croatia. The BiogasIN consortium includes 10 partner organisations.

Figure 3: BiogasIN logo

Currently, capacity training courses for investors, financing institutes and administrative bodies are prepared and implemented. Furthermore, 7 high-level conferences are organised in the BiogasIN target countries. Information on these events and future developments can be found at the BiogasIN website.

In parallel to these events, several surveys are currently implemented in order to assess the policies and legislation, administrative burdens, and the access to financing sources in the BiogasIN target countries. The following questionnaires are used to implement the survey:

- Financing of biogas projects, addressing financing institutes in BiogasnIN target countries
- Financing of biogas projects, addressing investors in BiogasnIN target countries
- Permitting procedures of biogas projects, addressing investors in BiogasnIN target countries
- Market potential in CEE for international biogas companies

The questionnaires are available at the BiogasIN website. The results will be the basis for the elaboration of recommendations to overcome non-technical barriers.

Conclusion

Feedstock material and biogas potential in CEE is very high. The biomass availability and the applied technologies will determine the biogas exploitation. However, biogas production is currently very limited in the target countries, mainly since legal, administrative and financial frameworks are not suitable. Thus, there is a large need to continuously support this technology and to mobilize politicians and decision makers, in order to facilitate fulfilment of the European obligations and targets.

Knowledge and awareness among farmers, financing bodies and policy makers are two main keys for the successful implementation of biogas plants in CEE. In addition, framework conditions have to be

tailored to offer suitable circumstances for investors regarding low investment risks. The start of first good-practice biogas plants in CEE is crucial to demonstrate that biogas projects are projects of mature technology with secure energy production and numerous socio-economic benefits to the local communities. Demonstration effects are expected to promote the utilisation of the large biogas potential in CEE.