

Project: BiG>East
(EIE/07/214)

***Experience of biogas training courses in
Bulgaria***

Deliverables 5.5 and D5.6 (including D5.1 and D5.3)



Denitsa Dimitrova, ENPRO¹
Iva Cheriyska, ENPRO¹
Krasin Georgiev, ENPRO¹
Libert Yavachev, ENPRO¹
Svetla Marinova – Garvanska, IP²
Nikola Kolev, IP²
Metodi Teoharov, IP²

¹ **Energoproekt Jsc**
1407 Sofia, Bulgaria
51 James Boucher Blvd.

² **Institute of Soil Science “Nikola Poushkarov”**
1369 Sofia, Bulgaria
7 Shosse Bankya Str.
P.O.Box 1080

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1. Introduction

One of the main problems of modern society is the generation of large quantities of waste. Existing practices for unregulated disposal of waste are not applicable today.

Optimal way for waste treatment and environmental protection is the production of biogas by anaerobic digestion. The products from anaerobic digestion are biogas and used biomass - organic fertilizer suitable for use in agricultural practice. Thus on the one hand protect the environment by using waste as a renewable energy source in connection with the search for energy reserves. On the other hand, gets an organic fertilizer suitable for use in the agriculture.

In this respect there is an international project called BIG-EAST, which aims to promote the benefits of biogas.

One of the main tasks of the project is to convey knowledge and experience of the three countries experts in the field of biogas /Austria, Germany and Denmark / to six target countries. Bulgaria is one of the target countries.

The program of projects is conducting courses for farmers interested in production and construction of biogas plants, the courses discuss the structure of biogas plants, anaerobic digestion processes, financing, etc.

In this connection three training courses were held in Bulgaria as a part of the BiG EAST project. The main aim of the courses was to introduce the biogas technologies to the farmers.

2. Organization of training courses in Bulgaria

2. 1. First course

The first Training Courses in Bulgaria was implemented at the International Agricultural Exhibition AGRA, that took place at the International Fair Plovdiv from 18 to 22 February 2009. The course was held on 19th of February. The course was announced at the exhibition's Programme and web site, BiG>East site and also through invitations, which IP sent to potential participants.

2. 2. Second course

The second training course was held also during the International Agricultural Exhibition AGRA on the 21st of February. The course was announced at the exhibition's Programme and web site, BiG>East site and also through invitations, which IP sent to potential participants.

2. 3. Third course

The third training course in Bulgaria took place at the Agricultural Institute of Stara Zagora. The course was held on 11 and 12 of December 2009.

The interest of farmers during the conduct of the courses was very large. They were interested and asked questions relating to the possible combinations of waste products co-digestion, the most promising and effective technology of biogas production and last but not least were the issues of financing for the construction of biogas plants.

The third course was announced in an article in Ecological Engineering and Environment protection magazine, Official Publication of the National Society of Ecological Engineering and Environment Protection, ISSN1311-8668. The title of the article is "Biogas production from waste – Energy of the future".

During the course was emphasized on the availability of funding through national and international financing programs, loans, government subsidies and others. The interest of farmers was associated with the use of digestate in agricultural practice in relation to the scarcity of organic sources in our country, impaired balance of organic matter in soils and Bulgarian presence of large quantities of organic wastes nationwide.

During the second day were visited livestock farms located near the Agricultural Institute, where the course was held. The participants visited sheep farm for 200 sheep, dairy farm of 200 cows, feed processing plant and turkeys farm. There have been many pictures taken.

As a conclusion of the third workshop was decided to make an association to the Agricultural Academy, which will personally introduce the Minister of Agriculture with the biogas issues and to move towards concrete action item is to finance construction of biogas plant.

3. Evaluation of the three training courses

The courses were made according the Bulgarian Biogas Handbook content. The participants first were acquainted of biogas technologies in general. After that the current situation in Bulgaria was presented, also the potential for biogas production in Bulgaria. The participants were introduced to the barriers for biogas production in Bulgaria, the existing legislative framework and support mechanisms. Also a lecture how to start planning a biogas plant was given. Among the participant were distributed a questionnaire, aiming to find if they are satisfied by the course content. Each of the participants received a copy from Bulgarian Handbook, Guidelines for Selecting Suitable Sites for Biogas Plants and also a certificate for participation. The certificate was prepared by IP and ENPRO.

Only the third training course lasted for 2 days, the first two courses were one-day courses. On the second day of the third training course the participant had the chance to see different farm in the neighborhood of the Agricultural Institute in Stara Zagora. The participants had the chance to see how the substrates suitable for biogas production are used for another purposes or are thrown.

In the second and third courses participation as speakers took Prof. Ivan Simeonov and Prod. Bayko Baykov from the Institute of Microbiology in the Bulgarian Academy of Science. Prof. Baykov and Prof. Simeonov are from the pioneers in the biogas technologies in Bulgaria.

The third training course in Bulgaria was also visited by Mr. Tobias Finstelwalder, expert from in the field of biogas production from waste. He gave a presentation about his own experience and the participants were really interested.

In general those training courses were a huge success, promoting the interest of wide range of listeners, starting from government and regulatory specialist, through farmers and food producers and ending to usual people who found new possibilities for business involvement and implementation.

There were even farmers wishing to increase the number of cattle they've produced by the purpose of future increase of revenue from electricity production.

4. Strategy for future biogas training courses in Bulgaria

It seems that it is a bit early for training courses for the farmers since there isn't adequate legislative framework. The target group of the training has to be the investors and the government. Still there is a big gap between the theory and the practice, because the farmers are really interested in the biogas plants, but they don't have the needed investment costs.

The strategy for future biogas training courses will be developed in both technical and auditorium ways.

In the next courses we will try to invite more widely both professional public. This concerns the professional associations and bodies, like the unions of milk, poultry and cattle producers, farmers and other interested entrepreneurs. More preliminary works will be done on advertizing the courses through specific advertizing channels, rather than adverts into the space.

All kinds of media should be used, but focused as newspapers, but farmers, radio, but in the "Farmers hours, television – the same, WEB in the sites for farmers and RES producers, adverts for the training courses in the Ministry of Agriculture and local Agricultural agency in all 28 county in Bulgaria.

In technical way the contents of the courses will be enhanced and widened. Few items will be included to the core material.

1. The policy of the European union and the way the subsidiaries for farms goes;
2. Financing the project – preparing the pre-feasibility study in bankable way
3. Preparing documents for applying for bank loan
4. Volume – Costs – Profit analysis – of how big (small) should be the project for the specific site
5. Environmental aspects basics of green certificates trading
6. Other usage of the heat energy wasted
7. Grid connection
8. Regulatory and other problems
9. Other issues and questions from the auditorium

5. Conclusions

The training courses in Bulgaria had real success, all of the participants were really satisfied with the course content (according to the feed back from the questionnaires). Most of the participants were interested in the supportive mechanisms and the discussions were mainly about them.

During the discussion of the third training course (in Stara Zagora) the participants decided to make Bulgarian Biogas Organization since Bulgaria doesn't have one.

Courses and discussions held with farmers and decision makers are a step in the development of processes for understanding the need to build biogas plants and the produce of biogas from organic waste. All participants in the courses welcomed the Bulgarian Handbook with great interest, which shows the progress in developing

an awareness of the need for renewable energy sources such as biogas from waste and environmental protection.

ANNEX 1 Syllabus (D5.1)

Agenda 19/02/2009

“Biogas Production in Agriculture – Training for Farmers”

Nikola Poushkarov Institute for Soil Science (IP) and Energoproekt Jsc

Programme:

10:10,30. Biogas Production Potential in the Republic of Bulgaria – Suitable Raw Materials for Gas Production

Speakers: Dr. Sv. Marinova, Senior Research Associate and Dr. N.Kolev, Senior Research Associate - IP

10,30:11,00. Obstacles and Legal Regulations for Biogas Production from Waste

Speakers: Eng. D. Dimitrova, Eng. Kr. Georgiev – ENPRO

11,00:11,30. Funding Conditions for Construction of Biogas Installations, Depending on the Variety of Organic Raw Materials

Speakers: Eng. Kr. Georgiev, Eng. D. Dimitrova, Eng. Iv. Ivanov – ENPRO

11,30:12,00. Types of Biogas Installations, Depending on the Raw Material Used for Biogas Production. Funding Conditions for Realization of Biogas Projects

Speakers: Eng. Iv. Ivanov, Eng. Kr. Georgiev, Eng. I. Cheriyska – Energoproekt

12,00:13,00-Въпроси и дискусия

13,00:13,300 Cocktail Reception for the Participants – Lobby in Front of the Hall

Agenda 21/02/2009

“Biogas Production in Agriculture – Good Practices”

“Nikola Poushkarov” Institute for Soil Science (IP) and Energoproekt Jsc

Programme:

10,00:10,30. Suitable Platforms and Regions for Construction of Biogas Installations

Speakers: Eng. K. Georgiev, Senior Research Associate, Dr. Sv. Marinova, Senior Research Associate – IP and ENPRO

10,30-11,00. Possibilities for Biogas Utilization

Speakers: Eng. D. Dimitrova, Eng. I. Cheriyska – ENPRO

11,00-11,30. Funding Possibilities for Farmers Under Different EC Programmes, Financing by Ministries, Municipalities, etc.

Speakers: Eng. N.Kolev, Senior Research Associate, Eng. Iv. Ivanov – IP, ENPRO

11,30-12,00. Additional Benefits of Biogas Production

Speakers: Eng. D. Dimitrova, Eng. I. Cheriyska, Dr. Sv. Marinova, Senior Research Associate-ENPRO, IP

12,00-12,30. Sludge from methanogenesis as alternative to the mineral fertilizers

Speakers: Prof. B. Baykov, New Bulgarian University

12,30:13,00. Biogas production from different organic waste mixtures

Speakers: Prof. I. Simeonov, Bulgarian Academy of Science

13,00:13,30. Biogas – substrates for biogas production and utilization methods

Speakers: S. Stanev

13,30:14,00 Въпроси и дискусия

14,00:14,30 Cocktail Reception for the Participants – Lobby in front of the Hall

Agenda 11/12/2009

10:30 - 11:00 Welcome-

Speakers: Svetla Marinova, Nikola Kolev, от името на председателя на ССА проф. Св. Бъчварова, Libert Yavachev и Metodi Teoharov

11:00 - 11:30 Biogas from waste – experience of biogas plant operator

Speaker: Tobias Finstelwalder

11:30 - 12:00 The BiG>EAST project

Speaker: Svetla Marinova

12:00 - 12:30 Biogas production from different organic waste mixtures

Speaker: I. Simeonov, Bulgarian Academy of Science

12:30 - 13:00 Possibilities for biogas production – social, economical and environment aspects

Speaker: Metodi Teoharov

13:00 - 13:30 Coffee

13:30 - 14:00 Potential for biogas production in Bulgaria. Existing legislative framework, barriers and perspectives

Speaker: Iva Cheriyska

14:00 - 14:30 Types of biogas plants. Design, construction and finances.

Speaker: Libert Yavachev

14:30 - 15:00 Biogas – substrates for biogas production and utilization methods.

Speaker: S. Stanev

15:00 - 15:30 The availability of unused fields – incentive for biogas market development.

Speaker: Nikola Kolev

15:30 - 16:00 Sludge from methanogenesis as alternative to the mineral fertilizers.

Speaker: Prof. B. Baykov, New Bulgarian University

16:00 - 16:30 Discussion

16:30 - 17:00 Cocktail

Agenda - 12. 12. 2009

9:00 – 12:00 Visit of farms in the neighborhood of Agricultural Academy

12:00 - 12:30 Coffee

12:30 End of the course – closing discussion

ANNEX 2 Questionnaire (D5.3)

***Questionnaire concerning the quality of
training courses for biogas production and
implementation in Bulgaria***

Training course

Training course data date month year: _____

Duration of the course: _____

To participant: In order to improve the quality of education, please fill in the questionnaire.
In the case the fields are not sufficient please use additional paper.

1. I understood for the copurce from:

- Internet;
- Newspaper;
- Journal;
- Personal invitation;
- Otherq please specify; _____

2. Reasons to take part in the course:

- Interested in biogas production and use;
- Интерес в областта на биогаза
- o Интерес в сферата на “Опазване на околната среда”
 - o Интерес в сферата на “Опазване на климата”
 - o Желание за допълнителен доход
 - o Интерес в областта на “Възобновяемата енергия”
 - o Интерес в сферата на “Управление на отпадъците”
 - o Други: _____

3. Формата и съдържанието на курса за обучение отговориха на моите очаквания, защото:

4. Формата и съдържанието на курса за обучение НЕ отговориха на моите очаквания, защото:

5. Следните теми от курса трябва да се разглеждат по-подробно:

6. Оценка на курса за обучение (отбележете желания от вас отговор):
Съдържание на курса за обучение

отлич но	много добро	добро	задово лително	незадово лително
-------------	----------------	-------	-------------------	---------------------

Ниво на организация

отлич но	много добро	добро	задово лително	незадово лително
-------------	----------------	-------	-------------------	---------------------

Практическа приложимост на наученото

отлич на	много добра	добра	задово лителна	незадово лителна
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Качество на материалите за обучение

отлич но	много добро	добро	задово лително	незадово лително
-------------	----------------	-------	-------------------	---------------------

Помощни средства за обучение

отлич ни	много добри	добри	задово лителни	незадово лителни
-------------	----------------	-------	-------------------	---------------------

Обща оценка на курса

отлич ен	много добър	добър	задово лителен	незадово лителен
-------------	----------------	-------	-------------------	---------------------

7. Инструкторите се представиха:

Инструктор А (моля напишете името)

отлич но	много добре	добре	задово лително	незадово лително
-------------	----------------	-------	-------------------	---------------------

Инструктор В

отлич но	много добре	добре	задово лително	незадово лително
-------------	----------------	-------	-------------------	---------------------

Инструктор С

отлич но	много добре	добре	задово лително	незадово лително
-------------	----------------	-------	-------------------	---------------------

8. Таксата за участие беше:

- o прекалено висока
- o прекалено ниска
- o нормална
- o би трябвало да бъде _____ Евро

9. Продължителността на курса беше:

- o прекалено кратка
- o прекалено дълга
- o нормална
- o би трябвало да бъде _____ (дни)

10. Бихте ли препоръчали този курс на други хора?

- o да
- o не

11. Лични данни:

Възраст: _____

Пол (м/ж): _____

Професия: _____

12. Коментари:

Благодарим Ви за попълването на въпросника!

ANNEX 3 Participants

Participants on 19/02/2009

1. Aleksi Staykov
2. Irena Atanasova
3. Ivan Dimitrov
4. Dimitrinka Stoycheva
5. Iliya Kafedziev
6. Angel Arolsky
7. Hristo Djodjkov
8. Assen Stanchev
9. Galina Todorova
10. Nelly Bekyarova
11. Violeta Vateva
12. Mariya Petrova
13. Georgi Petrov
14. Simona Ralcheva
15. Vesselina Srednova
16. Ilina Ilcheva
17. Vesselin Kutev

Participants on 21/02/2009

1. Rashko Gerogiev
2. Maryan Matev
3. Detellina Mateva
4. Mihail Matev
5. Hristina Metodieva
6. Angel Devedjiev
7. Slav Slavov
8. Katerina Nenova
9. Tanya Ivanova
10. Emiliya Popova
11. Veneta Krasteva
12. Penka Zapryanova
13. Diana Pantaleeva
14. Krasimira Uzunova
15. Marin Uzunov
16. Romyana Vasileva
17. Ivan Angelov
18. Minko Kumanov

Participants on 11/12/2009

1. Elena Belenska
2. Ivko Stamatov
3. Ivan Paunov
4. Maria Nacheva
5. Antoaneta Yancheva
6. Kancho Peichev
7. Rashko Georgiev
8. Neven Popov
9. Dimitar Delchev
10. Dimitar Gadzev
11. Conka Odzakova
12. Yovka Popova
13. Stayka Laleva
14. Ivan Mastikov
15. Zornitsa Shopova
16. Ivan Simeonov
17. Asen Mirkov
18. Petya Slavova
19. Antonia Stoyanova
20. Nedka Dimova
21. George Saykov
22. Stayka Stratieva
23. Ivan Gospodinov
24. George Kapinchev
25. Rumen Bazilov
26. Rosinka Petkova
27. Slav Slavov
28. Daniela Yordanova
29. Teodora Angelova
30. Vladimir Karabashev
31. Victor Kolchanov
32. Petar Klinke
33. Katya Neykova
34. Yordan Todorov
35. Stafan Stanev
36. Anton Georgiev

ANNEX 4 Pictures of the first two training courses



ANNEX 5 Pictures of the third training course





ANNEX 6 Certificates of the training courses

		
ИНСТИТУТ ПО ПОЧВОЗНАНИЕ „НИКОЛА ПУШКАРОВ“		
Сертификат за участие в семинар Тема: Производство и използване на биогаз в България		
Проведен в гр. Пловдив на 19. 02. 2009		
Г-н / Г-жа _____		
Ръководител на проект от ИП ст. н. с. I ст. д-р Св. Маринова		Ръководител на проект от Енергопроект инж. Иван Иванов
 Семинарът е финансиран от проект BiG>EAST по програма „Интелигентна енергия- Европа“ към ЕС		

		
ИНСТИТУТ ПО ПОЧВОЗНАНИЕ „НИКОЛА ПУШКАРОВ“		
Сертификат за участие в семинар Тема: Производство и използване на биогаз в България		
Проведен в гр. Стара Загора на 11 и 12. 12. 2009г		
Г-н / Г-жа _____		
Ръководител на проекта от Институт по почвознание ст. н. с. I ст. д-р Св. Маринова		Ръководител на проекта от Енергопроект АД д-р Либерт Явашев
 Семинарът е финансиран от проект BiG>EAST по програма „Интелигентна енергия- Европа“ към ЕС		