Examples for financing of biogas projects in The Netherlands,

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- Henning Hahn, Dominik Rutz, Erik Ferber, Franz Kirchmayer -

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1. Introduction

The implementation of biogas projects requires three preconditions: good and stable legislative framework conditions, easy and transparent permitting procedures, as well as access to financing. If one of these three preconditions is weak or not given, the biogas project risks failure. In Europe, these preconditions are very good in countries like Germany and Austria. In other countries there is still considerable effort needed to improve them.

The present report provides an outline for financing conditions and procedures in the top 5 EU countries with developed biogas market for agricultural biogas plants: 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). The graph on the next page illustrates the energy production of biogas in Europe.

This report serves as overview of good practices for biogas financing in countries with developed biogas markets. More precisely, this report shall assist policy makers and financing bodies in the BiogasIN countries: Bulgaria, Croatia, Czech Republic, Greece, Latvia, Romania and Slovenia to develop good framework conditions for biogas financing.

The BiogasIN project is supported by the “Intelligent Energy for Europe Programme” by the European Commission and aims to create a sustainable biogas market in Central and Eastern Europe (CEE): Bulgaria, Croatia, Czech Republic, Greece, Latvia, Romania and Slovenia. Core of BiogasIN is the removal of framework barriers in CEE: high administrative barriers both in permitting and financing phases.
Figure 1: Primary energy production of biogas in Europe in 2007 [EurObserv'ER]

Legend:  
- Landfill gas  
- Sewage sludge gas  
- Other biogas (decentralised agricultural plant etc.)
2. Basics of financing biogas projects

The initial investment for a biogas plant is generally very high and it usually requires the application of sound financing tools. The following list includes the investments and costs for a typical agriculture biogas plant:

- Costs for planning: engineering costs, costs for permits, taxes, certificates, etc.
- Costs for equipment (investment costs): technical equipment, buildings, storage facilities, infrastructure, grid connection, etc.
- Costs for feedstock
- Operation and maintenance costs: personnel, spare parts, repair, material, digestate management etc.
- Costs of financing: interest, fees, etc.

The following list describes the revenues of biogas projects:

- Electricity and heat sale/savings
- Public subsidies
- Green certificates
- Revenues from tipping fees in biogas plants for waste
- Revenues from sales of digestate as organic fertiliser
- Savings from manure management (disposal fee)

Depending on the size of the biogas projects and the feedstock type, typical investors in biogas plants are single farmers, several farmers jointly investing in one biogas plant, and industry. In some cases also other investors are involved, such as e.g. municipalities or waste companies.

Financing bodies will finance biogas projects depending on the expected financial performance compared to the project risks and depending on the credit worthiness of the investor. In general, profitability of investment in biogas project strongly depends on availability of the national supporting scheme (either as feed-in tariff or green certificates) and assurance that the project in question will be eligible to benefit from the support system at the operational phase.

Due to the high capital costs, usually debt capital is required for the implementation of biogas projects. Furthermore, equity capital of 20-30% of the total capital cost is usually required. In some countries, it is possible to receive a certain amount of
project funding from public sources or to obtain low-interest credits. Public sources should be considered and included in the calculation/financial planning process. Subsidies for biogas plants can be received for various fields of interest: agriculture, regional development, renewable energy projects, environment, structural funds, etc.

Common financing methods are **credits from private banks**. As indicated in Figure 2 below, there are two main types of typical financing for biogas projects: traditional financing by loans and project financing.

![Diagram showing traditional loan financing and project financing concepts](image)

**Figure 2:** Traditional loan financing and project financing concepts

For **traditional financing** the credit history of the company or investor (e.g. farm) plays an important role. On the one hand, the liability of the company depends on the assets of the biogas plant and, on the other hand, of the company which is in many cases the farm. Decisions of the financing bodies depend upon the annual financial statements of the company. This is the typical financing tool for single farmers investing in biogas projects.

In the framework of the **project financing**, the biogas project itself is regarded as legal entity (Figure 2). This tool is often used for projects in which several shareholders are involved (e.g. several farmers). Main criteria of this future oriented concept are rates of return and success of the project. Decisions regarding loans are based on the assets and the cash-flow of the biogas project. The predictability of the cash-flow is thereby the important parameter/criteria, depending on following factors:

- Technology of the project
- Location of the project
- Contracts of electricity and heat sale
- Availability and price of feedstock material
Due to the good and predictable framework conditions, this cash-flow based concept is widely applied, for instance, in Germany.

Another financing tool is **investment funds**. An investment fund involves money from several small investors. All of them are investing in one biogas project. Costs and benefits are shared between the investors upon the consortium or joint venture agreement. Farmers can form a cooperative where each farmer has a share in biogas revenues proportionally to the provided substrate and its biogas yield and methane content.

Another financing option would be the cooperation with **energy contractors**. A contractor is usually a company specialised in biogas production. The type of cooperation with these contractors is manifold.

Finally, a biogas plant or dedicated equipment can be **leased**. The leasing company and the biogas plant operator are concluding a leasing contract. This may include whole biogas plants or the cogeneration unit, only. Leasing of cogeneration units is widely applied.

All above financing options could be combined and form some kind of derivative tailored for targeted niche of investors.
3. Financing of biogas projects in the Netherlands

The Dutch biogas market comprises today about 90 biogas plants running on feedstock from agriculture. Electricity and upgraded biogas from biogas plants are mainly promoted in the Netherlands through price regulation in terms of bonus payments. Biogas plants in the Netherlands receive incentives depending on the source of the produced biogas and the utilisation of the waste heat. Projects where the use of waste heat is involved in the concept, or the CO$_2$ is used for greenhouses, are supported by the government with better incentives. Renewable energy projects become eligible for subsidies, if they use innovative new technology. Thus, subsidies are rarely granted for biogas projects. Furthermore electricity from biogas plants is exempted from fiscal regulation mechanisms, such as tax allowances for writing off investments in installation generating electricity from renewable sources.

Typical investors in biogas plants are single farmers, groups of farmers jointly investing in one biogas plant, municipalities, energy utilities, waste companies and the industry.

The biogas market in the Netherlands has developed due to the financial stimulus through the previous MEP-programme (Financial stimulation of renewable energy production in the Netherlands). Since 2008, the SDE-programme (Besluit stimuleren duurzame Energie – Incentive for sustainable energy production) is in place which provides a bonus payment for electricity produced from biogas plants. The development of biogas plants decreased rapidly when the SDE programme came into force with its strongly limited budget for bonus payments. Nowadays only 30% of the applicants for the bonus payment receive financial support from the SDE scheme.

The following sections aim to give an overview of the legal aspects concerning the available means of promotion for biogas projects as well as commonly available financing tools and their conditions in the Netherlands.

3.1. Support tools in the Netherlands

As described above, the main support tool in the Netherlands is the SDE-Programme, promoting the development of renewable energy sources through price regulation in terms of a bonus payment. The bonus payment is granted to renewable energy plant operators and aims to compensate the difference between the market price for electricity from fossil resources and electricity from renewable sources. The bonus payments for electricity from biogas plants are valid for a maximum period of 12 years.

Subsidies are granted only to a limited annual amount of the allocated SDE-fund. If the accumulated amount of the subsidies exceeds the limited funds, no subsidies can be granted. Subsidies will be granted according to the date of submission of the application.
The payment scheme guarantees a fixed bonus paid to the operator from the commissioning of the biogas plant onwards. The subsidy is the difference between the base tariff and the correction price, which corresponds with the actual energy price the producer receives. The base amount is based on the average cost price of biogas or electricity from biogas, which is determined by the Minister of Economic Affairs. The correction price is determined by the Minister of Economic Affairs at the beginning of each year and finalised at the end of each year.

The feed-in base tariff for electricity from biogas in 2010 is for:

- Co-digestion of animal manure 0.165 €/kWh; with waste heat utilization up to 0.193 €/kWh
- Digestion of other biomass 0.158 €/kWh
- Digestion of green household waste 0.129 €/kWh; with waste heat utilization up to 0.149 €/kWh
- Landfill gas and water treatment/ sewage sludge 0.059 €/kWh

The feed-in tariff for upgraded biogas depends on the type of substrate that is used to produce biogas. For the year 2010 the tariff is as follows:

- Digestion of green household waste 0.465 €/Nm³
- Digestion of other biomass 0.583 €/Nm³
- Landfill gas 0.218 €/Nm³
- Sewage sludge 0.218 €/Nm³

The feed-in tariff for electricity contains a correction price of 0.047 €/kWh. The correction price for upgraded biogas is 0.208 €/Nm³ independent of the origin of the renewable gas. This corresponds with the energy price the producer receives for his produced renewable energy on the energy market.

The state bears the funding costs. The fund for all kinds of renewable energies promoted by the SDE-Programme has increased from 1.459 m€ in 2008 to 1.958 m€ in 2010.

Besides price regulation through the SDE-Programme, biogas projects in the Netherlands are also supported by subsidies through the EOS-Programme (Besluit EOS: demo en transitie-experimenten - Order on the Allocation of Grants). The EOS-Programme came into force in 2004. It provides subsidies for research, development and market research projects in the field of renewable energy sources with a maximum grant being 40% of the total investment.

All technologies used in the generation of electricity from renewable sources in the Netherlands are eligible for subsidies from the EOS-Programme. Furthermore subsidies are only granted to companies and not to private individuals. The subsidies for the EOS Programme are funded by the budget of the Netherlands Ministry of Economic Affairs.
3.2. Financing tools in the Netherlands

In the Netherlands, the Rabobank supports the financing of about 75% of all installed biogas plants. Besides the financing through Rabobank, investors in biogas projects may receive assistance in financing their biogas projects from private consulting companies, credit institutes and private banks. The lifetime of a loan for a biogas project depends on the guaranteed subsidy period.

The success of Rabobank, or Green Finance, a Rabobank Group, in financing biogas plants is partly due to the Green funds scheme, a tax incentive scheme of the Dutch government which is only available for capital intensive investments such as large scale biogas plants. Green financing enables investors to finance green projects less expensively, by offering a lower interest rate (1-2% lower) for environmentally-friendly investments.

The Dutch Greentech Fund will invest in promising Dutch technology start-ups developing innovative technologies or processes that make the chain from raw material to end product more sustainable. Among other factors, the focus here is on bioenergy. The fund will invest a maximum of 2.5 million in a business in the form of a minority stake. The share of the financial support depends on the project and will be fixed with approval of financing.

Furthermore, it is a common financing method in the Netherlands to finance biogas plants with credits from private banks including both traditional and project financing without any special conditions for biogas projects.
4. References

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety


Rabobank Group

Green Finance, [www.rabobank.com](http://www.rabobank.com)

Senternovem

The Green Funds Scheme - a success story in the making

5. Contacts

Fraunhofer-Institute for Wind Energy and Energy System Technology
Division Bioenergy System Technology
M.Sc. Henning Hahn
Königstor 59
34119 Kassel
Germany
Phone: +49/(0)561/7294-261
Fax: +49/(0)561/7294-260
hhahn@iset.uni-kassel.de
www.iwes.fraunhofer.de

WIP - Renewable Energies
Dipl. Ing. Dominik Rutz M.Sc.
Sylvensteininstr. 2
81369 München
Germany
Phone: +49/(0)89/72012739
Fax: +49/(0)89/72012791
Dominik.rutz@wip-munich.de
www.wip-munich.de

European Biogas Association
Ing. Franz Kirchmayr
Vice President
Avenue de la Fauconnerie 73
B – 1170 Brussels
Belgium
Mobile +43/6643040761
kirchmeyr@european-biogas.eu
www.european-biogas.eu