IEE Project “BiogasIN”

Financing options for Biogas Projects and its bottlenecks in CE Europe (Bulgaria, Croatia, Czech Republic, Greece, Latvia, Romania and Slovenia)

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BiogasIN website: www.biogasin.org
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1. **Introduction**

This report was written in the frame of the BiogasIN project (IEE/09/848), which is supported by the European Commission within the Intelligent Energy for Europe programme. BiogasIN aims to create a sustainable biogas market in Central and Eastern Europe (CEE), namely: Bulgaria, Croatia, Czech Republic, Greece, Latvia, Romania and Slovenia. Core of BiogasIN is to reduce framework barriers for biogas projects in CEE: high administrative barriers both in permitting and financing phases.

This deliverable is based upon the contribution of the seven target countries partners and aims to give an overview about current financial opportunities on biogas production, utilisation and related issues in the 7 CEE countries in order to facilitate the broader implementation of biogas projects in the European Union and especially in those countries.

Financial resources for Renewable energy project can be divided in two general categories: state incentives and other financial resources. State incentives are often investment subsidies, feed-in tariffs, tax or payback regulation. Other financial resources can include traditional financing like loans, project finance or third party finance.

In order to analyse the financial opportunities and reduce these kind of barriers for financing a biogas plants, target countries partners of the BiogasIN elaborated reports on the financing procedures and it bottlenecks in the target countries based on national surveys. The surveys were implemented by using interviews with financial organisations and project developers based on 2 Questionnaires prepared by WIP (Q2 and Q3). The used questionnaires are presented in the ANNEX.

Detailed descriptions of financing options and its bottlenecks and the results of Q2 and Q3 analysis are provided in the dedicated country reports prepared by the BiogasIN project partners. These reports are available at the BiogasIN website.

The main finding of this survey in the 7 BiogasIN target countries is that although there are several national and private financing options depending on the mature of each biogas market, financing procedure for biogas projects is still complicated and long lasting. The survey has shown that there is ground and necessity for capacity building among financing organisations and project developers.

In any case the investment in biogas remains a major issue. Public sector investment and incentives can play a major role in encouraging also the private financial sector to support biogas (eg. development of new financial instruments of green investment funds with lower interest). Financial markets will use their influence if they see that this type of investments is in their broad interest. As the past returns are not guide for future performance and as biogas technology in somehow new in many CEE countries what is needed is not only the investigation of financial opportunities but also the development of a clear financial environment for such investments.
2. Bulgaria

2.1. Public and private support for biogas projects

National support
The main national support schemes for the implementation of a biogas project in Bulgaria are the feed-in tariff system and the Bulgarian Energy Efficiency and Renewable Energy Credit Line (BEERECL).

- Feed-in tariff system. According to the type of electric power plant there are several feed-in prices, namely:
  a) Electric Power plant less than 5 MW working with wood waste: preferential price of 217 BGN/MW
  b) Electric Power plant less than 5 MW working with agricultural wastes: preferential price of 168 BGN/MW
  c) Electric Power plant less than 5 MW working with energy crops: preferential price of 88 BGN/MW

- Bulgarian Energy Efficiency and Renewable Energy Credit Line (BEERECL). Project scope: co-generation, geothermal projects and biomass projects. Funding scheme: Loan with incentive grant. There is a limit on the amount of the loan principal, on which the grant can be received. This limit differs among the Participating banks and varies from 150,000 to 2 M€. In addition, project sponsors receive an incentive grant upon project completion. This grant offers:
  - 15% of the disbursed loan principal for industrial energy efficiency projects
  - 20% of the disbursed loan principal for small renewable energy projects.

Private financing
The actual identified project development steps may vary in number depending upon the developer; some can be combined but most projects usually include the following phases in one form or another:

**Phase 1 – Pre-feasibility:** a market opportunity is identified and rough costs and possible profits established.

**Phase 2 – Feasibility:** the market opportunity is analyzed; concept process alternatives developed for meeting the opportunity; challenges identified; order of magnitude capital cost estimates (CCE) developed; and one or two process alternatives selected for further development.

**Phase 3 – Definition:** discussions are initiated with potential suppliers, customers, financiers, regulating bodies, environmental groups and other stakeholders; a plant location selected; plant layouts developed in sketch form; a Class 25 CCE (capital cost estimation) developed for the selected alternatives; a final alternative selected for development; and a plan for project execution is established.

**Phase 4 – Budget Development:** on-going discussions with potential suppliers, customers, financiers, regulating bodies, and other stakeholders, the intent being to establish memorandums of understanding (MOU’s) with each party; sufficient engineering done to support the development of a Class 10 Budget CCE; preliminary discussions with potential contractors.

**Phase 5 – Detail Design:** MOU’s in place with suppliers and customers; financing is in place; permitting well under way; detail engineering completed for all disciplines; procurement and contracting processes started; major purchases made; Class 5 Accounting CCE established.

**Phase 6 – Procurement and Contracting:** supplier and customer contracts finalized; project contracts established; purchasing completed; necessary permits in place.

**Phase 7 – Construction, Commissioning and Start-up**
If the first six phases are completed successfully, then phase 7, construction, commissioning and start-up should also be successful.

**Market and Financial and Economic Analysis**

It goes without saying that if you don’t have a secure market for your product, it doesn’t matter how well engineered or constructed your project is, it won’t be successful. The same applies to financing and economics. No matter the success of the technology, if the project doesn’t have a satisfactory return on investment, it will not be successful. Securing markets and monitoring the financial viability are paramount. Securing a market will most likely be a condition for securing financing.

The one caveat to the above statements are projects that are supported by governments who deem that the project is socially desirable and are willing to subsidize the construction and operation of the plant, and in some cases the entire industry.

**Risk**

Risk is associated with every venture, and must be accounted for at each stage of the project development process. Companies with well established project development processes have a formalized `gate’ procedure that assesses risk continually through the project. At the end of each of the phases described above, risk is assessed per criteria that the company has established for determining if a project is still viable. If the criteria is met, the project passes through the `gate’ and on to the next phase of the project. If the criterion is not met, then the project is either terminated or revised until all criteria are met.

This formalized gate process limits the amount of risk to the development funds that have been expended to date. There is little or no financial risk with phases 1 and 2; increasing risk with phases 3, 4 and 5; and considerable risk with phases 6 and 7, where the greatest amount of funds are expended. Hence, the criteria to pass the gate beyond phase 5 should be quite strict. However, if phases 1 through 5 have been conducted properly, and the risks have been identified and can be accommodated, then risk is minimized.

Cutting the project development process short and trying to make the leap from feasibility phase 2 to phase 6 or 7 increases the risk substantially.

**Financing**

The `person’ controlling the funds has control of the project. Most developers work with someone else’s money. This could be a single investor, a group of investors, or a bank or other lending institution.

Working with investor’s money means that you will be subject to some form of accountability, which will require developing the project to a recognized development process. You will likely need a `bankable’ study which will define not only the project and business plan, but will identify the risks. Likely the lender will require that the study be prepared by a reputable third party who is knowledgeable in both the plant process and the project development process. Most often the third party is an engineering company or a construction company.

**Engineering**

The amount of engineering undertaken depends upon the stage you are at in the development process. You don’t want to do any more engineering than is required to satisfy the requirements of the current development phase. For example, you would not do detail design until you knew the project was technically and financially viable and you had MOU’s in place with most of the stakeholders.
The cost of engineering can vary significantly depending upon the type of project or study. As a ’rule of thumb’, expect that the total cost for the detail design of a conventional project will be in the range of 10-15% of the total direct costs.

Sometimes in an effort to defray the up-front costs, an entrepreneur will attempt to push the engineering onto the equipment vendors or contractors, who then hide the engineering in their overall pricing. However, it is the author’s experience that vendors are not best suited to determine the most applicable process technology; there is an unavoidable bias in favour of supplying their own equipment and systems.

Nor are vendors the best ones to establish construction costs. They don’t have the in-house expertise or the specific knowledge of the area where the project is to be constructed and often provide grossly inaccurate construction allowances.

The engineering must be done by someone; but the vendor’s interests are not the same as the Owner’s. As is to be expected, the vendor wants to minimize his costs and maximize his profits, and to do so, will often sacrifice technological requirements in order to reduce his costs such as simple things like making chutes too shallow or conveyors too steep.

The Owner wants to get good value; the most appropriate equipment for the lowest cost. Utilizing an Owner’s engineer ensures that the owner’s interests are first and foremost at all times.

**Capital Cost Estimating**

You will have to establish suitable capital cost estimates for each phase of the project. The amount of effort required for each phase varies; but you need to do enough work to believe in the accuracy of the estimate. A capital cost estimate for the total installed project cost includes direct costs, indirect costs and contingency; and may, or may not provide for escalation.

**Direct Costs**

Direct costs are ‘hard’ project costs which usually include work done in the following disciplines:
- Civil and Structural Work, including site preparation, roads, underground services, foundations, buildings, etc.
- Mechanical and Piping Work, including process equipment and systems
- Electrical and Instrumentation Work, including electrical power and control systems
- Other disciplines depending upon the type of project
- Direct costs include the following for each discipline:
- Direct purchase price of goods or service, including equipment purchases
- Installation contractor purchases, including concrete, steel, tool rentals, sub-contractors
- Contractor installation labour

**Indirect Costs**

Indirect costs are ‘soft’ project costs that are not included in direct costs and could include allowances for such things as:
- Engineering
- Owner’s development costs
- Construction management
- Construction living out allowance and travel, if the project is in a remote location
- Temporary construction facilities
- Construction insurance
• Vendor equipment erection supervision
• Commissioning and start-up assistance and training
• Premium labour costs (overtime)
• Spare parts
• Taxes and Duties

The amount included for indirect costs depends upon company policies and the items included and can vary substantially. An average number to use is 25% of the total direct costs.

**Contingency**
A contingency allowance should be provided in the CCE to cover those costs that are unforeseen at the time the estimate is produced and may become apparent as detailed design and construction proceed. The contingency is not intended to provide for costs associated with scope changes.

The amount of contingency to allow depends upon company policy, which should consider the amount of engineering and procurement work undertaken to produce the CCE and can vary between 5% and 25% of total direct and indirect costs. The greater the project has been defined, the lower the contingency required.

**Accuracy of Capital Cost Estimate**
The accuracy of a capital cost estimate depends upon the amount of engineering and procurement effort undertaken to establish the costs.

### Phase 1 – Pre-feasibility Study
- Class 50-75 CCE
- No engineering done
- No procurement activities done
- ‘best intelligent guess at costs’

### Phase 2 – Feasibility Study
- Class 40-50 CCE
- ~ 1% of engineering completed
- Historical data used for CCE and maybe a few verbal price quotations

### Phase 3 – Definition Study
- Class 25 CCE
- 5-10% of engineering completed
- Technical specifications developed and +/-25% budget price quotations received
- Preliminary discussions with contractors regarding unit pricing

### Phase 4 – Budget Development
- Class 10 CCE
- 25-35% of engineering completed
- +/-10% budget prices obtained

### Phase 5 – Detail Design
- 90-100% of engineering is completed

### Phase 6 – Procurement and Contracting
- Firm equipment and contract pricing is obtained
- Class 5 CCE accounting budget is set

**Cost Estimate Definitions**
One definition for the different classes of cost estimates is as follows, e.g. – a Class 25 CCE is one in which there is a >90% probability that the estimated capital cost will not exceed 125% of the estimated value.
A more common definition is: a Class 25 CCE is one in which the costs are within +/-25% of the estimated value. The author believes that this definition is not as reliable. It is his experience that projects are rarely less than the estimated value; and if they are, it is likely that the cost was over-estimated in the first place.

**Project Execution**
There are many types of project arrangements; however, following are simple descriptions of the (3) most common.

**Conventional Projects**
- The client selects an Owner’s engineer who performs a minimum of project phases 1-3 and as high as phase 6.
- Engineering can be on a `cost plus mark-up’ or firm price basis. The cost plus basis usually provides the best value.
- Often, the client is very familiar with the technical process.
- If he wishes, the client can exercise considerable control all the way through the project.
- Usually the equipment purchases and contracts are made by or in the client’s name.
- The client obtains financing for the project and assumes all risk.
- This type of project usually results in the lowest total capital cost.

**EPCM Projects**
- In addition to engineering and procurement functions, the Owner’s engineer takes on the added responsibility of construction management and may or may not assume some of the project risk.

**EPC Projects**
- Sometimes called `turn-key’ or `design-build’ projects.
- The client selects a knowledgeable Owner’s engineer, who looks after the client’s best interests throughout the project. He will usually perform project phases 1-3 or 4, providing conceptual design and a Class 10-25 CCE and then will develop a performance-based EPC tender document, which is issued to selected companies.
- The selected companies provide firm-price bids for (1) functioning plant.
- The client establishes a single contract with one entity to provide the plant.
- The Owner’s engineer monitors the progress of the selected EPC contractor’s work.
- The Contractor obtains financing and assumes all risk, until the plant is complete, performance requirements have been met and the plant has been turned over to the client.
- As the Contractor assumes the project development and implementation risk, he usually adds a large mark-up to cover his potential losses. Consequently, this type of project is usually the most costly.
- One disadvantage of the EPC project is that the client has little or no control over process design or technology selection, once the EPC contract has been awarded.
- During the financing procedure, the «person» controlling the funds has control of the project. Most developers work with someone else’s money. This could be a single investor, a group of investors, or a bank or other lending institution.
- Working with investor’s money means that you will be subject to some form of accountability, which will require developing the project to a recognized development process. You will likely need a «bankable» study which will define not only the project and business plan, but will identify the risks. Likely the lender will require that the study be prepared by a reputable third party who is knowledgeable in both the plant process and the project development process. Most often the third party is an engineering company or a construction company.
2.2. Bottlenecks

In the survey participated clerks from the banks, bank managers, potential investors and farmers. They were all keen on participating in this event as it would give the both sides a clear view on what are setbacks on acquiring loans and funds.

**Bottlenecks from the viewpoint of financing bodies**

Main bottlenecks according to the financing bodies are that the farmers and investors do not have equity capital. An only bank loan is not good enough to see a biogas project all the way.

**Bottlenecks from the viewpoint of project developers**

The bottlenecks from the viewpoint of the project developers and the investors are concerning mostly the banks and the loans they give. If a farmer acquires a loan from the bank he must straight away start paying interest and principal. The collaterals on the loan are too great. Also the interests are around 15%, which is a big percent also. The complex procedures and the high bank taxes is another setback for acquiring a bank loan.

The main findings from the Questionnaire analysis in Bulgaria are the following:
- None of the interviewed has implemented a biogas project. However there is a tendency that shows there is increasing interest in biogas.
- Nearly 50% of the interviewed have very little knowledge of biogas. Unfortunately not enough knowledge for finding financing and implementing a biogas project.
- 46% of the interviewed replied that they don’t know if the banks have biases regarding biogas, including its society benefits, rate of investment returns etc.
- The situation in Bulgaria is such that loans are given hard in general. This is due to the crisis and high loan interest.
- There are several European instruments for investments. Potential investors, participating in the survey have heard of them and are aware that they can be used for financing biogas.
- The survey shows that the main problems of the financial procedures are: the lack of low-interest loans and required high equity capital.
- The main bottlenecks for the investors are the high interest of the loans. There are no banks in Bulgaria, which can offer interest rate of 5% or at least close to this rate. Also, there is no information of biogas, bank employees are not aware how the investment is repaying. This is the reason for high equity capital required.
3. Croatia

3.1. Public and private support for biogas projects

Biogas market in Croatia is in its early beginning and currently, only electricity from biogas has developed public support scheme in terms of feed-in tariff. There is also possibility to support biogas utilisation as biofuel but the tariff item is not been set yet.

The owner of power plant on biogas upon reaching the eligible producer status, signs a 12 year power purchase agreement on electricity made from biogas at announced feed-in tariff with HROTE (Croatian Energy Market Operator). Behind the Power purchase agreement and HROTE, there are other three key institutions for ensuring the long term payback of a biogas investment in Croatia:

1) Ministry of Economy, Labour and Entrepreneurship (MINGORP or MoELE) that issues Energy Approval
2) HEP-ODS is distribution grid operator that issues Grid Connection Approval
3) HERA (Croatian Energy Regulatory Agency) issues Eligible Producer Status.

Permitting procedure is closely entangled with the financing scheme in terms of ensuring the long term payback of the investment via feed-in tariff.

Croatia is a candidate country since 2004 and, as such, it is not eligible for Structural funds. Nevertheless, international financing institutions such as World Bank, Green Energy Fund, UNECE European Investment Bank (EIB), European Bank for Reconstruction and Development (EBRD), KfW etc. are providing financing aimed at the field of investments in green energy. Those financing is usually channelled to the beneficiaries via national financial institutions.

Croatia is eligible for ELENA technical assistance facility (European Local ENergy Assistance), financed through the Intelligent Energy-Europe programme, established by European Commission and the European Investment Bank.

In terms of providing financial support for biogas investments, it is important to mention national Environmental Protection and Energy Efficiency Fund (FZOEU) that finances documentation preparation and other justified preparatory pre-investment activities (public call once per year).

Croatian Bank for Development and Reconstruction (HBOR) provides Loan programme for the Financing of Projects of Environmental Protection, Energy Efficiency under soft conditions.

In early 2011, the first direct support for investment for biogas plants originated from agriculture sector, under Instruments of Pre-accession Assistance (IPA programme) for diversification of rural economies. Until recently, direct investment support has not been introduced while several programmes financing preparation activities have been available.

The table below provides overview of financial possibilities related to investment in biogas project. From the listed financing possibilities, only IPARD financing and feed-in tariff are specific for biogas projects while other financing schemes are generally financing investments in green energy.
From 2007, when the RES-E package described the production and utilisation of RES-E, after only 2 biogas plants fully operating so far, it is fair to say that the amount of available financing is not proportional to the expected investment activities.

**Overview of financial possibilities related to investment in biogas projects in Croatia**

<table>
<thead>
<tr>
<th>Preparation of project documentation/consulting services</th>
<th>Investment financing</th>
<th>Long term payback</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBRD TAM/BAS</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ELENA</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>EU &amp; EBRD – Western Balkans Sustainable Energy Direct Financing Facility</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>EU &amp; EBRD – Western Balkans Private Sector Support Facility via commercial banks, technical documentation prepared by internal experts</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>KfW: Programme for the Promotion of Renewable Energy and Energies Efficiency (RE &amp; EE) via HBOR, consultancy included when HBOR accepts the client</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>UNECE: Financing Energy Efficiency Investments for Climate Change Mitigation</td>
<td>-</td>
</tr>
<tr>
<td>FZOEU</td>
<td>HBOR – classical loan with subsidised interest rate IPARD programme</td>
<td>Power Purchase Agreement for 12 years according to feed-in tariff per kWh (HROTE)</td>
</tr>
<tr>
<td>International biogas companies; biogas project developers</td>
<td>Commercial banks – classical loan Capital funds</td>
<td>-</td>
</tr>
</tbody>
</table>

**National support**

Since mid 2007, when a package of 5 RES-E sublaws was adopted, electricity produced from biogas plants is purchased at incentive price (feed-in tariff) set by the Tariff system. The Ordinance on utilisation on renewable energy sources and cogeneration (OG 67/07), in article 4 and 5 recognises three types of biogas plants:

1) power plants on biogas from agricultural crops (maize silage...), organic residues and waste from agro-food industry (maize silage, manure, slaughterhouse waste, waste from biofuels production...)

2) power plants on landfill gas and power plants on gas from waste water treatment plants

The tariff item is differentiated by size of the power plant in two categories: less or equal to 1 MW\textsubscript{el} and above 1 MW\textsubscript{el}.

By gaining the eligible producer status, the producer of electricity from biogas is eligible for power purchase agreement for a period of 12 years.

The tariff item delivered in 2007 is updated annually for consumer price index and, for 2011, amounts as presented in the next Table.
<table>
<thead>
<tr>
<th>Type of power plant</th>
<th>≤ 1 MW</th>
<th>&gt; 1 MW</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HRK/kWh</td>
<td>€/kWh</td>
</tr>
<tr>
<td>PP on <strong>biogas</strong> from energy crops, waste and residues from agriculture and food processing industry</td>
<td>1.3552</td>
<td>18.34</td>
</tr>
<tr>
<td>PP on landfill <strong>gas</strong> and waste water treatment gas</td>
<td>0.4065</td>
<td>5.50</td>
</tr>
</tbody>
</table>

Close to the adoption of RES-E sublaws, Croatian Bank for Development and Reconstruction (HBOR) has received, via MoELE, a GEF/World Bank grant of 5.5 mUSD that was, among other, supporting preparation activities for investments in RES-E. The project ended in mid 2010. The implementation of the grant was organised through FZOEU, where 50% of the loan amount was to be financed on behalf of FZOEU. FZOEU had a role of technical advisor to HBOR where FZOEU have provided evaluation of all investment proposals. In other words, the beneficiary, future RES-E producer, had to pay 50% of the loan for preparation of project documentation (measurement, environmental impact assessment, basic, main and implementation design of the plant; investment study, building permit, location permit and all other technical and permitting documentation) needed to make the investment bankable and make the investor eligible producer. The maximal amount of the loan was 250,000 USD with 4% of interest rate, annually. Utilisation of the loan was envisaged for 3 years plus 1 year of grace period. Return of the loan was envisaged as one repayment – 12 months after utilisation of the loan.

This grant has been closed where all assets are reserved by various investors. Some 3 or 4 investors in biogas plants are among those investors that have reserved financing for preparation of the documentation needed for accomplishing permitting procedure. Nevertheless, those assets are still remained at reserved status and very little has been utilised due to the common bottlenecks discussed in this paper.

It has been agreed that, upon utilisation of Loan for project documents preparation, the investor will be immediately eligible for the second financing program of **HBOR: Loan Programme for the Financing of Projects of Environmental Protection, Energy Efficiency**. This soft loan should be kept in mind at the section of private financing since this loan can be both utilised directly (at HBOR) or indirectly (via commercial bank).
Each year, FZOEU announces a call for project proposals where it provides co-financing for various RES-E projects. The condition and scope of co-financing varies from year to year and it can include both initial investment, financing of preparatory documentation (technical documentation) and investment itself.

Currently, Green Certificates are not implemented in Croatia although some actions are taken into that direction. Green Certificates are issued to electricity producers to guarantee that certain amount of electricity is generated using renewable energy sources. A market for green certificates can be established between electricity producers and suppliers, enabling market price setting of green certificates. Several countries implemented green certificate schemes, in order to support the generation of green electricity. The system is more market-oriented mechanism in comparison to investment support and feed-in tariffs. The feed-in tariffs system is implemented in Croatia, but there are some ongoing studies and projects aiming to implement green certificate system, as well as Guarantees of origin of electricity, heating and cooling produced from renewable energy sources.

Private financing
In Croatia, most of the private banks are branches of large European banks such as UniCredit bank, Hypo Alpe-Adria-Bank International AG, Raiffeisenbank Bank, Erste & Steiermärkische Bank, Gruppo Intesa, Societe Generale, Banco Popolare, OTP Bank etc. and Hrvatska poštanska banka is the only bank in Croatian ownership.

In general, green energy market is still perceived as risky investment and recently only few banks have introduced energy efficiency loans. Since investments in renewable energy projects are more intensive, the banks are still not providing custom made loans for renewables. Nevertheless, the 8 largest banks in Croatia are open to finance investments in biogas projects under normal conditions as for other investments.
When appraising technically challenging investment, the local bank is asking for consultancy to the national or international headquarters. In other words, most of the banks that have experience in financing biogas investments in other European countries should have technical support for investment appraisal within the bank.

Until now, Hypo Group Alpe Adria bank has financed investment in the only biogas plant fed by feedstock from agriculture.

The list of banks that have agreement with HBOR to provide the soft loan (described in the previous chapter) indirectly to its clients are:

1) Banco Popolare Croatia d.d., Zagreb
2) Banka Kovanica d.d., Varaždin
3) Credo banka d.d., Split
4) Croatia banka d.d., Zagreb
5) Erste & Steiermärkische bank d.d., Rijeka
6) Hrvatska poštanska banka d.d., Zagreb
7) Hypo Alpe-Adria-Bank d.d., Zagreb
8) Imex banka d.d., Split
9) Istarska kreditna banka Umag d.d., Umag
10) Karlovacka banka d.d., Karlovac
11) OTP banka Hrvatska d.d., Zadar
12) Partner banka d.d., Zagreb
13) Podravska banka d.d., Koprivnica
14) Privredna banka Zagreb d.d., Zagreb
15) Raiffeisenbank Austria d.d., Zagreb
16) Slatinska banka d.d., Slatina
17) Societe Generale - Splitska banka d.d., Split
18) Štedbanka d.d., Zagreb
19) Zagrebacka banka d.d., Zagreb

In Croatia, only traditional loan financing is available andESCO companies are not supporting investments in biogas projects.
3.2. Bottlenecks

Bottlenecks from the viewpoint of financing bodies

Following the meeting and interview with the president of Croatian Bank Association, mr. Bohaček, EIHP made a phone survey among 8 largest Croatian banks, calling the Investment department:

1) Banco Popolare Croatia d.d., Zagreb
2) Erste & Steiermärkische bank d.d., Rijeka
3) Hypo Alpe-Adria-Bank d.d., Zagreb
4) Privredna banka Zagreb d.d., Zagreb
5) Raiffeisenbank Austria d.d., Zagreb
6) Societe Generale - Splitska banka d.d., Split
7) Zagrebacka banka d.d., Zagreb
8) OTP Banka Hrvatska.

The question was if they would finance an investment in a biogas plant and under what conditions.

The conclusions from the survey were almost identical to that information obtained from Croatian Bank Association interview:

- All banks are kind to participate in the interview.
- Banks do not offer project financing, only traditional loans.
- Only Hypo Bank provides financing in renewables (no special conditions) and had provided financing for the first biogas plant in Croatia.
- Three banks provide financing of energy efficiency investments but that is related to “green market”.
- All banks were open for financing of a biogas investment under “normal” conditions but had a little or no knowledge about it.
- Banks are looking for technical support in evaluating renewable energy investment from its “mother bank”.

To conclude, banks are willing to enter biogas market if more bankable projects were available.

Bottlenecks from the viewpoint of project developers

24 questionnaires were fulfilled and the investors had the need to call and elaborate their situation in that manner. At least 7 investors have called EIHP to talk about the financing situation of biogas plants in Croatia. Unfortunately, the only biogas plant that had received financing from a private bank was not available for the interview, despite 4 e-mails and 3 phone calls. EIHP had the intention to interview all biogas investors pending in the permitting procedure. For this interview phoning was selected as the most cost effective way. In that manner, all target audience was assessed. Within the collected surveys, the answers on the individual questions had different response intensity which could indicate either low interest or low experience related to the issue of the question. That is why each result is accompanied with the response intensity. The most of the responses come from engineers (58%) and economists (26%).

The main findings are the following:

- 100% response: 69% of survey audience is planning to implement a biogas plant.
- 100% response: all biogas investor state that they have at least average knowledge about biogas (13%) but most of the report good knowledge (58%)
- 100% response: 48% of investors have excellent knowledge about biogas but without practice. 32% believe that equipment supplier will guide them in operating
the biogas plant while 20% will employ someone with practice in operating a biogas plant.

- 100% response: 67% of the responses either strongly agree (29%) or agree (38%) that it is currently very difficult to get the loans in general in Croatia but 25% of them still think that getting a loan is not a problem. However, there were no positive responses about loans for biogas projects where 83% either agree (35%) or strongly agree (48%) that it is very difficult to obtain financing for biogas investments.

- 100% response: most of the banks (47%) seems to be informed about financing options for biogas projects but there is still significant share (35%) of lack of information on biogas projects among banks’ employee

- 100% response: when excluded non-experienced answers, 59% of banks did not forward the investor to the internal specialist for renewable energy projects and 41% did. Among those, 58% responses have identified Zagrebačka banka and the rest have identified EIHP. The truth is that EIHP is facilitating several loans of foreign banks in Croatia, and when contracted, EIHP provides technical consultancy for a bank.

- 96% response: most of the biogas investors think that there are biases against biogas projects among Croatian banks.

- 100% response: majority of biogas investors (49%) know about special support programs for financing of biogas projects while 38% is not familiar with such programmes. 13% thinks that there are no such programmes in Croatia.

- 100% response: 41% replies that there are no specific guidelines for financing biogas project in particular, which is true.

- 100% response: 67% does not know who can provide information on financing options for biogas projects. From those that have answered with “YES” (33%), three quarters have identified EIHP (23%), Institutions (22%) and Venture equity (22%) as an information source for biogas financing. The rest have identified HBOR and national Fund for Environmental Protection and Energy Efficiency (FZOEU) with 11% each. There were also several notes that there is plenty of information available but when asked to detail, it is not functioning.

- 13% response: in the question “which type of financing did you used” one answer with loan from the bank, another with syndicated loan and one has chosen “others”.

- 13% response: all biogas investors had to go to another bank to finance their projects (not their mother bank).

- 16% response: 2 biogas investors went to foreign banks while 2 has chosen a bank in Croatia to finance their projects.

- 16% response: 2 biogas investors had about 40 weeks of negotiations with the bank while one had 47 and still haven’t realised the loan. One investor has been negotiating for 2 years and the issue is still open.

- 13% response: all investors say it was difficult to find a bank willing to finance their biogas projects: 2 biogas investors say it was “difficult” and 1 says “very difficult”.

- 16% response: 3 investors have been asked about long term biomass supply contract for the biogas plant. Contract with HROTE, Building permit and Land ownership have been also asked which means that those investments are rather advanced. These 3 documents are asked for all RES projects, according to the permitting procedure. One investor has commented that there are so many papers/documents needed that he, as a farmer, cannot follow.

- As the main problems for financing procedures in Croatia were recognised a) too big debt/equity or warranties are needed (23%), b) employees of the banks do not have experience in financing biogas projects (21%), c) banks do not trust biogas investments (21%).
• As the main bottlenecks for financing plants in Croatia were recognised a) biogas is novelty for banks (22%), b) too high equity for loans (21%), c) high security is asked (13%).

**Further aspects**
Detected bottlenecks in financing institutions could be removed by capacity building events aimed in two segments: management board and investment appraisal officers.

Investment appraisal officers should be familiarised with the technology and key appraisal parameters of a biogas project. In addition, they should be familiarised with the permitting procedure and key documents that ensure that the biogas project will be eligible for the feed-in tariff for the period of 12 years.

Management board should be informed about the potential size of the biogas market in Croatia and the experience of other banks (especially activities of their mother banks) in that field. Less emphasis should be on the technical appraisal of the biogas project itself but key documents for permitting procedure have to be elaborated together with brief description of the national renewable goals and green marketing for the bank.

Detected bottlenecks of investors are related to high costs of financing plus high costs of permitting procedure. Banks have stated “that they would finance biogas projects if there were more bankable”. This is the fact where biogas investors do not approach the implementation of the investment on a solid ground with fully prepared investment study, long term biomass supply contracts and necessary documents from permitting procedure. Biogas project is an investment intense activity and this certainly represents a barrier to entry. Nevertheless, it is strange to realise that most of the plants are rather large (1 MW). Capacity building event should be focused on how to prepare Investment study and how to outline a Long term feedstock supply for a biogas plant. The other bottlenecks will be addressed in the permitting procedure bottlenecks.
4. Czech Republic

4.1. Public and private support for biogas projects

National support
The construction of biogas plants in the Czech Republic is supported by the state. The operators of biogas plants have legislatively guaranteed redemption price of the produced electricity. The current feed-in price is determined by the Energy Regulatory Office.

Support Mechanisms and feed-in conditions for electricity from renewable energy sources

Law on the Promotion of Production of Electricity from Renewable Energy Sources
With August 1, 2005, a law on electricity from RES entered into force and implemented the EU Directive 2001/77/EC in Czech National legislation.

The law supports the production of electricity from RES, i.e.
- hydropower, wind power, biomass power plants, geothermal plants, PV,
- as well as electricity from mine gas from closed mines,
- and from biomass including landfill gas, sewage gas, biogas.

Operators of regional grid systems and of the distribution system are obliged to purchase all electricity from RES.

Producers of electricity can choose from two support schemes:
- Fixed feed-in tariffs
- Green Bonuses

Fixed Feed-in Tariffs: In case of the fixed price, the electricity has to be purchased by the operator of the distribution system for regulated fixed prices. The price is valorised through a price index of the industrial producers. There is alittle risk in this option. The feed-in tariffs are fixed each year for one year ahead for each type of RES. They are fixed in a way that the conditions for meeting the indicative target of 8% until 2010 are met, and that the 15-year payback period of the investments is ensured. For new installations, the feed-in tariff/redemption price of the green electricity is valid for the year of commissioning, and the price index is guaranteed. For existing installations, the price of the year 2005 is guaranteed, and the price index is applied also. Stability of the redemption price is guaranteed for a given installation for 15 years.

Green Bonuses: In the case of the Green Bonuses, the producer sells electricity on the market for the wholesale price. In addition, he receives a premium (=Green Bonus) (in CZK/MWh) from the distribution system operator. This way, the risk is higher, but the revenue is also higher. Green Bonuses are fixed one year ahead for individual types of RES in a way that the total of revenues for the average purchase price is higher than that for the fixed purchase prices. The payback period for investments is shorter. The Energy Regulatory Office will take into account the increased risk entailed in placing green electricity on the market, therefore higher revenue is given. The price of the Bonus is flexible according to the redemption price of the electricity.

The Energy Regulatory Office determines the feed-in tariffs and the green bonuses each year in advance. The prices may not be lower than 95% of the value of the year before. Prices are set on the following assumptions:
- Return of investment of 15 years
- Prices are differentiated according to the renewable energy source
- Prices are differentiated by the year of commissioning

In the next Graph is showed the development of Feed-in tariffs and Green bonuses for biogas plants in the Czech Republic:

![Development of Feed-in tariffs and Green bonuses for biogas plants in CR](image)

Source: Pricing decisions of ERO

Moreover, the revenues from the biogas plant operation were exempted from the income tax in the year of the start-up and the next five years. This exemption does not apply today, unfortunately.

Investors can get a grant for the construction of renewable energy sources using biogas up to 30% of eligible costs from the national grant programs. Currently three possible grant resources are offered.

1. **Rural Development Programme (RDP)**
   - **Measure III.1.1 Diversification into non-agricultural activities**
   - **Ministry of Agriculture**

   This program supports farmers who want to start or expand their activities, particularly in the area of production and processing. Support is provided for selected areas of economic activities. A significant part of the support is oriented at the construction of facilities for the processing and use of renewable energy sources. The amount budgeted for this measure for the whole programming period is approximately 150 million EUR.

   In the years 2007-2010 were registered with the Ministry of Agriculture, a total of 171 applications for investment support for new construction or renovation of existing biogas plants in the diversification of agricultural activities from the Rural Development Programme. For this purpose, total of roughly 3.5 billion, one quarter of the aid provided from the state budget and the remaining three quarters are from EU.
Apart from the biogas stations is supported, in accordance with the current trends, the development of technologies for cleaning up the biogas to power motor vehicles and for the public filling stations that can receive a subsidy of up to sixty percent of eligible expenses.

Current status of RDP implementation:

<table>
<thead>
<tr>
<th>Applications from the year</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of registered applications</td>
<td>29</td>
<td>24</td>
<td>35</td>
<td>83</td>
<td>171</td>
</tr>
<tr>
<td>amount of registered applications (mil. CZK)</td>
<td>637</td>
<td>542</td>
<td>536</td>
<td>1,300</td>
<td>3,000</td>
</tr>
<tr>
<td>number of approved projects</td>
<td>26</td>
<td>19</td>
<td>34</td>
<td>73</td>
<td>152</td>
</tr>
<tr>
<td>amount of applications submitted for reimbursement (mil. CZK)</td>
<td>582</td>
<td>472</td>
<td>135</td>
<td>0.7</td>
<td>1,200</td>
</tr>
<tr>
<td>paid (in mil. CZK)</td>
<td>581</td>
<td>456</td>
<td>66</td>
<td>-</td>
<td>1,050</td>
</tr>
</tbody>
</table>

Note:
- an average installed electrical capacity of supported BPS is about 605 kW
- an average grant is 17.8 million CZK
- total installed electrical capacity of the approved projects from RDP is 92 MW

Source: Ministry of Agriculture

2. Operational Programme Environment (OPE) - the area of 3.1 under Priority Axis 3

State Environmental Fund

The Operational Programme for 2007-2013 includes the grant scheme "Exploitation of Renewable Energy Sources".

Field support: 3.1 - Construction of new facilities and renovation of existing facilities in order to increase the use of RES for heat production, electricity generation and cogeneration.

Sub-area: 3.1.1 Construction and reconstruction of heat sources using RES.
- 3.1.2 Construction and reconstruction of sources of electricity using RES.
- 3.1.3 Construction and renovation resources for the combined generation of electricity and heat using RES.

The construction of new facilities and the modernisation of the existing facilities with the aim to increase the use of renewable energy sources for heat generation, electric energy generation and for combined heat and electric energy generation- Almost 363 million EUR have been reserved for this area, representing 54% of Priority Axis 3's resources.

Currently is opened the 18th call in sub-region of support of 3.1.2 Construction and reconstruction of sources of electricity using RES.

Restrictions of the call:
- The maximum grant per project in subarea 3.1.2 can be achieved 50 million CZK.
- The maximum grant per project in subarea 3.1.3 can be achieved 100 million CZK.
- In subarea 3.1.3 will be accepted only the projects, where the recovery of produced heat reaches at least 20%, except for its own technological consumption. Projects with less use of heat will be accepted in the sub-area 3.1.2.

Priority Axis 4 – Improving waste disposal and environmental remediation

Support area 4.1 Improving waste disposal

3. Operational Programme Enterprise and Innovations (OPEI) 2007-2013

Ministry of Industry and Trade of the Czech Republic

The construction of biogas plants can be supported also by the programs Eco-energy (OPEI) or the Guarantee program from the Českomoravská záruční a rozvojová banka a.s. (ČZRB),
and there is a possibility to combine both supports, but the grantee can’t be an agricultural subject.

The Ministry of Industry and Trade manages a programme of support of small and medium-sized enterprises (SMEs) named Eco-energy. This program implements the Priority axis 5 “Effective energy” from OPEI. The aim of the Eco-energy is to stimulate business activity of SMEs in the area of reducing energy intensity of production and increased use of renewable and secondary sources.

**Private financing**

In general, green energy market is still perceived as a risky investment and recently only few banks have introduced energy efficiency loans. Nevertheless, because the investments in renewable energy projects are still more intensive, the largest banks in Czech Republic are open to finance biogas projects under normal conditions as for other investments.

Since May 2007, Česká spořitelna a.s. (CS) has provided small and medium sized enterprises (SMEs) with the “TOP Energy program”, a set of comprehensive services and products supporting the preparation and implementation of innovative energy projects involving energy savings and production of energy from renewable sources. The program includes information service, advisory, funding and project management.

The Programme is designed for SMEs, public and non-profit organizations and for large corporations too. It is specialized in providing full package financing of Renewable energy projects (photovoltaic power plants, wind parks, small hydro power plant, and biogas/biomass power plants).

CS has established Special Finance Unit – Energy Team, the combination with other special products (EIB programmes) is possible too.

Financed can be up to 80% of overall costs and financing adjusted to fit the structure of subsidies is achievable too.

**Komerční banka, a.s. (KB)** has the Program for financing BGPs too.

There are some benefits in financing biogas projects:
- guarantee of various forms of the state support, that can make the investment into the biogas plants profitable and secure.
- there is a team of specialists for the alternative energy sources for individually consultations about the best way of financing already at the stage of business plan preparing.
- on one place it is possible to solve the financing sources as far as the useful insurance for the time of construction phase and for the operation phase too.

The support is provided for:
- elaboration of the business plan with respect to the future debt financing
- selecting of the optimal financing structure

The involvement of the financing experts during the project preparation can help to achieve the most efficient way of financing.

For example KB provides the following types of the loans for co-financing of the project:
- short-term bridging loan to cover VAT expenses
- medium-term advance loan for the subsidies
- long-term investment loan for the biogas plant development
- consolidation of the medium-term advance loan for the subsidies and the long-term investment loan for the biogas plant development into one loan with an extraordinary repayment upon collection of the subsidy
- principal payments deferral during the development and commissioning stages
- regular repayments from the revenues generated by the project – i.e. the revenues from the sales of electricity and/or heat

For persons interested in the utilisation of grant resources KB offers the use of specialised services in consulting department named KB EU Point. Banking consultants will find for free a suitable grant program for the project plan and the regional EU specialist could then provide consulting directly at the place of the project realisation.

**What to do before the first meeting with the bank**
Prior to the discussion with the bank, it is needed to have a specific idea about the project from the technical, economic, execution, and operational points of view. And to sum up all the information in a brief business plan. Beside the basic information about the investor, the bank specialist will also be interested in:
- the reasons leading to the project realization
- current status of the project
- project costs and their structure
- the own resources – the amount of the money that investor plans to invest in the project
- the expected location
- the structure and volume of raw materials, its ensuring, logistics, and storage
- the grid connection
- whether the heat will be used too
- considered supplier of the construction works
- the legal status – for a special purpose established, or an existing company

**GE Money Bank (GE)** is a member of CZ BIOM – Czech Biomass Association, which has in the long term supported the use of biomass and biogas energy in the Czech Republic. The reason for the association was the specialization of GE Money Bank in financing projects using renewable energy sources and the interest of active support of eco-energetics in the Czech Republic. This orientation is based on a global initiative of General Electric called Ecomagination, which supports environmental protection and renewable energy sources.

**Loans at GE:**
- financing up to 100% of the investment costs, according to the project type and investor’s economics;
- loan maturity to 15 years (according to the project type and investor’s economics),
- the possibility of choice between fixed and floating interest rate

The EU service at GE will help with the execution of grants from EU Structural Funds.

Finally it is appropriate to mention, that there are some private companies in Czech Republic concerned with mediation and consultancy in the project financing of BGP (biogas plants), for example BAWAG Energy, EnviTec Biogas, Bioplyn tech servis s.r.o., etc.
4.2. Bottlenecks

Bottlenecks from the viewpoint of financing bodies

CzBA decided to ask separately some of the main Bank managers for interview about biogas investing. The most important Czech banks were contacted with the survey questions:

1) GE Money Bank
2) Komercní banka, a.s. (KB)
3) Česká spořitelna, a.s. (ČS)
4) Československá obchodní banka, a.s. (ČSOB)
5) Českomozavská záruční a rozvojová banka, a.s. (ČZRB)
6) Raiffeisenbank a.s.

Some of the main results are the following:

1) From the results of CzBA survey among financing institutions it was found, that a special program for financing biogas projects (BGPs) is in place by:
   1. GE Money Bank
   2. Česká spořitelna, a.s. (ČS)
   3. Komercní banka, a.s. (KB)

   All of them have special experts for renewable projects and employ a designated expert for biogas project.

3) All respondents (banks) answered that they offer both – project and loan (private/business) financing, and provide the option of a grace period for biogas projects.

4) To the question, if it is easier to receive a loan for a small scale plant, or for a medium and large plants, 67% answered that it makes no difference and the rest stated that it is easier to get a loan for medium or large plants.

5) As far as the main criteria for providing loans is concerned, for the 28% the main criteria is the acceptable investor's/farmer's financial situation, for 27% it is the history of the farm or agricultural company and assuring enough supply of raw materials, and the size of cultivated land.

6) The financial risk of financing biogas projects was estimated in 67% as low, and only in 33% as high.

7) The main risks for financing biogas projects can be summarized:
   1. Technological risk (technology selection, defects, etc.) - 43%
   2. Operational risk (lack of inputs, irresponsible operator, problems during construction) – 29%
   3. Financial risk (possible breach of grant conditions, the debt burden of the borrower) – 28%

8) Risk rate can be described as follows: financing of this type of project is different and new activity from the other client's activities. The biological process is not really easy to operate and not very explored yet, stability of the biological process, and external risks are hardly influenceable by client.

The estimation of financial risk of a loan for biogas projects compared to loans for other renewable energy projects resulted in 67% answers with “No difference” and the remaining 33% judged it as “Low” financial risk.
10) The main bottlenecks for financing a biogas plant could be summarized as follows:
   2. relatively short history of these projects on the Czech market
   3. ensuring the own raw-materials, investor's stability, size of cultivated land etc.

**Bottlenecks from the viewpoint of project developers**

20 questionnaires were fulfilled and some of the project developers had discussed personally with CzBA the financing situation of biogas plants in Czech Republic.

The main findings are the following:

- the most respondents answered that it is not very difficult to get any loan in Czech Republic in general. And the same was found about loans for biogas projects. This can indicate that the main problem in Czech Republic is not to get a loan, but mainly in the permitting system and in the approach of some state and responsible authorities.
- **The type of financing** is usually **project financing** (50% of respondents), 40% use financing by banks and only 10% finance these projects from private sources.
- 67% of home-banks provide loans for biogas projects and only 16% had to go to another bank institution.
- 83% have chosen a bank in the Czech Republic and the negotiations with bank took usually about 7-10 weeks.
- 67% of the respondents evaluated the difficulties with finding the bank willing to finance biogas project as “Easy” and 33% even as “Very easy”.
- The most of answers concerned the lack of low interest loans provided by national financing authorities and too high interest rates.
- The main bottlenecks for financing biogas plants from the view of project investors and developers were described as follows:
  - poorly ensured feedstock capacity (37%)
  - ensuring of the areas for the digestate application (25%)
  - low level of prepared projects (25%)
  - there are not any fundamental problems in financing biogas plants (13%)
- the main motivation for the implementation of biogas plants in Czech Republic is the utilization of waste product
5. Greece

5.1. Public and private support for biogas projects

National support

Feed-in tariff system
Law 3851/2010, «Acceleration the Development of RES to Combat Climate Change and other provisions regulating matters which fill in the competence of the Ministry of Environment, energy and Climate Change» entered into force on June 2010 to amend the current legislation on renewable energy sources and particularly Law 3468/2006.

Among other, law 3851/2010 sets new and higher feed-in tariff system based on the form of biomass (there are different prices according to biogas source, namely 220€/MWh for biogas emanating from biomass - organic remnants of animal farming and of agricultural processed remnants and refuse - with installed capacity of ≤3MW and 200€/MWh for the same type of biogas plants but with installed capacity of >3MW). This is a key driver for attract higher interest on biogas exploitation schemes as the guaranteed market price was increased more than 2 times. Furthermore, the energy produced from biogas, providing the investments are realised without the use of government subsidy, is priced on the basis of the prices of the law 3851/2010, raised by 15%.

Power Purchase Agreements have a total duration of 20 years.

Public subsidies
Currently, the main state financial-support instrument that provides substantial public subsidies to RES investment projects is the so-called «National Development Law» (Law 3908/2011). RES projects can receive financial support from a series of other programmes managed by the Ministry of Rural Development and Food. For more information concerning Financial Instruments and Economic incentives for Energy Investments see www.cres.gr and www.antagonistikotita.gr.

Development law covers all private investments implemented in Greece (dealing with all sectors of economic activity with some exceptions). Proposals for private investments can be submitted to the National Development Law twice a year (April and October and any time for the big investments).

Biogas Investment projects falls under General Investment Projects (subcategory Regional Cohesion). This subcategory, includes projects in productive activities that exploit local competitive advantages, face local needs and address regional problems with environmentally sustainable technological applications, introducing energy saving technologies and use of water resources and contributing to environmentally friendly reconstruction, rehabilitation and development areas of economic activity. These investment projects get a grant or leasing subsidy of 80% for new businesses (of the upper incentive limit) and the rest filled with exemptions.

Private capital of the investor must be at least 25% of the eligible costs in case of Grants. The beneficiary must contribute at least 25% of the eligible costs in the cases of tax exemption, either with private capital or other financing options.
Private financing
The most common private incentives for biogas projects in Greece are presented, namely:

- Traditional financing,
- Project finance,
- Third party finance.

Traditional financing
The most common financing methods in Greece for RES project are **credits from private banks**. Traditional financing by long-term loans is basically the current situation. For example the National Bank finances major investment totaling 1.44 billion in wind parks and photovoltaic, hydropower and biogas and biomass, with loans totaling 855 million euros. Those that have been completed and work representing investments worth 668 million and produce electricity about 460 MW. With funding from the National, currently produces 43% of total energy from wind, 26% of total energy from solar, 12% of total energy from small hydro and 57% of the country's total energy from biogas and biomass (St. Tamvakakis, chairman of NBG, 2010).

In Greece a number of private banks have specific programmes financing projects like PVs or interventions for energy saving in buildings. The basic documentation is an application form and a series of legalisation and financial documents (depending on the case and bank). Furthermore, institutional banks offer soft loans and special facilities.

Project finance
Another option for big biogas projects and investments is project finance, which is often used only for projects with an investment volume of some million Euros. In Project Finance, the financing is based on anticipated revenue as the primary and/or exclusive source of repayment for the financing and is secured by project assets (limited or non-recourse financing). In Greece this type of financing is used mainly by banks who usually seek for mature and well established technologies (low risk) or investments that can give economies of scale.

Third Party Finance
DIRECTIVE 2006/32/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 April 2006 on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC states among others that ... the use of third-party financing arrangements is an innovate practice that should be stimulated. In these, the beneficiary avoids investment costs by using part of the financial value of energy savings that result from the third party's investment to repay the third party's investment and interest costs. In this financial scheme an ESCO (Energy Service Company) plays the primary role and undertake the responsibilities and/or financing. ESCO undertake the development, installation, financing and operating the project. The fundamental feature in this case it that the customer (client or end user) does not make any cash payment. The three stakeholders of this scheme are a) the ESCo b) the client or end user and) the bank.

Law 3855/2010 sets, among others, the policies, regulations and measures for the development of the Energy Service Market in Greece. Energy Service Companies (ESCOs) are foreseen to have an important role in the Greek energy service market and this Law, is expected to boost the ESCO market since it creates a safe investment environment by laying down the legislative framework for the operation of ESCOs. The Law also describes the context and principles of the Energy Performance Contract (as it describes the basic outline of EPC) and allocates obligations and responsibilities between the ESCO and the customer.
Although this scheme is rather new in Greece there are a couple of examples in the biogas sector under development.

5.2. Bottlenecks

Bottlenecks from the viewpoint of financing bodies

The main conclusions from Questionnaires analysis are the following (6 questionnaires were received back):

- All six banks provide loans for renewable energy projects. Four of them provide loans for biogas project in particular and have a designated expert for renewables (one bank has a designated expert for biogas projects).
- In the most cases project financing (for high budget projects) and private/business loans are provided for RES - biogas projects.
- All banks consider the option of a grace period for biogas projects but it depends mainly of the form of the loan and the inventor credibility.
- For three (3) banks it is the same to receive a loan for a small scale plant as a single investor/farmer, or to receive a loan for a medium/large scale plant as a consortium of investors/farmers (in 2 cases it is easier to receive a loan for a small scale plant as a single investor/farmer and in one case it is easier to receive a loan for a medium/large scale plant as a consortium of investors/farmers).
- The main criteria in providing loans for biogas projects are the following:
  a) mature business plan,
  b) permits,
  c) investment risks and guarantees
  d) proven technology,
  e) financial profile of the investor,
  f) feedstock supply,
  g) reasonable costs,
  h) own contribution.
- The documentation required from the investor in order to process the loan vary between the banks and the case, but generally at least a feasibility study, permits, other incentives option, own contribution, guarantees, a business plan, legal and financial documents are needed.
- The required equity capital is at least 25% (in 3 banks)
- Mostly loan negotiations for biogas projects take 4-6 weeks, but in some case it takes even more.
- Four (4) banks estimate the financial risks for financing biogas projects as low and two (2) high. The financial risk of a loan for biogas projects compared to loans for other renewable energy projects was considered as higher in 5 cases. Some of the main risks for financing biogas projects are:
  a) RES legislation changes (not stable framework)
  b) Lack of experience (investors)
  c) Feedstock supply (feedstock contracts)
  d) biogas technologies (many technologies but not all of them proven yet)
- From the viewpoint of banks, the main bottlenecks for financing a biogas plant in Greece are related to:
  a) Small size of investments
  b) Investors’ reliability (new entities with no experiences and financial records)
  c) Public Incentives
  d) Feedstock contracts in a certain monetary value
  e) Biogas projects are relative new business area
  f) Not stable legislative and tax framework
Bottlenecks from the viewpoint of project developers

The survey for biogas project developers was based on the BiogasIN questionnaire (Q3) which was sent to a wide spectrum of recipients (e.g., participants in CRES training courses or Conferences concerning biogas, investors who have submitted or has the intention to submit to grant Generation licence from the Greek Regulatory Authority of Energy, energy producers, project developers, consultants and other stakeholders dealing with biogas). After reminder and phone calls 21 questionnaires were gathered and analysed. The main findings are the following:

- Question 1.1: 100% response. 62% are planning to build a biogas plant, 19% have already implemented a plant and 19% have not.
- Question 1.2: 100% response. All stated that have knowledge about biogas either good (48%) or medium (52%).
- Question 2.1: 95% response. Almost 90% agree that financing projects under any loan is currently very difficult in Greece (52% strongly agree and 37% agree).
- Question 2.2: 86% response. 60% agree that financing biogas projects is currently very difficult in Greece.
- Question 3.1: 100% response. 57% stated that bank employees are not informed about financing options for biogas projects and only 5% stated the opposite.
- Question 3.2: 90% response. 57% stated that banks didn’t forward them to a bank-internal specialist for renewable energy projects, which means that many banks have not any specialist for biogas or RES.
- Question 3.3: 90% response. The three answers have almost the same percentages (Yes, No, I don’t know)
- Question 4.1: 90% response. 53% stated that they know support programs and one of them is the Development Law.
- Question 4.2: 100% response. 57% stated that no one provides with guidelines or checklists and 19% stated that banks, public authorities or both provide such documents.
- Question 4.3: 100% response. 57% stated that they don’t know who can provide information on financing options from biogas projects and the rest named several sources (e.g., Greek Ministry of Environment Energy and Climate Change, CRES, foreign banks or biogas investors).
- In Question 6.1 as main problems for financing procedures in Greece were recognised a) that bank employees do not have any experience with financing of biogas projects (32%), b) interest rates are too high (28%), c) too much equity is required (19%).
- In Question 6.2 as the main bottlenecks for financing biogas plants in Greece were recognised the following: Banks does not finance new established companies, there are no alternative financing sources, own contribution, insufficient financing, banks little knowledge about biogas, high investments costs, country current financial situation, general knowledge of biogas issues.

Further aspects

Generally, some remarks from the survey to the banks are the following:

- Many banks offer traditional loans and project finance.
- In most cases they have experience with other RES projects but their experience in biogas is rather limited. Some of them have already developed and supply “green products”.
- There is ground and williness for capacity building for banks, as biogas is getting very popular the last year in Greece.
- Generally banks were kind to participate in the survey and are willing to enter biogas market.
From the viewpoint of banks, the main bottlenecks for financing a biogas plant in Greece are related to:

- Small size of investments
- Investors’ reliability (new entities with no experiences and records)
- Public Incentives
- Feedstock contracts in a certain monetary value
- Biogas projects are relative new business area
- Not stable legislative and tax framework

From the viewpoint of project developers the main bottlenecks are the following:

- Banks does not finance new established companies
- There are no alternative financing sources
- Own contribution
- Insufficient financing
- Banks little knowledge about biogas
- High investments costs
- Country current financial situation
- General knowledge of biogas issues

Some recommendations to improve the financing procedure in Greece can include:

- Capacity building for banks and biogas investors.
- Stable legislative framework and more financial possibilities (public or private incentives)
- New financing products from banks and designated departments for RES/biogas
- Mature investments and more bankable projects from biogas investors.
6. Latvia

6.1. Public and private support for biogas projects

National support

Public subsidies
The main State support instrument for initial financing of biogas (as well as other forms of renewable energy and energy efficiency) projects in Latvia is the Climate Change Financial Instrument (CCFI) or internationally known as Green Investment Scheme. CCFI is a programme of State Budget and resources are obtained from realizing state owned assigned amount units within the framework of international emissions trading which is one of the Joint Implementation projects under the Kyoto Protocol.

CCFI was first introduced in 2009 and is managed by the Ministry of the Environmental Protection and Regional Development (note: till 2011 it was called the Ministry of the Environment). The main purpose of this instrument is to reduce green house gas (GHG) emissions, thus contributing to global climate change prevention. Also adaptation to effects caused by global climate change is of the scopes of CCFI. Financing for biogas projects within the framework of CCFI so far have been available under four calls for applications (see next Table).

Financing for biogas projects within the framework of CCFI

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Target of the tender</th>
<th>Total available financing, LVL (EUR)</th>
<th>Share of co-financing from CCFI for each project, %</th>
<th>Status of the tender</th>
<th>The target audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The use of renewable energy sources in transport sector</td>
<td>Adjustment of vehicles for the use of biofuels (including biogas)</td>
<td>3 522 621 (5 012 267)</td>
<td>35-55</td>
<td>Active (20.01.2011)</td>
<td>Entrepreneurs, businesses in Republic of Latvia</td>
</tr>
<tr>
<td>2</td>
<td>The use of renewable energy sources for GHG emission reduction</td>
<td>Technology transfer from fossil fuels to renewable energy sources</td>
<td>27 716 876 (39 437 786)</td>
<td>45-75</td>
<td>Draft regulations announced (Planned to open in the beginning of February)</td>
<td>Municipalities, state or local government institutions, entrepreneurs in Republic of Latvia</td>
</tr>
<tr>
<td>3</td>
<td>Development of GHG emission saving technologies and pilot project implementation</td>
<td>Development and introduction of GHG emission reducing products and technologies</td>
<td>2 793 646 (3 975 023)</td>
<td>25-75</td>
<td>Draft regulations announced</td>
<td>Direct or indirect regulatory authorities, derived public persons, entrepreneurs in Republic of Latvia</td>
</tr>
<tr>
<td>4</td>
<td>Complex solutions for GHG emission reduction in industrial buildings</td>
<td>Transition from fossil fuel heating systems to heat energy production from renewable energy sources.</td>
<td>9 839 256 (14 000 080)</td>
<td>45-55</td>
<td>Application deadline passed (21.10.2010)</td>
<td>Entrepreneurs, businesses in Republic of Latvia</td>
</tr>
</tbody>
</table>
Within the framework of CCFI so far four calls for applications have been available. For one of the activities application deadline has already passed and the appraisal takes place. Another activity is open for applications, and two are scheduled to open in the near future.

Activity “The use of renewable energy sources in transport sector” that is now open for applications, promote the use of renewable energy sources (including biogas) in transport sector. It is planned that this activity will contribute to the implementation of requirements of Directive 2009/28/EC of European Parliament and of the Council on the promotion of the use of energy from renewable sources that requires for at minimum 10% share of biofuel in transport sector in 2020. Within the framework of activity, measures promoting adaptation of fossil fuel operated vehicles to one which use biofuel as a source of energy are supported. Also the installation of necessary biofuel filling equipment is eligible for this call of applications. Regarding biogas, the use of organic municipal waste, sludge and manure for biogas production is supported. The amount of financial support is in range of 35-55% depending on the status of the entrepreneur (micro, medium, large enterprise).

For two other CCFI activities – “The use of renewable energy sources for GHG emission reduction” and “Development of GHG emission saving technologies and pilot project implementation” tender regulations have been announced and they are to open in near future. Within the framework of these activities it is planned to support:

- Purchase, construction, installation, and reconstruction or replacement of biogas installations with total installed heat capacity of 3 MW or electric capacity of 1 MW for one project
- Development, testing, and demonstration of new, innovative GHG emissions reducing technologies; technology experience and knowledge transfer in form of pilot projects (including vehicle purchase or adjustment for the use of biofuels; promotion of the use renewable energy sources)

One of the CCFI activities where project submission deadline has already passed and soon the project realization will start is called “Complex solutions for GHG emission reduction in industrial buildings”. Among other activities investment was provided to promote transition from fossil fuelled heating equipment to technologies that uses biomass, biogas (except biogas electricity production in cogeneration), solar energy, and efficient heat pumps. Financing was available for purchasing, installation, and connection costs of installations with maximal capacity of 3 MW for one project.

**Feed-in tariff system**

State support for RES electricity generation is introduced in Cabinet of Ministers Regulation No.262 “Regulations Regarding the Production of Electricity Using Renewable Energy Sources and the Procedures for the Determination of the Price” and No.221 “Regulation Regarding Electricity Production and Price Determination upon Production of Electricity in Cogeneration”. The regulations set a number of criteria for biogas electricity producers to apply for electricity mandatory purchase and to guarantee that electricity producer will be able to sell the electricity for a certain price. According above-mentioned regulations the percentage of each kind of RES for ensuring the mandatory purchase is given in the following Table.

The electricity sale price within the framework of mandatory purchase is calculated depending on installed electrical capacity.

The price for electricity production in cogeneration is calculated taking into account energy component and capacity component.
**Share from final electricity consumption of end users in Latvia that mandatory has to be covered with electricity produced using renewable energy sources**

<table>
<thead>
<tr>
<th>Renewable energy source</th>
<th>2010 and the next 10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydropower plants with capacity over 5 MW_e</td>
<td>34.31 %</td>
</tr>
<tr>
<td>Hydropower plants with capacity up to 5 MW_e</td>
<td>1.98 %</td>
</tr>
<tr>
<td>Wind power plants</td>
<td>5.37 %</td>
</tr>
<tr>
<td>Biogas electricity generation plants</td>
<td>7.93 %</td>
</tr>
<tr>
<td>Biomass power plants and biomass and fossil fuel co-firing power plants</td>
<td>4.97 %</td>
</tr>
<tr>
<td>Solar power plants</td>
<td>0.01 %</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>54.57 %</strong></td>
</tr>
</tbody>
</table>

On September 2010 a new Law on Renewable energy was announced in the Secretary of State meeting and is still waiting for the final consideration in the Cabinet of Minister. The existing version of the draft law provides the following price for electricity purchase that is produced from biogas:

**Biogas electricity purchase price depending on electrical capacity of a biogas plant**

<table>
<thead>
<tr>
<th>Electrical capacity, MWe</th>
<th>Price for electricity LVL/MWh</th>
<th>Price for electricity EUR/MWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.2</td>
<td>139.7</td>
<td>199</td>
</tr>
<tr>
<td>0.2-0.4</td>
<td>108.0</td>
<td>154</td>
</tr>
<tr>
<td>0.4-0.6</td>
<td>95.0</td>
<td>135</td>
</tr>
<tr>
<td>0.6-0.8</td>
<td>84.0</td>
<td>120</td>
</tr>
<tr>
<td>0.8-1.2</td>
<td>79.0</td>
<td>112</td>
</tr>
<tr>
<td>&gt;1.2</td>
<td>68.0</td>
<td>97</td>
</tr>
</tbody>
</table>

It is foreseen that the mandatory purchase period for biogas electricity will be 20 years from the first day of the plant operation and that the set price for electricity will be decreased for one percentage point each year starting from January 1, 2012.

**Guaranteed payment for installed capacity**

Regarding biogas power plants monthly payment for installed electrical capacity is available for units with installed electrical capacity more than 1 MWe if the number of working hours is more than 8000 hours per year.

Regarding biogas electricity production in cogeneration producers can apply for guaranteed payment for installed electrical capacity if it is 20 MWe or more and the number of operation hours exceeds 3000 hours per year. There are no such a big biogas cogeneration plants in Latvia.

**Exemption from taxes**

Since biogas is a renewable energy source its use is supported by exemption of several taxes. National Law on Excise Duties determines that petroleum products that are used as motor fuel, fuel or its replacement product or component, and natural gas are taxed with excise duty. This is aimed to increase the competitiveness of biogas while biofuels are free of the tax. At the same time the law determines that also natural gas that is used for electricity generation (including cogeneration) is free of excise duty. Otherwise, if the natural gas is used as a fuel, the tax rate is 15.60 LVL per 1000 m$^3$. If the natural gas is used as motor fuel
the tax rate is 70 LVL per 1000 m³. In addition, for natural gas a reduced rate of VAT is applied.

National Law on Natural Resources Tax determines that all renewable energy sources (including biogas) are exempted from payment of tax on carbon dioxide emissions from incineration facilities.

**Private financing**
The most common private biogas project financing method in Latvia is credits from private banks. When applying for long-term investment loan, usually a standard form of application has to be fulfilled. This includes:

1. Loan information (required amount and currency, purpose and economic substantiation of loan, repayment schedule etc.)
2. Information on applicant (name, contact information, registration number, management, representatives, owners, description of company, financial commitments etc.)
3. Information on collateral (real estate, other company assets, guarantee etc.).

In addition, several legal and financial documents have to be handed in. Specific list of documents depends on the particular bank, but mostly it includes:

- A copy of borrower’s legal documents (e.g. registration document)
- Documents confirming the rights of representation
- Company statute
- Annual accounts for the previous two years
- Current year financial statement
- Tax payment certificate
- A business plan
- An assessment for offered insurance
- Documents confirming ownership rights for offered insurance.

**6.2. Bottlenecks**

**Bottlenecks from the viewpoint of financing bodies**
From the interviews with financing bodies several conclusions regarding biogas project financing can be made:

- All nine banks that responded to the call to complete the questionnaire provide loans for renewable energy projects. Seven of them provide loans for biogas projects in particular. Two banks employ a designated expert for biogas projects, while three – experts for renewable energy projects in general.
- Employees from six banks answered the question about national commercial support programmes for financing renewable energy projects. Three of them named support programme provided by the Ministry of Economics, one – provided by the Ministry of Environmental Protection and Regional Development but the other two were not able to name an exact programme.
- Mainly both private/business loan and project financing are provided for biogas projects.
- All banks provide the option of a grace period for biogas projects on condition that the interest is paid anyway.
- From the viewpoint of bank employees in most cases it is as easy (or difficult) to receive a loan for a small scale plant as a single investor/farmer as to receive a loan for a medium or large scale plant as a consortium.
The main criteria for providing loans for biogas projects are: project developers experience and knowledge, project concept and economical background, the provided collateral, and the share of EU and self financing.

Large number of different documents is asked to be submitted for banks together with the loan application. Mostly it includes legal and financial documents; a business plan; description of the entity and the project; information on collateral, contracts, and commitments; permits related to construction and operation of the biogas station; and certificate issued by the State Revenue Service about the tax payment. Depending on particular case, the bank can ask for other documents to be submitted.

The required equity capital is within range 20-40%.

Mostly loan negotiations for biogas projects take 4 weeks, but depending on particular case it can require more or less time to settle the loan.

Almost all banks estimate the financial risks for financing biogas projects as high. The main risks for financing biogas projects are related to technological aspects during the project development phase (equipment purchase, installation and launching, successful building), feedstock (availability, supply, and logistics), project developers knowledge and experience, and obtaining the necessary permits. This is because often the planned conditions do not match with the reality of the project which can have serious impact on project realization. If there is a deviation from the planned implementation process of the project, all payments are delayed. If the project developer has no experience, the project becomes risky. Already operating biogas stations with clear, comprehensive and maintainable in long term feedstock supply model has considerably lower risk, if compared to developing biogas plants.

If compared to granting loans for other renewable energy projects, the financial risk of a loan for a biogas project mainly is the same level or higher. The financial risk is higher because, if compared to biogas, other renewable energy sources (e.g., wind and water energy) are less risky because they are not being produced. Although there is certain variation regarding energy supply, wind and hydro energy are still permanent energy sources.

From the viewpoint of banks, the main bottlenecks are related to self-financing, the collateral, and project developer lack of experience.

**Bottlenecks from the viewpoint of project developers**

Within the collected surveys for biogas project developers, the answers to closed questions had good response intensity while the open questions were less answered. It indicates that for respondents it is easier to select an answer from given options and such question-answer structure gives more complete result.

Results of the questionnaire with biogas project developers indicate that there exist problems with financing procedures for biogas projects in Latvia. More than a half of biogas project developers agree that it is currently very difficult to get loans from banks for biogas projects. More than 80% of biogas project developers think that banks have biases against biogas projects. Exactly the lack of trust in biogas projects from the side of banks has been mentioned as one of the main problems for financing procedures in Latvia. Another important problem is the largeness of equity capital that is required. Biogas project developers mention than the main bottlenecks for financing biogas plants in Latvia are the lack of government support and stable and organized legislation, as well as lack of stability in the biogas sector.

The results of questionnaire show that largest part of biogas project developers does not know who can provide information on financing options for biogas projects and would like to participate in training courses regarding biogas project financing options. The largest part of project developers who had chosen financing by banks had to go to another bank to finance
the project because their home bank did not give the loan. All of the biogas project developers who had used financing from banks say that it was either difficult or very difficult to find a bank willing to finance the project.

**Further aspects**

Some recommendations to improve the financing procedure in Latvia:

- It is necessary to train the bank employees and experts regarding biogas issues by demonstrating the various aspects of biogas production and use, and pointing out the criteria and risks that must be taken into account when evaluating the biogas project loan applications;

- It is necessary to inform biogas project developers and potential biogas producers (farmers) about the financing possibilities and to emphasize the project aspects that are considered by banks when evaluating the loan applications. These are the aspects where the potential biogas producer must demonstrate his/her competence and possibilities to comply with them.

- It is necessary to learn from the experience of operating biogas plants in Latvia that proves the reliability and confidence in biogas as sustainable energy source. Successful biogas projects are demonstrating that optimal technical solution and project structure gives economically feasible result and is benefit for all involved parties (farmers, banks, local government and society in general).
7. Romania

Strategy for RES (approved by Government Decision 1535/2003) was used for forecasting medium and long term dynamics of the RES technologies and in the same time estimating the RES energy production capacity and volume that will be achieved. In this moment those values have been re-evaluated several times and now are just having a historical value.

- GD 443/2003 on the promotion of electricity production from renewable energy (as amended by GD 958/2005) states that share electricity from RES in the gross national electricity consumption is expected to reach 33% by 2010.
- The existing and planned measures to promote production and consumption of electricity produced from RES approved by GD 1395/2005 provides commissioning of power generation capacity 440 MW of RES by 2010 and 790 MW for 2011-2015.
- GD 1892/2004 with subsequent amendments, introduced the system mandatory quotas combined with CV and approved trading value of these allowances for the period 2005-2010.

Law 220/2008 established that the national targets for the share of electricity produced from renewable energy sources in final consumption of electricity in the years 2010, 2015 and 2020 are 33%, 35% and respectively, 38%. In achieving these targets it was taken into account the electricity produced in hydropower plants with installed capacity above 10 MW. Mandatory annual quotas of green certificates for the period 2008-2020 are those in the following Table.

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual obligatory quota Law 220/2008 (%)</th>
<th>Annual obligatory quota based on the new modified law 220/2008 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>5,26</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>6,28</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>8,30</td>
<td>8,3</td>
</tr>
<tr>
<td>2011</td>
<td>8,30</td>
<td>10,0</td>
</tr>
<tr>
<td>2012</td>
<td>8,30</td>
<td>12,0</td>
</tr>
<tr>
<td>2013</td>
<td>9,00</td>
<td>14,0</td>
</tr>
<tr>
<td>2014</td>
<td>10,00</td>
<td>15,0</td>
</tr>
<tr>
<td>2015</td>
<td>10,80</td>
<td>16,0</td>
</tr>
<tr>
<td>2016</td>
<td>12,00</td>
<td>17,0</td>
</tr>
<tr>
<td>2017</td>
<td>13,20</td>
<td>18,0</td>
</tr>
<tr>
<td>2018</td>
<td>14,40</td>
<td>19,0</td>
</tr>
<tr>
<td>2019</td>
<td>15,60</td>
<td>19,5</td>
</tr>
<tr>
<td>2020</td>
<td>16,80</td>
<td>20</td>
</tr>
</tbody>
</table>
7.1. Public and private support for biogas projects

The public support system in Romania has 2 main pillars: 1) Binding quota and 2) Green certificate.

In July 2010 a new law made some changes to the existing RES-E system in Romania. Law makes a number of system changes to promote the existing RES-E related mainly:
- Duration of the scheme of promotion;
- GC awarded to 1 MWh of RES-E depending on the type technology, RES used, etc.;
- RES-E selling;

In late 2009, ANRE sent to the EC-DG Competition (through Competition Council and Permanent Representative of Romania in Brussels) a request for informal opinion on the character of GC scheme contained in Law 220/2008 (if it could be regarded as state aid). In 2009 the EC informed that the law 220/2008, as amended, does not involve state aid measures. The new law was published in July 2010.

I. Binding quota system combined with trading regimen, the scheme applies during operation and provides a central support for RES-E producer, for a maximum time span of 15 years (only for new investments). After 10 years, the scheme will be resented to the Commission European for further discussions and changes. Seen as continuous revenues.

II. Green certificate schema for renewable energy projects; The new law from 2010 is granting up to 3 GC for 1MW for biogas production.

National support
The existing system in Romania is a combination between the “binding quota trading system” with “Green Certificates”.

The scheme applies to RES electricity produced from the following: hydropower plants with an installed capacity of 10 MW, wind, solar energy, geothermal, biomass, biogas, digester gas waste gas, fermentation of the sludge from wastewater treatment plants waste and is delivered to the electricity network.

The producer of electricity from renewable energy sources is benefiting from the promotion system and is assuring the income from:
- selling the electricity to the electricity market;
- the sale of green certificates on the existing market for green certificates.

The number of green certificates will be influenced based on the used technology for generation of RES. The amendments to the Law 220/2008 approved by the Chamber of Deputies in 2010 provide:

a) for electricity from hydropower plants with installed capacity of not more than 10 MW:
   i) 3 Green certificates (GC) for each MWh generated and supplied if a hydropower plant is new;
   ii) 2 GC for each MWh generated and supplied if a hydropower plant is refurbished;

b) 1 GC for each 2 MWh from hydroelectric plants with a installed capacity of no more than 10 MW, which do not fall under the conditions letter. a);

b) 2 GC by the year 2017, and 1 GC, from 2018, for each 1 MWh produced and delivered using wind energy;

c) 3 GC for each 1 MWh produced and supplied by producers electricity sources from biomass;

d) 6 GC for each 1 MWh produced and supplied by producers using solar energy.
The current scheme will be an important contribution to achieving the quantitative targets the share of RES-E in total electricity consumption. Current projections show that this support scheme, completed with the schemes for investment will lead to a RES-E production of 32.1 TWh in 2020. Forecasts indicate that, due to economic crisis gross national electricity consumption will be 73.6 TWh in 2020 (compared to 85 TWh, which was the forecast value in Romania's energy strategy for the period 2007-2020). Under these conditions, E-RES share in total gross national electricity consumption in 2020 will be almost 43.5%.

**Other public financing sources (e.g. Ministry of agriculture or Environment)**

**Ministry of Environment - Romanian Environment Fund**

The new law (that brings changes to the former law 220/2008) is bringing in the same time punitive measures if the specified quota in table 1 is not respected. The amount of the penalty has increased to 110 Euro / certificate not purchased. This penalty is then collected and transferred to the Romanian Environment Fund to finance the production of energy from RES by individuals who want to invest in energy capacity installed power up to 100 kW.

**Green certificates**

In 2009 ANRE sent to DG Competition (through Competition Council) a request for informal opinion on the mechanism for differential allocation proposed by Law 220. If the DG competition will consider this mechanism as state aid, the notification scheme will then be officially approved by the Commission. Pending the decision of the Commission's authorization, the Law 220/2008 is only partially applied, meaning that the GC it is not applied differentiated based on technologies. The previous support mechanism is provided by GD 1892/2004. Provisions still apply for establishing the minimum and maximum limits to the amount of GC's namely between 27-55 Euro / GC.

The average price for 2009 for green certificates was 53.146 Euro / GC. For 2010 the average price for green certificates is 53.878 Euro/GC.

The producer of electricity from renewable energy sources is benefiting from the promotion system represented by: i) selling the electricity to the electricity market; ii) the sale of green certificates market for green certificates.
8. Slovenia

8.1. Public and private support for biogas projects

National support
The Slovenian energy policy is in favour of biogas plants development in order to increase the share of renewable energy sources, to reduce the GHG emissions and to increase the share of electricity produced from RES.

The construction of biogas plants is supported by the Slovenian government by the help of soft loans from the public Environmental Fund of the Republic of Slovenia and with the subsidization of investment documentation in the planning stage for the RES projects. One of the main stimulations is the guaranteed prices and premiums of electricity or the operating support, where every biogas operator may choose only one of them. The guaranteed purchase price consists of the difference between the operating support and the current electricity price, while the operating support is the current electricity price on the market.

Feed-in tariff system
In the year 2009 the Ministry of the Economy of the Republic of Slovenia, Directorate for Energy (which is in charge for the establishment of a legal framework for fostering of the RES use), adopted the new support schemes (the Decree is valid from 01.11.2009) for the electricity generated from renewable energy sources - Regulation on supports for the electricity generated from renewable energy sources (Official Gazette of the Republic of Slovenia № 37/2009).

This Decree sets up the following issues:
- the types of the energy technologies for production plants generating electricity from renewable energy sources (hereinafter: RES generating plants), which are eligible to support,
- the classification of RES generating plants by size categories, which are eligible to support,
- the detailed definition of support,
- the method of determining of reference costs for generating electricity from RES,
- the method of determining prices for guaranteed purchase of electricity produced in RES generating plants,
- the method of determining the level of support provided as operating aid for the current operation of RES generating plants,
- the conditions for obtaining support,
- the way of obtaining support,
- the way of receiving support,
- and other issues associated with the support for electricity generated from RES.

Biomass that can be used for biogas production in a biogas plant and electricity production receiving support is divided by sources:
- **B1:** Energy crops - wood or non-wood crops grown specifically for energy purposes.
- **B2:** Biodegradable fraction of products, residues and waste. This category includes biodegradable fraction of products, residues and waste from agriculture, including plant and animal substances.
- **C1, C2:** Biodegradable municipal and industrial waste. Biodegradable municipal and industrial wastes are biodegradable fractions of industrial and municipal waste, which are allowed to be used for energy purposes pursuant to regulations on the waste management.
**Size categories of RES generating plants (biogas plants).**

<table>
<thead>
<tr>
<th>Size category of a generating plant</th>
<th>Nominal electrical capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro (&lt; 50 kW)</td>
<td>&lt; 50 kW</td>
</tr>
<tr>
<td>Small (&lt; 1 MW)</td>
<td>&lt; 1 MW</td>
</tr>
<tr>
<td>Medium (1 – 10 MW)</td>
<td>1 – 10 MW</td>
</tr>
<tr>
<td>Large (10 – 125 MW)</td>
<td></td>
</tr>
</tbody>
</table>

The government support for the electricity produced in RES generating plants (biogas plants) comprises:

1. **Guaranteed purchase of electricity** (hereinafter: guaranteed purchase). Pursuant to this support, irrespective of the price of electricity on the market, the Centre for RES/CHP Support buys all the acquired net electricity produced, for which the RES generating plant has received guarantees of origin, at guaranteed prices set out in this Decree; or

2. Financial aid for current operations (hereinafter: **Operating support**). This support is allocated for the net electricity generated, for which a guarantee of origin has been received and which RES electricity producers sell themselves on the market or use for their own consumption, provided that the costs of producing this energy are greater than the price that can be obtained for it on the electricity market.

**Reference Costs in biogas plants using biogas obtained from biomass**

Reference costs cover the generation of electricity from biogas, produced from biomass that presents more than 75% of volume from the sources B1, B2.

<table>
<thead>
<tr>
<th>Size category of a generating plant</th>
<th>Fixed part of reference costs (EUR/MWh&lt;sub&gt;el&lt;/sub&gt;)</th>
<th>Variable part of reference costs (EUR/MWh&lt;sub&gt;el&lt;/sub&gt;)&lt;sup&gt;2,3&lt;/sup&gt;</th>
<th>Total reference costs (EUR/ MWh&lt;sub&gt;el&lt;/sub&gt;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro (&lt; 50 kW)</td>
<td>118.72</td>
<td>41.84</td>
<td>160.56</td>
</tr>
<tr>
<td>Small (&lt; 1 MW)</td>
<td>111.75</td>
<td>44.56</td>
<td>156.31</td>
</tr>
<tr>
<td>Medium (1 - 10 MW)</td>
<td>96.18</td>
<td>44.24</td>
<td>141.42</td>
</tr>
</tbody>
</table>

---

1 Reference costs at generating plants using biogas through the use of one or more types of substrate.
2 The variable part of reference costs shall be adjusted annually or more frequently based on the forecast reference market prices of maize silage substrate.
3 Variable costs for the year 2009.
Reference costs in biogas plants using biogas obtained from biodegradable waste

Reference costs cover the generation of electricity from biogas produced from biodegradable waste that contains more than 25% of volume share from sources C1, C2.

<table>
<thead>
<tr>
<th>Size category of generating plant</th>
<th>Fixed part of reference costs (EUR/MWh&lt;sub&gt;el&lt;/sub&gt;)</th>
<th>Variable part of reference costs (EUR/MWh&lt;sub&gt;el&lt;/sub&gt;)&lt;sup&gt;4&lt;/sup&gt;</th>
<th>Total reference costs (EUR/ MWh&lt;sub&gt;el&lt;/sub&gt;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro (&lt; 50 kW) and Small (&lt; 1 MW)</td>
<td>139.23</td>
<td>/</td>
<td>139.23</td>
</tr>
<tr>
<td>Medium (1 - 10 MW)</td>
<td>129.15</td>
<td>/</td>
<td>129.15</td>
</tr>
</tbody>
</table>

Guaranteed purchase prices

With regard to the RES used and the size category of a biogas plant, the guaranteed purchase prices are identical to the reference costs, and comprise two parts:

1. The fixed part of the guaranteed purchase price is identical to the fixed part of the reference costs and does not change throughout the duration of the Contract on guaranteed purchase;
2. The variable part of the guaranteed purchase price is identical to the variable part of the reference costs, where it is determined, and is adjusted annually or more frequently upon the publication of the reference prices of fuel.

Operating Support

Operating support shall be determined by deduction from the total reference costs for a biogas plant and size category, which are adjusted annually or more frequently depending on the reference costs of fuels, the price that electricity from the biogas plant could obtain on the current electricity market.

The following table shows the operating support for electricity from biogas plants using biogas obtained from biomass (B1 and B2).

<table>
<thead>
<tr>
<th>Size category of generating plant</th>
<th>Operating support (EUR/ MWh&lt;sub&gt;el&lt;/sub&gt;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro (&lt; 50 kW)</td>
<td>113.56</td>
</tr>
<tr>
<td>Small (&lt; 1 MW)</td>
<td>107.71</td>
</tr>
<tr>
<td>Medium (1 - 10 MW)</td>
<td>92.28</td>
</tr>
</tbody>
</table>

The table below shows the operating support for electricity from biogas plants using biogas obtained from biodegradable waste (C1 and C2).

---

<sup>4</sup> The variable part of reference costs, which depends on generated MWh, shall be ignored for the purposes of this Decree. The variable part of reference costs shall be adjusted annually or more frequently based on the Energy Agency’s forecast of the reference market for energy price.
## Size category of generating plant

<table>
<thead>
<tr>
<th>Size category of generating plant</th>
<th>Operating support (EUR/ MWh$_{el}$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro (&lt; 50 kW)</td>
<td>92.23</td>
</tr>
<tr>
<td>Small (&lt; 1 MW)</td>
<td>90.63</td>
</tr>
<tr>
<td>Medium (1 - 10 MW)</td>
<td>80.01</td>
</tr>
</tbody>
</table>

### Bonus

The Decree includes some novelties for biogas operators in a form of supplementary payment:

- **a)** if the annual useful heat deployment exceeds 15% of the biogas input energy, then the biogas plant is entitled to a supplementary payment in the amount of **10%** of operating support. The heat from biogas plants, which is used for obtaining of biogas, does not deemed as useful heat.
- **b)** if the manure and slurry input represent annually more than 30% of the substrate volume for obtaining of biogas, then the biogas plant is entitled to a supplementary payment in the amount of **10%** of operating support;
- **c)** if the manure and slurry input represent annually more than 70% of the substrate volume for obtaining of biogas, then the biogas plant with the nominal electrical capacity of up to 200 kW is entitled to a supplement in the amount of **20%** of operating support.

### Public subsidies

- **Financial subsidies**

RES generating plants in Slovenia are stimulated through the feed-in tariff system (please, see above) and therefore no additional subsidies are available. There is only one exception (EU and public call) appeared in 2009 for farmers, which had the opportunity to obtain subsidies in the amount of up to 50% of investment costs, which was issued by the Ministry of Agriculture, Forestry and Food – the measure 311 "Diversification into non-agricultural activities". In this example the guaranteed purchase priced is decreased (for each 10% of the received subsidy the price is decreased by 5%, etc.). For more information, please, see the Chapter 2.1.

- **Soft loans**

*Environmental Fund of the Republic of Slovenia* is a public fund offering within their calls some favourable credits for environmental and RES investments for companies and households, including biogas plants installation. The Fund encourages the development of environmental protection by providing loans or guarantees for environmental investments and other forms of assistance. The Fund promotes investments that comply with the National Environmental Action Plan and the European Union environmental policy.

**Authority:** Environmental Fund of the Republic of Slovenia  
**Public call:** *Public call for environmental investment loans 44PO10 (April 2010)*  
**Subject of the call:**

Credits of the Environmental Fund for environmental investments are entitled to corporate bodies, sole entrepreneurs and private individuals in the Republic of Slovenia. The amount of funds under this call amounts to € 20.000.000. The credit defines the project phase’s investments for:
1. A) Reducing greenhouse gas emissions for the following purposes:

2) installation or reconstruction of facilities for production of electricity from renewable energy sources that will gain or retain the Declaration for electricity generating plant on renewable sources, according to the valid regulations.

**Terms:**

- Facilities that will be renovated or newly built with a loan from Eco-Fund must not be intended for sale in the market.
- The highest share of the credit is 90% of the recognized cost of the investment.

**Credit Conditions:**

a) **Interest rate**
The minimum annual interest rate for the loans granted under this call is:

- for the purposes of the 1. A) 2): three-months EURIBOR + 1.5%, or at least the higher fixed extra payment that does not provide the country assistance, so that the amount of the total interest rate on the day of the first credit money order is equal to the applicable reference rate for calculating of the state aid in accordance with the Commission report on the revision of the method for setting the reference interest rates and discount rates, increased to 100 basis points, and

b) **Repayment period**
The repayment period is shorter or equal to the period of the investment refund, which is disclosed in the credit application. In any case, it may not exceed 15 years including the grace period. The moratorium on repayment of the principal is one year maximum.

c) **The amount of credit**
The amount of each loan is limited to € 2,000,000.00, the lowest amount of the loan is € 80,000.00.

**Tax and payback regulations**

**Regulation on the CO₂ Emission Tax**

On the base of the 4th paragraph of the Article 112 and 4th paragraph of the Article 113 of the Law on Environmental Protection, the Government of the Republic of Slovenia issued the *Decree on environmental tax for the pollution caused by emissions of carbon dioxide* first in 1996; later this regulation was amended in 2002 and finally in the 29.4.2005 (Official Gazette of the RS, No 43/2005).

**Article 1. Subject**

(1) This Regulation establishes the obligation to pay environmental taxes on air pollution caused by emissions of carbon dioxide from burning fuel or other combustible organic matter, liable for the environmental benefits and contributors to it, the basis for levying environmental tax, its amount and method of its calculation, assessment and payment.

(2) This Regulation establishes, in accordance with the Article 17 of the Council Directive 2003/96/EC of October 27, 2003 on restructuring of the Community framework for taxation of energy products and electricity, the conditions for the refund of environmental benefits, its exemption from or reduction in pay.
Article 11. Exemption from taxes
(1) The environmental tax from the combustion of fuel does not pay for the use of:
1. biomass for heating use;
2. solid, liquid or gaseous fuel, if produced from biomass;
3. animal by-products as fuel;
4. fuel in the device, for which the operator has obtained a permit to be a producer exempted from taxes, in accordance with this Regulation.

Article 15. Permission for a producer exempted from taxes
(1) A permission to be a producer exempted from taxes is issued by the customs authority on the basis of the device operator’s written application, who has a license for greenhouse gas emissions in the operating plant according to the regulations on environmental protection and energy-intensive company, if:

1. The device, for which one have obtained a permit to emit greenhouse gases, is carrying out an operation with the fuel from these Regulation.

The permission for a producer exempted from taxes is issued for one calendar year.

(5) The holder of the permission may apply for the permit prolongation.

Article 21. Operator of an installation of combined heat and power.
(a) The operator is entitled to a refund of the paid environmental taxes by the combustion of fuel, if one has acquired the status of qualified electricity producer in accordance with regulations governing the conditions for becoming a qualified producer of electricity.

Green certificates
RECS is an internationally recognized symbol for the system of certificates for energy from renewable sources (Renewable Energy Certificate System). The system was evolved from the European project and is cost effective and reliable for the certification of electricity from renewable sources in Europe.

RECS members have common rules - BC (Basic Commitment). Those ensure that across the Europe are used the same procedures for the issue and use of the RECS certificates. RECS is organized by countries. In Slovenia it is the Energy Agency of the Republic of Slovenia is in charge for issuing of RECS certificates.

The RECS system is issuing the standard certificates as a proof that the electricity produced from renewable sources. These certificates shall be applied throughout the Europe. The RECS certificates can also be traded, together with or without electricity. This means the organization of the market of energy from renewable sources, which fostering the construction of units for the production of energy from renewable sources in Europe.

Currently the Green certificates are not popular in Slovenia for biogas projects development due to the completion of the obtaining procedure.

Public Agency for Technology of the Republic of Slovenia (TIA).
For the advantage of the biogas projects there is also a Public Agency for Technology of the Republic of Slovenia (TIA) that was founded by the Republic of Slovenia in 2006. TIA is an independent public agency responsible for the enhancement of technology development and innovation in the Republic of Slovenia. TIA’s main activities are the grant programs aimed at technology development and fostering of cooperation of the R&D institutions and universities.
with industry. An important part of their activities are also the international projects. Through the cooperation with partners abroad TIA strives to develop new policies in technology development and services to the Slovenian industry. Public calls referred to biogas projects are also foreseen with this institution.

**Slovene Enterprise Fund (SEF)**

Slovene Enterprise Fund (SEF) is a central public financial institution of the Republic of Slovenia established in 1992 to improve the access to finance for different stages of development-commercial projects for micro-, small- and medium- sized companies in Slovenia.

Being the implementing institution of the Republic of Slovenia for the financial support among the entrepreneurial sector in Slovenia, every year SEF publish the state aids for the development and expansion of investments for SME's. SEF also closely cooperates with other domestic and international financial institutions, such as commercial banks, the SID Bank, the European Investment Fund (EIF) and the European Mutual Guarantee Association (AECM). Public calls referred to biogas projects are also foreseen with this institution.

**Private financing**

There is one more common financing method in Slovenia for financing biogas projects – **credits from private national banks**, which include two main types of financing: traditional financing by loans and project financing.

For **traditional financing** the credit conditions of the company or investor (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, it depends of the company, which is frequently 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 into biogas projects.

In the case of the **project financing**, the biogas project itself is regarded as legal entity. This tool is often used for projects, in which a few shareholders are involved (a few farmers). Main criteria of this future oriented concept are the rates of return and success of the project. Decisions regarding the loans are based on the assets and the cash-flow of the biogas project.

According to the research made by the Development Agency Sinergija, the national banks require the following **documentation from the investor in order to process the loan request** (documentation may differ):

1) Presentation of the borrower and the borrower's ownership structure description,
2) Spatial plan (detailed site plan, Building permit),
3) The borrower's business plan for the next year.
4) The business plan - essential to demonstrate the economics of the project - (documentation in relation to insurance, estimated value of the investment, schedule, project description, contracts (drafts): for the supply of raw materials, for implementation, for maintenance, the foreseen staff structure, marketing etc. );
5) Summary of the business plan;
6) The projected financial structure (own share, bank credit);
7) Estimated cash-flows for repayment of the bank loan (incomes, expenses, bank liabilities);
8) Balance sheet and income statement for the previous and current year (credit rating);
9) profit and loss, customer's balance sheet.

The main criteria of the banks for providing loans for biogas projects:
✓ The merit of the investments / reality / adequate future cash-flows with realistic assumptions of the project.
✓ The adequacy and experience of the borrower, the suitability of the operator (reference, financial stability).
✓ Adequately regulated relations between the participants in the project
✓ Adequate own share of the borrower and credit insurance.
✓ Type of financing.
✓ Selected technology.

The defined proportion of equity capital required for biogas projects should be at least 20% that can make possible a good financing performance. The private banks in Slovenia are prepared to finance biogas projects and usually have at least one dedicated expert in this sector.

8.2. Bottlenecks

Bottlenecks from the viewpoint of financing bodies
According to the research made by the Development Agency Sinergija among the financing bodies subjected to the financing procedures of biogas projects, we found out the following bottlenecks for the development of biogas market in Slovenia:
1. Most of the banks in Slovenia have biases against financing of biogas projects (high financial risks by the project implementation, unpredictable development);
2. Banks do not have confidence in biogas projects, as they consider the financial risk of credits for the projects in the field of biogas as much higher as in comparison to the credits for other projects in the field of renewable energy, because of the complexity of the investment and the very operation process;
3. Risks of delivery and contractual relationships for the inputs to produce the expected amount of biogas (maintenance or monitoring of the plant operating);
4. Significantly higher investment value and complexity of the device operation;
5. Borrowers have insufficient knowledge of the credits. Equity ratio is too small, the credit insurance is weak.

Bottlenecks from the viewpoint of project developers
According to the research made by Development Agency Sinergija among the biogas investors/operators subjected to the financing procedures of biogas projects, we found out the following bottlenecks for the development of biogas market in Slovenia:
1. Currently it is very difficult to get any bank loan in Slovenia, specifically for the implementation of biogas projects;
2. Bank employees are poorly informed about financing opportunities for biogas projects, only at certain banks it is possible to get a sufficient answer on such funding opportunities;
3. Sometimes it is difficult to communicate with the internal experts in the banks (in small banks they are not employed at all), who is responsible for the projects related to renewable energy, since the internal expert works alone, while the others are not entitled to these issues;
4. Banks do not offer any guidance on how to obtain credits for biogas projects and so they have no experience with such a financing;
5. It was difficult to find a bank willing to finance a biogas project;
6. Negotiations with the bank for a loan was lasted 8-50 weeks;
7. A lot of complex documentation is required for processing of the credit application, which requires at least 2-4 extra persons just for the preparation of relevant documentation;
6. Interest rates are too high;
7. Too much equity is required (at least 20%);
8. The calculations show that it does not worth to obtain grants or subsidies for the construction of a biogas plant, as this means a reduction in the subsidized purchase price of electricity;
9. The main bottlenecks in financing of biogas plants in Slovenia are the lack of knowledge about biogas projects in general from the side of the financing decision makers;
10. There are no training programs for bank employees subjected to the projects financing from the field of renewable energy.

9. Conclusion

In conclusion there are still several bottlenecks in all the financing procedures for biogas plants in the seven target countries. Some of them are almost the same and others are country specific.

In Bulgaria, a main bottleneck according to the financing bodies is that the farmers and investors do not have equity capital. From the viewpoint of project developers the survey shows that the main problems of the financial procedures are: the lack of low-interest loans and required high equity capital.

In Croatia, banks do not offer project financing, but only traditional loans. Only one bank provides financing in renewables (no special conditions) and had provided financing for the first biogas plant in Croatia. Banks are open for financing of a biogas investment under “normal” conditions but had a little or no knowledge about it and they are looking for technical support in evaluating renewable energy investment from its “mother bank”. Furthermore, banks are willing to enter biogas market if more bankable projects were available. From the viewpoint of project developers, the bottlenecks are related to high costs of financing plus high costs of permitting procedure. In general it was stated that banks do not trust biogas investments, and high debt/equity or warranties are needed.

In Czech Republic, the experiences in relation to negotiations with the banks are mixed. First, practically all the banks (staff) are positive towards the biogas project and it seems to be in a great interest to the banks. Then the banks start to "complicate" with documentation, thus the process of negotiation ones lasted up to 50 weeks. There is a lack of knowledge about biogas in general by the bank employees and the financing decision makers and often misunderstanding of the project specifics, when the biogas plant installation, its start-up and achievement of steady fermentation conditions, is completely different from, e.g. photovoltaic, that operates right after the installation.

On the other hand, with regard to the implemented interviews it was found out that irrespective to the national laws, which are inclined to biogas projects, the financing procedure for biogas projects in Czech Republic is frequently a complicated and long lasting process – about 1 years per biogas plant. Almost all interviewed biogas operators have been complaining about it. In parallel, the main bottlenecks for financing biogas plants were described as follows: a) poorly ensured feedstock capacity, b) ensuring of the areas for the digestate application, c) low level of prepared projects.

In Greece, many banks offer traditional loans and project finance. In most cases they have experience with other RES projects but their experience in biogas is rather limited. From the viewpoint of banks, the main bottlenecks for financing a biogas plant in Greece are related to: a) small size of investments, b) investors’ reliability (new entities with no experiences and records), c) public Incentives, d) feedstock contracts in a certain monetary value, e) biogas projects are relative new business area, f) not stable legislative and tax framework.
From the viewpoint of project developers the main bottlenecks are the following: a) banks does not finance new established companies, b) there are no alternative financing sources, c) own contribution, d) insufficient financing, e) banks little knowledge about biogas, f) high investments costs g) country current financial situation, h) general knowledge of biogas issues.

In Latvia, both private/business loan and project financing are provided for biogas projects. From the viewpoint of banks, the main bottlenecks are related to self-financing, the collateral, and project developer lack of experience. From the viewpoint of project developers the main bottlenecks are the following: a) currently very difficult to get loans from banks for biogas projects, b) project developers think that banks have biases against biogas projects, c) high equity capital that is required, d) the lack of government support and stable and organized legislation, as well as lack of stability in the biogas sector.

In Romania, the existing system is a combination between the “binding quota trading system” with “Green Certificates”. The scheme applies to RES electricity produced from the following: hydropower plants with a an installed capacity of 10 MW, wind, solar energy, geothermal, biomass, biogas, digester gas waste gas, fermentation of the sludge from wastewater treatment plants waste and is delivered to the electricity network. The producer of electricity from renewable energy sources is benefiting from the promotion system represented by: i) selling the electricity to the electricity market; ii) the sale of green certificates market for green certificates.

The number of green certificates is influenced based on the used technology for generation of RES. For electricity from biomass 3 green certificates per 1MWh is given. The average price for 2009 for green certificates was 53.146 Euro / GC. For 2010 the average price for green certificates is 53.878 Euro/GC.

In Slovenia the financing procedure for biogas projects is frequently a complicated and long lasting process (1-1.5 years per biogas plant). Almost all the interviewed biogas operators complained about it (except those, who were the first to install their biogas plants in Slovenia). Most of the banks in Slovenia have biases against financing of biogas projects (high financial risks by the project implementation, unpredictable development) and do not have confidence in biogas projects. Currently it is very difficult to get any bank loan in Slovenia, specifically for the implementation of biogas projects. The main bottlenecks in financing of biogas plants in Slovenia are the lack of knowledge about biogas projects in general from the side of the financing decision makers.

In all cases bankers should be familiarised with the technology and the key parameters of a biogas project. In addition, they should be familiarised with the permitting procedure and key documents that ensure that the biogas project will be feasible. On the other hand project developers have to face the implementation of the investment in biogas on a solid ground with fully prepared investment and feasibility study, long term feedstock supply contracts and necessary documents from permitting and financing procedure. Capacity building events in those two target groups will facilitate the process and are necessary and highly recommended.
10. References

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4. Sioulas K., George Kanavakis (2011), Financing options for biogas projects and its bottlenecks in Greece; Centre for Renewable Energy Sources and Saving (CRES); Report of the Project BiogasIN (IEE/09/848)
5. Ekodoma Ltd (2011), Assessment on Financing Options and Bottlenecks for Biogas Projects in Latvia; Report of the Project BiogasIN (IEE/09/848)
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7. Stanislav Sraka (2010), Financing options for biogas projects and its bottlenecks in Slovenia; Development Agency Sinergija; Report of the Project BiogasIN (IEE/09/848)
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ANNEX: Questionnaires Q2, Q3

Survey on Financing Procedures for Biogas Projects in XXXCountry

Questionnaire for Financing Organisations

Questionnaire Q2
D.5.3., WP 5

- Your Organisation name -
Include also your company logo!

date

This Project (Contract No. IEE/2003/SI.2-554364) is supported by:

Intelligent Energy [Europe]
The BiogasIN Project

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” Programme. The objective of BiogasIN is to effectively improve the framework conditions for the installation of new biogas plants in 7 Eastern European countries: Bulgaria, Croatia, Czech Republic, Greece, Latvia, Romania, and Slovenia.

BiogasIN consists of 10 European partner organisations. The project is coordinated by the Croatian Energy Institute “Iivoja Pozar”. The responsible partner for XXX Country is XXXYourOrganisation Name.

More information on the BiogasIN project is available on the website: www.biogas-in.org

Aim of the Survey

Simple and transparent financing procedures for biogas plants are an important prerequisite for the implementation of new biogas projects. In order to improve and simplify the financing procedures in XXXCountry, a survey is made with financing organisations. The results of this survey will be presented to the responsible authorisations and organisations involved in biogas financing procedures in XXXCountry.

The completion of the questionnaire takes only about 5 minutes.

This Questionnaire was elaborated by WIP Renewables Energies (www.wip-munich.de), Germany, in cooperation with XXXYour organisation Name.

Contact

Please send the Questionnaire back by email/fax/post as soon as you complete it but not later than 30 November 2010 to:

Company name
Name of person in charge
Address
Telephone
Telefax
Email:

You can also complete this Questionnaire directly at the web site: www.biogas-in.org

Thank you for your Contribution to Support the Biogas Development in XXXCountry!
1. General information on financing options

1.1 Does your organisation provide loans for renewable energy projects?
   □ Yes
   □ No
   □ I do not know

1.2 Does your organisation provide loans for biogas projects in particular?
   □ Yes
   □ No
   □ I do not know

1.3 Does your organisation employ a designated expert for renewable energies?
   □ Yes
   □ No
   □ I do not know

1.4 Does your organisation employ a designated expert for biogas projects?
   □ Yes
   □ No
   □ I do not know

1.5 Do you know about national commercial support programmes or low interest loans that support financing of renewable energy projects?
   □ Yes; please name them:
   a) __________________________________________
   b) __________________________________________
   c) __________________________________________
   d) __________________________________________
   □ No, I do not know
   □ There exist no national commercial support programmes or low interest loans in XXXCountry

1.6 Which financing do you offer for biogas projects?
   □ Private / business loan
   □ Project financing
   □ Both is provided
   □ We do not offer financing for biogas projects
   □ Other: __________________________________________
1.7 Does your organisation provide the option of a grace period (period without repayment to the loan provider) for biogas projects?
   □ Yes
   □ No
   □ Depends on: ____________________________________________________________

1.8 Is it, in your opinion, easier...
   □ ...to receive a loan for a small scale plant as a single investor/farmer, or
   □ ...to receive a loan for a medium/large scale plant as a consortium of investors/farmers.
   □ It makes no difference.

2. Prerequisites of your organisation for financing biogas projects

2.1 What are the main criteria of your organisation in providing loans for biogas projects?
   a) ____________________________________________________________
   b) ____________________________________________________________
   c) ____________________________________________________________
   d) ____________________________________________________________
   e) ____________________________________________________________

2.2 Name all the documentation your organisation requires from the investor in order to process the loan request:
   a) ____________________________________________________________
   b) ____________________________________________________________
   c) ____________________________________________________________
   d) ____________________________________________________________
   e) ____________________________________________________________
   f) ____________________________________________________________
   g) ____________________________________________________________
   h) ____________________________________________________________
   i) ____________________________________________________________
   j) ____________________________________________________________

2.3 Is a defined proportion of equity capital required for biogas projects?
   □ Yes, at least _________%
   □ No
2.4 How long do loan negotiations for biogas projects take on average? 
   Please insert number of weeks: __________________

3 General attitude towards biogas projects

3.1 How do you estimate the financial risk of financing biogas projects in general?
   □ Very high
   □ High
   □ Low
   □ Very low
   □ I do not know

3.2 What are the main risks for financing biogas projects?
   a) ________________________________________________________________
   b) ________________________________________________________________
   c) ________________________________________________________________

3.3 Please name the reasons for your answer given in 3.1 and 3.2!

3.4 How do you estimate the financial risk of a loan for biogas projects compared to loans for other renewable energy projects (such as wind power, solar power, geothermic plants...)?
   □ Much higher
   □ Higher
   □ No difference
   □ Lower
   □ Much lower
3.5 Please name the reasons for your answer given in 3.4!


3.6 Which are, in your opinion, the main bottlenecks for financing a biogas plant in XXXCountry?

a) 

b) 

c) 

4 Personal information (optional)

4.1 Please name the financial institute you are working for!


4.2 Which is your position in the bank?


4.3 How often has your organisation provided financing for biogas projects so far?

_______ times

4.4 How often has your organisation rejected financing for biogas projects so far?

_______ times

4.5 Have you ever participated in a training course targeting renewable energies?

☐ Yes; organized by: ____________________________

☐ No

Thank you for your Contribution to support the Biogas Development in XXXCountry!
Survey on Financing Procedures for biogas projects in XXX Country

The BiogasIN Project

The BiogasIN project “Development of sustainable biogas markets in Central and Eastern Europe” (Contract No. IEE/09/648) is supported by the European Commission in the “Intelligent Energy for Europe” Programme. The objective of BiogasIN is to effectively improve the framework conditions for the installation of new biogas plants in 7 Eastern European countries: Bulgaria, Croatia, Czech Republic, Greece, Latvia, Romania and Slovenia.

BiogasIN consists of 10 European partner organisations. The project is coordinated by the Croatian Energy Institute "Hrvoje Pozar". The responsible partner for XXX Country is XXXYourOrganisation Name.

More information on the BiogasIN project is available on the website: www.biogasin.org

Aim of the Survey

Simple and transparent financing procedures for biogas plants are an important prerequisite for the implementation of new biogas projects. In order to improve and simplify the financing procedures in XXXCountry, a survey is made with current and future biogas investors. The results of this survey will be presented to the responsible authorisations and organisations involved in biogas financing procedures in XXXCountry.

The completion of the questionnaire takes only about 5 minutes.

This Questionnaire was elaborated by WIP Renewable Energies (www.wip-munich.de), Germany, in cooperation with XXXYour organisation Name.

Contact

Please send the Questionnaire back by email/fax/post as soon as you complete it but not later than 30 November 2010 to:

Company name
Name of person in charge
Address
Telephone
Telefax
Email

You can also complete this Questionnaire directly at the web site: www.biogasin.org

Thank you for your Contribution to Support the Biogas Development in XXXCountry!
1 General issues

1.1 Have you already implemented a biogas plant in XXX Country?
   - Yes
   - No
   - I am planning to build a biogas plant
   - I tried to build a biogas plant, but gave it up, due to the following reason:

---------------------------------------------------------------


1.2 What is your knowledge about biogas?
   - Excellent knowledge
   - Good knowledge
   - Medium knowledge
   - Very little knowledge
   - No knowledge at all

2 General satisfaction with financing procedures in XXX Country

Please judge the following statements:
“It is currently very difficult to get the following loans in XXX Country...”

2.1 Any loans in general
   - Strongly disagree
   - Disagree
   - Neither agree nor disagree
   - Agree
   - Strongly agree

2.2 Loans for biogas projects
   - Strongly disagree
   - Disagree
   - Neither agree nor disagree
   - Agree
   - Strongly agree
   - I do not know
3  Satisfaction about banks in XXXCountry

3.1  Are employees of banks informed about financing options for biogas projects?
   □ Yes, at which banks? ______________________________________________________
   □ No
   □ I do not know

3.2  Did banks forward you to an bank-internal specialist for renewable energy projects?
   □ Yes, which banks? ______________________________________________________
   □ No, they did not forward me to a specialist
   □ No, I did not approach any bank for biogas financing

3.3  Do you think that banks in XXXCountry have biases against biogas projects (e.g. high financial risk, unforeseeable development...)?
   □ Yes
   □ No
   □ I do not know

4  General access to information on biogas financing programs

4.1  Do you know any national or European support programs for financing of biogas projects?
   □ Yes, please name them:
   a) ______________________________________________________
   b) ______________________________________________________
   c) ______________________________________________________
   □ There are no programmes available
   □ I do not know

4.2  Do banks or public authorities offer guidelines or checklists for financing in biogas projects?
   □ Yes, but only offered by banks
   □ Yes, but only offered by public authorities
   □ Yes, such guidelines are offered by both, banks and public authorities
   □ Yes, such guidelines are offered by: __________________________________________
   □ No
   □ I do not know

4.3  Do you know who can provide information on financing options for biogas projects?
   □ Yes, who? ______________________________________________________
   □ No
5 Personal experience with financing of biogas projects

If you have not yet implemented a biogas plant, please skip questions 5.1 – 5.6 and go on with chapter 6!

5.1 Which type of financing did you use?

☐ Financing by banks:
  ☐ Project financing ☐ Traditional Loan Financing
  ☐ Private investment
  ☐ Other: _____________________________________________________________

5.2 Did your home bank provide you loans for your biogas project?

☐ Yes, my home bank gave me the loan
☐ No, I had to go to another bank to finance my project
☐ This question does not apply

5.3 Did you choose a bank in XXXCountry or a foreign bank for financing of your biogas project?

☐ A bank in XXXCountry
☐ A foreign bank
☐ This question does not apply

5.4 How long did negotiations with banks take?

________ weeks

5.5 How difficult was it, to find a bank willing to finance your biogas project?

☐ Very easy
☐ Easy
☐ Difficult
☐ Very difficult

5.6 Which documentation did the bank require in order to process your loan request?

a) _________________________________________________________________

b) _________________________________________________________________

c) _________________________________________________________________

d) _________________________________________________________________

e) _________________________________________________________________

f) _________________________________________________________________
6 Reasons for unfavourable financing procedures for biogas projects

6.1 What are the main problems for financing procedures in XXX Country?
(You can also choose several options)
- Banks have no trust in biogas projects.
- There are no low interest loans provided by national financing authorities.
- Too much documentation is required in order to process the loan request.
- Bank employees do not have any experience with financing of biogas projects.
- Too much equity capital is required.
- Interest rates are too high.
- Other: Please describe in 6.2!

6.2 Which are, in your opinion, the main bottlenecks for financing biogas plants in XXX Country?

a) __________________________________________________________________________________

b) __________________________________________________________________________________

c) __________________________________________________________________________________
7 Personal information (optional)

7.1 Please name your profession:

________________________________________________________________________

7.2 Have you ever participated in a training course targeting renewable energies?

☐ Yes; organized by: __________________________________________________________________________

Course title: ________________________________________________________________________________

☐ No

7.3 Please name your motivation for the implementation of a biogas plant


Thank you for your Contribution to support the Biogas Development in XXXCountry!