



**Promotion of biogas and its market development through local and regional partnerships**

(Contract N°: EIE/07/225/SI2.467622)

Task 2.1

**Country specific conditions for the implementation of biogas technology**

**Comparison of Remuneration**

25<sup>th</sup> June 2010

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# Country Specific Conditions Comparison of Remuneration



## 1 Introduction

The following document gives an overview on remuneration for energy produced from biogas in 9 EU countries (Austria, Belgium, England and Wales, France, Germany, Italy, Poland, Slovenia and Spain) as regulated for the year 2010. Most commonly, biogas is converted to electricity and heat. The electricity is sold (fed-in) to the (public) electricity grid. The heat is used or sold locally. New developments are made in order to use biogas as a fuel for transport or to inject it directly into the gas grid.

Regarding the feeding-in of biogas-electricity to the electric grid, there are mainly 2 systems in use across the EU: **feed-in tariffs** and **certificates** (quota). In some countries, fiscal incentives are additionally given. Chapter 2 verbally summarises the system specifications. Chapter 3 compares the remuneration for electricity in values.

For more information on the Biogas Regions Project, please visit [www.biogasregions.org](http://www.biogasregions.org).

## 2 Qualitative Description of Remuneration System

### **Austria**

In Austria, the “*Ökostromgesetz*” (Eco-Power Law) regulates the **feed-in tariffs** since 2002. Currently the “*Ökostromgesetz 2008*” (BGBl I Nr. 114/2008, 8.8.2008) is in force. The tariffs are published in the “*Ökostromverordnung 2010*” (BGBl II Nr. 42/2010, 2.2.2010). The remuneration is calculated based on the amount of green electricity that is fed into the grid. A minimum overall efficiency of 60% for electricity and heat production is required. The tariffs are guaranteed for 13 years. A use of non-agricultural substrates reduces the tariff by 20%. The tariffs depend on the size (el. capacity) of the plant and range between 18.5 €/kWh (250 kW<sub>el</sub> only agricultural substrates) to 10.4 €/kWh (>500 kW<sub>el</sub> mixed substrates). The heat can be sold freely on the market. A feeding in of biogas into the gas grid is possible with many restrictions (CH<sub>4</sub> content, cleaning of the gas, compression, ...) and in practice not yet competitive. More information is found at: <http://www.e-control.at/de/marktteilnehmer/oeko-energie/einspeisetarife>

### **Belgium**

In Wallonia, the remuneration system of “green” energy is regulated by the Walloon Government Decree (WGD) of 30<sup>th</sup> November 2006 (modified by the WGD of 25<sup>th</sup> January 2007 and 20<sup>th</sup> December 2007) related to the promotion of power produced by renewable energy or cogeneration.

It describes the mechanism of the **green certificates** (GC) that is in operation since the 1<sup>st</sup> October 2002. A green certificate is a transferable certificate issued to producers of green power for a number of kWh generated which is equal to MWh<sub>e</sub> divided by the carbon dioxide saving rate. This saving rate is calculated by dividing the carbon dioxide gain achieved by the system under consideration by the carbon dioxide emissions of the traditional reference electric system (steam and gas turbine) defined and published annually by the Walloon Commission for Energy. The carbon dioxide emissions are those generated by the green power generation as a whole and include fuel production, emissions during combustion if applicable, and waste processing if applicable but also the transportation of external wastes or fuel consumption for energy crops. The price of Green Certificates is guaranteed at a minimum price of 65 €/GC for a period of 15 years. But the average value is around 90€/GC and depends on the GC virtual market. The green producer may sell the green certificates to different actors of the market (power supply companies, the transmission system operator ELIA, the Federal



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Government). For plants with a capacity higher than 5 MW, the system is the same except for the carbon dioxide saving rate that is diminished.

On top of the GC, the remuneration of power depends on the prices of the market, remuneration of heat is decided by the seller.

For the remuneration of biogas as biofuel or injected into the grid, there is no application in Belgium for the moment.

## **England and Wales**

The system in the UK is reasonably complicated because there is a choice of tariffs available to an AD plant owner since the introduction of Feed-in Tariffs on the 1<sup>st</sup> April 2010. The system will change again on the 1<sup>st</sup> April 2011 when the Renewable Heat Incentive (RHI) is introduced.

Electricity from biogas is eligible for Renewable Obligation Certificates (double) at any size or for the Feed-in Tariff (FiT) at below 5 MW. The developer can decide which tariff to opt for. Only installations completed post July 15<sup>th</sup> 2009 are eligible for the FiT and RHI. Bio-methane injected into the grid is currently unsupported but will be eligible for Renewable Heat Incentive payments from 1<sup>st</sup> April 2011. The level of that support, along with the extent to which heat production is supported, has been subject to consultation and the final regulations are awaited.

## **France**

The «*Arrêté du 10 juillet 2006 fixant les conditions d'achat de l'électricité produite par les installations qui valorisent le biogaz NOR: INDI0607869A* » is the statement of the 10th July 2006 laying down the terms of injection to the grid the electricity produced by biogas plants.

The biogas cogeneration rate has risen since July 2006. It is made up of three components: a cogeneration rate of 0.09 €/kWh<sub>el</sub> (depending on the power of the equipment), an AD bonus of 0.02 €/kWh<sub>el</sub> and an energy efficiency bonus of up to 0.03€/kWh<sub>el</sub>, if there is a total energy efficiency of more than 75%. If there is thermal valorisation, the rate can rise to 0.14 €/kWh<sub>el</sub>. Since 2006, there is an actualization rate in July 2009 (K = 1,09411) that changes the amount.

Summary of tariffs:

- *cogeneration rate* – 2010 tariff
  - o plants smaller than or equal to 150 kW<sub>el</sub>: **9.8** €ct/kWh<sub>el</sub>
  - o plants larger than 150 kW<sub>el</sub> until 2 MW<sub>el</sub>: **9.8 to 8.2** €ct/kWh<sub>el</sub> (linear interpolation)
  - o plants larger than 2 MW<sub>el</sub>: **8.2** €ct/kWh<sub>el</sub>
- *methanisation bonus* of **2.2** €ct/kWh<sub>el</sub>
- *total overall efficiency*
  - o total efficiency (valorisation) in terms of heat and electricity that is sold and/or used
  - o total efficiency smaller than 40%: **no bonus**
  - o total efficiency between 40% and 75%: **0 to 3.3** €ct/kWh<sub>el</sub> (linear interpolation)
  - o total efficiency above 75%: **3.3** €ct/kWh<sub>el</sub>

The global energy efficiency (heat and electricity, sold and/or used) of the plant has to be up than 75% to receive a maxima bonus. The heat can be sold freely on the market. There isn't legal tariff for gas grid injection

## Germany

In year 2000 the EEG (Erneuerbare Energien Gesetz – renewable energies law) became law, which was renewed in 2004 and 2009. The EEG regulates the **feed-in tariffs** for all renewable energies. The tariff depends on:

- size ( $\text{kW}_{\text{el}}$ ) and age of the plant (see table below)
- feedstock (energy crops, waste, liquids...)
- technology (innovations in machinery/technique)
- combined heat and power (CHP) (efficient utilization of produced heat)
- guaranty of remuneration for 20 years (falling 1.0%/year since 2009)

The feed-in-tariffs (EEG 2009) are shown in the following table:

EEG 2009: tariff in €/kWh by plant size	up to 150 $\text{kW}_{\text{el}}$	151 to 500 $\text{kW}_{\text{el}}$	501 kW to 5 $\text{MW}_{\text{el}}$	5 to 20 $\text{MW}_{\text{el}}$
basic prices (year of start-up = 2009)	11.67	9.18	8.25	7.79
renewable resources bonus	7	7	4	-
slurry bonus (> 30 mass %)	4	1	-	-
landscape maintenance bonus (> 50 mass %)	2	2	-	-
form-aldehyde bonus	1	1	-	-
bonus for new technologies	2 (1)	2 (1)	2 (1)	-
CHP bonus	3	3	3	3

The period of payment is guaranteed for 20 years. For plants which are started running during the following calendar years the payment sink yearly by 1%. Plants with a size > 5  $\text{MW}_{\text{el}}$  receive the feed-in-tariffs only if they use cogeneration of heat and power.

To receive the slurry or the landscape maintenance bonus the amount of 30 mass % (slurry) or 50 mass % (landscape maintenance) must be certified by an expert.

The technology bonus of 2 €/kWh will be granted if new technologies are used for example electricity generation with fuel cells, gas turbine etc. If the biogas is processed the operator receives 2 €/kWh for plants which processes raw-biogas up to 350  $\text{m}^3/\text{h}$  and 1 €/kWh for plants which processes raw-biogas up to 700  $\text{m}^3/\text{h}$ .

## Italy

Renewable energy sources producers can apply for the emission of green certificates (CV).

There are two kinds of applications:

- Final balance, according to net energy actually produced by the plant in the year previous to the application for green certificates;
- Estimation, according to foreseen net productivity of the plant.

The “estimation” green certification can be required for the current year or for the following year.

For the renewable energy plants that started operating between 1st April 1999 and 31st December 2007 the green certificates are granted for 12 years.

The **Financial Law 2008 and the Law 29th November 2007 n. 222** introduced relevant news about the support to energy produced by renewable energy sources plants.

Following the producer’s application, as an alternative to green certificates, a fixed tariff, depending on the renewable source will be granted for 15 years. This mechanism includes plants that started the activity after 31st December 2007 with an average nominal annual power up to 1 MW. At the end of

the 15 years electric energy is paid following the same procedure under economic conditions included in article **13 of the Legislative Decree n. 387/2003**. The fixed tariff can vary every 3 years with a Ministerial Decree in order to assure the right remuneration to foster renewable energy sources. Starting from 2008 the green certificates are worth 1 MWh and they are granted by the GSE. The reference price is 112.82 € per MWh, VAT net. It is calculated as the difference between: the reference value of 180.00 € per MWh and the average value of the selling price of electric energy 2007 equals to 67.18 € per MWh.

## **Poland**

In Poland the main law for the energy from the renewable sources is “Prawo Energetyczne” – Energy Law. This law is being renewed almost every year. The most important change to this law was made on 1st October 2005. This document introduced the green certificates. In Poland the producer of the renewable electricity can obtain income from the two sources:

- (I) The price of the electric energy, which is guaranteed, and represents average price of the electric energy on the market in the previous year,
- (II) The price of the certificate of origin, which depends from the present rate on the Energy Stock Exchange

Electricity - production of the electricity and heat requires licence. The licence is given by the “Energetic regulation office” for 10 to 50 years. To receive the license the “decision about the facility location and terrain development” is obligatory.

In Poland the operator of the electricity grid is obligated to buy the energy and heat that is produced from the renewable materials (green certificate). It is also obligated to build the grid to the plant but it is not specified how long it should take. There is no difference between the prices of energy produced from different renewable sources. The el. power capacity of the plant does not influence the plant either. The price depends only from the average price of the electric energy on the market in the previous year and from the present rate on the Energy Stock Exchange.

The average price of the electric energy on the market in the year 2007 was 197.21 zł/MWh which gives in current rate 47.87 €/MWh or 4.8 €ct/kWh. The price of the certificate of origin on the Energy Stock Exchange on 1st June 2010 was 273.03 zł/MWh which gives in current rate 66,7 €/MWh, 6.6 €ct/kWh. The current exchange rate is 4,12.

## **Slovenia**

One of the tasks of Ministry of the Economy, Directorate for Energy in Slovenia is the establishment of a legal framework for promoting the use of renewable sources. In the year 2009 there are new support schemes for electricity generated from renewable energy sources (valid from 1.11.2009).

In this Decree the following issues are laid down:

- the types of energy technologies for production plants generating electricity from renewable energy sources (hereinafter: RES generating plants) which can receive support,
- the classification of RES generating plants that can receive support into size categories,
- a detailed definition of support,
- the method of determining reference costs of generating electricity from RES,
- the method of determining prices for guaranteed purchase of electricity produced in RES generating plants,



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- 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 biogas plant and electricity production receiving support broken down by source

- B 1 Energy crops - Energy crops are wood or non-wood crops grown specifically for energy purposes
- B 2 Biodegradable fraction of products, residues and waste. This category includes biodegradable fraction of products, residues and waste from agriculture, including plant and animal substances.
- C 1, C 2 Biodegradable municipal and industrial waste. Biodegradable municipal and industrial wastes are biodegradable fractions of industrial and municipal waste, which are allowed to be used of energy purposes pursuant to regulations on the waste management.

The following table categorizes RES generating plants (biogas plant) by plant size:

Size category of generating plant		Nominal electrical capacity
1.	Micro	< 50 kW
2.	Small	< 1000 kW
3.	Medium	1 – 10 MW
4.	Large	over 10 up to 125 MW

Support for electricity produced in RES generating plants (biogas plant) 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 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<sup>1</sup>

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

Size category of generating plant	Fixed part of reference costs (EUR/MWh <sub>el</sub> )	Variable part of reference costs (EUR/MWh <sub>el</sub> ) <sup>2,3</sup>	Total reference costs (EUR/MWh <sub>el</sub> )
Micro (< 50 kW)	118.72	41.84	160.56
Small (< 1 MW)	111.75	44.56	156.31
Medium (1 - 10 MW)	96.18	44.24	141.42

<sup>1</sup> Reference costs at generating plants using biogas through the use of one or more types of substrate.

<sup>2</sup> The variable part of reference costs shall be adjusted annually or more frequently based on the forecast reference market prices of maize silage substrate.

<sup>3</sup> Variable costs for 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 of sources C1, C2

Size category of generating plant	Fixed part of reference costs (EUR/MWh <sub>el</sub> )	Variable part of reference costs (EUR/MWh <sub>el</sub> ) <sup>1</sup>	Total reference costs (EUR/MWh <sub>el</sub> )
Micro (< 50 kW)	139.23	/	139.23
Small (< 1 MW)		/	
Medium (1 - 10 MW)	129.15	/	129.15

<sup>1</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 reference market prices of energy.

## Guaranteed purchase price

With regard to the RES used and the size category of the 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 this is determined, and is adjusted annually or more frequently upon publication of the reference prices of fuel.

## Operating Support

Operating support shall be determined by deducting from the total reference costs for an 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 electricity market.

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

Size category of biogas plant	Operating support (EUR/MWh <sub>el</sub> )
Micro (< 50 kW)	113.56
Small (< 1 MW)	107.71
Medium (1 - 10 MW)	92.28

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

Size category of biogas plant	Operating support (EUR/MWh <sub>el</sub> )
Micro (< 50 kW)	92.23
Small (< 1 MW)	90.63
Medium (1 - 10 MW)	80.01

## Bonus

There is also a novelty in the decree **bonus – extra pays (supplement)**. Where the annual useful heat deployment exceeds 15% of the input biogas energy, the biogas plant shall be eligible to **supplement in the amount of 10% of operating support** for this biogas plant. Heat from biogas plants used for obtaining biogas shall not be deemed to be useful heat.

Where manure and slurry represent annually more than 30% of the volume of substrate for obtaining biogas, the biogas plant shall be eligible to **supplement in the amount of 10% of operating support** for this biogas plant.

Where manure and slurry represent annually more than 70% of the volume of substrate for obtaining biogas, the biogas plant with nominal electrical capacity of up to 200 kW shall be eligible to **supplement in the amount of 20% of operating support** for this biogas plant.

## Spain

In Spain, the first regulation where it was told about electricity regulation from RES was the Spanish Royal Decree 2366/1994. While the first time was told the difference between the terms “ordinary” and a “special” electricity was in the Spanish Law 54/97 of the electricity sector. Where “special regulation” group was made reference for installations which used renewable energy sources, residues or cogeneration.

After that then Spanish Royal Decree 2818/1998, about electricity production by installations supplied by renewable energy resources, residues or cogeneration was passed. Currently the Spanish Royal Decree 661/2007 regulates the electricity production activity in special regime.

The last update of the compensation scale of the electricity distribution, calculation and review has been established in the Spanish Royal Decree 222/2008.

The last year was very active regarding launch legislation regarding special regime electricity production, installation etc ...

The Royal Decree Law of 6/2009, de 30 de April, adopts specific measures in energy sector and it is approved the social bonus. This Law includes a new requirement for electricity producers in special regime and the Registration in the pre-assignment register in the General Directorate of Energy and Mines Policy. For carrying out this registration some requirements are also need:

- Grid connexion-evacuation fixed with the electrical company
- Administrative authorisation
- Working license
- Bank guarantee for requesting the access to the electrical grid
- To have enough financial resources (own or 3rd parts) for covering the 50% of the installation
- To have an agreement of buying the 50% of the equipment with the manufacturer
- Favourable inform of water uses (if it would be need)
- To deposit a bank guarantee of 20 €/KW in the Saving Bank of Deposits of the General Administration

This new step will made the period of procedure and construction longer.

Also the Royal Decree 485/2009 regulates the carry out of “last resource” supply in the electric energy sector.

The Spanish Order ITC/3519/2009 reviews the access toll to the grid from first of January 2010, the tariffs and the bonus for installations in “special” regime. It is the Minister of Industry, Tourism and Commerce who is in charge of review the tariffs every 6 months. In this Order is also quoted that every market generator, in ordinary or special regime has to pay the Market Operator by each installation up to 1MW of net or installed power, the fixed quantity of 15.30 €/MW of available power.

The remuneration is calculated based on the amount of renewable electricity that is fed into the grid. A minimum overall efficiency of 45% for electricity and heat production is required for biogas in the case of plants of el. capacity) ≤100 MW. The tariffs are guaranteed for 15 years, but in the case of fix tariff there is even a guarantee after 15 years but with a lower tariff. There is no extra bonus for electricity production in special regime from biogas if the feedstock is agricultural substrates (energy crops). It is the same than from sludge, manure, urban residues, industrial organic residues etc...The tariffs depend on the size (el. power capacity) of the plant. On the other hand the Power guarantee has a remuneration about 2 €/MW of elec. power capacity installed and by hour.

The heat can be sold freely on the market but there are no initiatives in this way. A feeding in of biogas into the gas grid is not possible by the lack of regulation.

There are two ways of calculate the price of the fed electricity produced in special regime in Spain.

The operator can choose between the options – currently on an annual basis:

- the fixed regulate tariff ranges
- the market pool depends on the market price for electricity and ranges from 6.5870 to 10.8104 €/kWh and there are an upper limit and a down limit.

<b>Elec. capacity</b>	<b>Period</b>	<b>Fixed Tariff €/kWh</b>	<b>Market pool €/kWh</b>
≤500 kW	first 15 years	13.8262	10.8104
≤500 kW	> 15 years	6.8872	-
≥500 kW	first 15 years	10.2409	6.5870
≥500 kW	> 15 years	6.8872	-

Tariff without CHP:

	<b>Elec. capacity</b>	<b>Period</b>	<b>Fixed Tariff €/kWh</b>	<b>Market pool €/kWh</b>	<b>Upper limit €/kWh</b>	<b>Down limit €/kWh</b>
Biogas from landfill:		first 15 years	8.4551	4.4721	9.4792	7.8711
		> 15 years	8.8872	-	-	-
Biogas generated in digesters:	≤500 kW	first 15 years	13.8262	10.8104	16.2182	13.0656
	≤500 kW	> 15 years	6.8872	-	-	-
	≥500 kW	first 15 years	10.2409	6.587	11.6691	10.1033
	≥500 kW	> 15 years	6.8872	-	-	-

Tariff with CHP:

	<b>Elec. capacity</b>	<b>Period</b>	<b>Fixed Tariff €/kWh</b>	<b>Market pool €/kWh</b>
Biogas from landfill:		first 15 years	8.7071	4.79
		> 15 years	7.0925	-
Biogas generated in digesters:	≤500 kW	first 15 years	14.1207	11.1433
	≤500 kW	> 15 years	7.0339	-
	≥500 kW	first 15 years	10.5369	6.9292
	≥500 kW	> 15 years	7.0862	-

### 3 Quantitative Comparison

On the next page, the remuneration of 4 different types of wet fermentation (< 15% DM) biogas plants is compared in figures:

<b>substrates (feedstock)</b>	<b>size – el. capacity [kW]</b>	<b>operation time [h/year]</b>	<b>el. energy [MWh/year]</b>
agricultural	100	8000	800
	500		4000
	1000		8000
non-agricultural (wastes)	100		800
	500		4000
	1000		8000



## Electricity from Biogas – Comparison of Remuneration in 2010

country	time <sup>1</sup> of authorisation [months]		remuneration for electricity [€/kWh] (excl. VAT)					
	con- struction	operation	agricultural substrates			non-agricultural substrates		
			100 kW <sub>el</sub>	500 kW <sub>el</sub>	1 MW <sub>el</sub>	100 kW <sub>el</sub>	500 kW <sub>el</sub>	1 MW <sub>el</sub>
Austria	6 - 18	3 - 12	18.5	16.5	13.0	14.8	13.2	10.4
Belgium	4,5 - 8	4,5 - 8	19.8	19.8	19.8	20.3	20.3	20.3
England and Wales	2 - 18	3 - 12	15.5	15.5	13	15.5	15.5	13
England and Wales-ROCs	2 - 18	3 - 12	12	12	12	12	12	12
France	18	10	9.8-15.3 <sup>6</sup>	9.5-15 <sup>6</sup>	9.1-14.6 <sup>6</sup>	9.8-15.3 <sup>6</sup>	9.5-15 <sup>6</sup>	9.1-14.6 <sup>6</sup>
<sup>2</sup> Germany	6 - 12	3 - 9	11.7 <sup>3</sup> - 30.7 <sup>4</sup>	9.2 <sup>3</sup> - 25.2 <sup>4</sup>	8.3 <sup>3</sup> - 19.3 <sup>4</sup>	11.7 <sup>3</sup> - 19.7 <sup>5</sup>	9.2 <sup>3</sup> - 17.2 <sup>5</sup>	8.3 <sup>3</sup> - 15.3 <sup>5</sup>
Italy	1 <sup>7</sup>	6 <sup>8</sup>	28 <sup>9</sup>	28 <sup>9</sup>	28 <sup>9</sup>	18 <sup>9</sup>	18 <sup>9</sup>	18 <sup>9</sup>
			28 <sup>10</sup>	28 <sup>10</sup>	28 <sup>10</sup>	20 <sup>10</sup>	20 <sup>10</sup>	20 <sup>10</sup>
Poland	6 - 18	6 - 12	11.4	11.4	11.4	11.4	11.4	11.4
Slovenia	6 - 24	6 - 12	15.6 <sup>11</sup>	15.6 <sup>11</sup>	14.1 <sup>11</sup>	13.9	13.9	12.9
			-18.9 <sup>12</sup>	-17.8 <sup>12</sup>	-16.0 <sup>12</sup>			
Spain	12-24	6-12	13.8	10.2	10.2	13.8	10.2	10.2

<sup>1</sup> time span that is needed for authorisation procedures, starting from the submission of the application documents to the authorities

<sup>2</sup> feed-in-tariffs (2009), plants which are started running during the following calendar years the payment sink yearly by 1%

<sup>3</sup> only basis price

<sup>4</sup> includes basis price and all bonus without the landscape maintenance bonus

<sup>5</sup> includes basis price, formaldehyde bonus (up to 500 kW<sub>el</sub>), technology bonus, technology bonus (processes raw-biogas up to 350 m<sup>3</sup>/h) and CHP bonus

<sup>6</sup> minimum prices only consider the cogeneration rate (tariff 2010), maximum prices include cogeneration rate, methanisation bonus and the maximum overall efficiency bonus.

<sup>7</sup> if the plant power is up to 150 kW the owner has only to produce the Municipality "Denuncia di Inizio Attività"

<sup>8</sup> if the plant power is over 150 kW and the Autorizzazione Unica gives permission of construction and to operation

<sup>9</sup> option "fixed tariff"

<sup>10</sup> option "green certificates"; factor K = 1.8 (agricultural substrates) or K = 0.8 (non-agricultural substrates); a revenue due to energy sales of 8 €/kWh is included

<sup>11</sup> base price

<sup>12</sup> base price with different **bonus – extra pays (supplement)**

For further Information, please visit [www.biogasregions.org](http://www.biogasregions.org) or **contact:**

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