Belgian report on implementing the objectives set in compliance with Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market (OJEC L283 of 27/10/2001)

Table of contents

TABLE OF CONTENTS **2**
LIST OF TABLES AND FIGURES IN THE REPORT **4**
INTRODUCTION **6**
FEDERAL STATE **7**
I. CURRENT OBJECTIVES (ART.3) 7
II. STATISTICS (2002-2008) 7
III. SUPPORT SCHEMES (ART.4) 7
1. Tariff support *7*
2. Exemption from federal taxes *8*
3. Tax reductions for energy saving investments *8*
4. Installation of photovoltaic solar panels in public buildings *9*
5. Additional measures *9*
IV. GUARANTEE OF ORIGIN (ART.5) 9
V. CURRENT OFF-SHORE PROJECTS AND PLANNED PRODUCTION FOR 2010 10
1. North Sea Projects (continental shelf under Belgian jurisdiction) *10*
2. Contribution of the North Sea projects to the 2010 objective *10*
WALLOON REGION **11**
I. CURRENT OBJECTIVES (ART.3) 11
II. STATISTICS (1997-2008) 11
1. Allocation of the guarantee of origin labels *20*
2. Use of the guarantee of origin labels *21*
3. Sanctions *21*
4. Guarantee of origin labels from outside the Walloon Region *21*
5. Guarantee of origin labels granted in 2008 ..... *21*
VLAAMSE GEWEST **23**
BRUSSELS-CAPITAL REGION **27**
I. CURRENT OBJECTIVES (ART.3) 27
II. STATISTICS 27
1. Electricity consumption *27*
2. Photovoltaic panels *28*
3. Biomass cogeneration *30*
4. Wind energy *30*
5. Biomass (wood) *30*
III. SUPPORT SCHEMES (ART.4) 33
1 Subsidising the Brussels-Capital Region *33*
2 Green electricity certificates *34*
3 Tax reduction and credits *36*
V. MEASURES TO INCREASE THE SHARE OF RENEWABLE ENERGIES 36
PLANS FOR 2010 – NATIONAL SYNTHESIS **42**
I. GROSS ELECTRICITY CONSUMPTION PLANS IN 2010 42
II. ATTAINING THE BELGIAN OBJECTIVE OF 6% FOR 2010 42
1. Aggregated RES-E production statistics 2002-2007 ..... *42*
2. 2008-2010 RES-E production projections *43*
3. Synthesis *43*

III. CONCLUSIONS ON ACHIEVING THE OBJECTIVE 43
ANNEX: STATISTICAL DATA AND PROJECTIONS (2002 – 2010) 45
I. EXPECTED INCREASE IN THE ELECTRICITY PRODUCED FROM RENEWABLE ENERGY SOURCES..... 45
II. EXPECTED INCREASE IN THE GROSS ELECTRICITY CONSUMPTION..... 45
III. EXPECTED INCREASE IN THE SHARE OF ELECTRICITY PRODUCED FROM RENEWABLE ENERGY SOURCES IN THE GROSS ELECTRICITY CONSUMPTION..... 45

List of tables and figures in the report

Table	Description	Page
	Federal state	
Table 2.1	Minimum price guaranteed per technology (Federal)	7
	Walloon Region	
Table 3.1	Electricity produced from renewable energy sources (1997-2008) in GWh/year	10
Table 3.2	Percentage of electricity produced from RES (1997-2008)	11
Table 3.3	Average trading price of green certificates	17
Table 3.4	Green energy production sites at the end of 2008	18
Table 3.5	Issuance of GOLs by CWAPE in 2008	19
Table 3.6	Electricity produced from renewable energy sources (2008-2012) in GWh/year	20
Table 3.7	Electricity produced from renewable energy sources (2008-2012)	20
	Flemish Region	
Table 4.1	Forecasts: total green electricity in the BAU scenario	21
Table 4.2	Summary table: results of renewables inventory in Flanders(2005-2008)	21
	Brussels-Capital Region	
Table 5.1	Summary of the production and total consumption of electricity in the Brussels- (2000-2008)	
Table 5.2	Summary of the maximum capacity, as well as the power and heat produced by the Brussels cogeneration plants for heat and power (1991-	27
Table 5.3	Increase in green electricity produced from biomass cogeneration	29
Table 5.4	Tonnes of incinerated waste and electricity produced by the waste processing operator at Neder-Over-Heembeek (1990-2004)	30
Table 5.5	Tonnes of incinerated waste and electricity produced by thewaste processing operator at Neder-Over-Heembeek (2005-2006)	30
Table 5.6	Distribution of green electricity produced in the BCR	31
Table 5.7	Grants for the Brussels-Capital Region for the promotion of electricity produced from renewable energy sources.	32
	National synthesis	
Table 6.1	Expected gross electricity consumption in 2010 (GWh)	42
Table 6.2	Consolidated statistics for electricity produced from renewable energy sources (2002 – 2007) (GWh)	
Table 6.3	Consolidated projections for electricity produced from renewable sources in (2008 – 2010)	43
	Annex	
Table 7.1	Expected increase in the electricity produced from renewable energy sources in (year 2002-2010) (GWh)	
Table 7.2	Statistics and expected increase in the gross consumption of electricity in (year 2002-2010) (GWh)	
Table 7.3	Expected increase in the share of electricity produced from renewable energy sources in the gross consumption of electricity (2002-2010) (%)	45

Figure	Description	Page
	Walloon Region	
Figure 3.1	Production of electricity from renewable energy sources (1997 – 2008)	13
Figure 3.2	Generation system and green electricity production in 2008	17
Figure 3.3	Percentage of electricity produced from RES (2008 – 2012)	20
	Flemish Region	
Figure 4.1	Monthly green electricity production in MWh	22
	Brussels-Capital Region	
Figure 5.1	Gross electricity production in kWp since 2006 from photovoltaic solar panels (year 2009: provisional)	28
Figure 5.2	Gross electricity production in GWh from photovoltaic solar panels (year 2009: provisional)	28
Figure 5.3	Distribution of the green electricity produced in BCR	31
	National synthesis	
Figure 6.1	Expected increase in electricity produced from renewable energy sources in (2002 – 2010)	42
Figure 6.2	Increase in the electricity produced from renewable energy sources in Belgium (2002 – 2010)	43
Figure 6.3	Increase in the share of electricity produced from renewable energy sources in the gross consumption of electricity in Belgium (2002 – 2010)	44

Introduction

The distribution of the institutional authorities in Belgium grants provisional powers to the Regions in regard to renewable energies. This principle is tempered by the fact that the Regions only hold their jurisdiction *ratione materiae* within the scope of their local jurisdiction, and consequently not in the ocean space in which Belgium has jurisdiction in accordance with international maritime law, such ocean space coming under federal authority. The latter is also competent in regard to tariffs.

According to these principles, the Federal State and the Regions have adopted legislative rules and promotion measures with a view to contributing to the attainment of Belgium's target for renewable energy for 2010.

The regional green electricity promotion systems adopted (or being drafted) are primarily based upon the quota obligations imposed on the electricity suppliers in addition to the different investment aid schemes. The federal state has also adopted measures aimed at promoting increased green electricity production in the North Sea under Belgian jurisdiction (hereinafter referred to as "off-shore green electricity") as well as the tax and tariff measures for all renewable electricity produced.

Consequently, this report has been drafted by each of the interested Regions themselves and by the federal Authorities within its remit.

A national synthesis is presented at the end of the report.

Federal State

The Federal State has jurisdiction in matters of the promotion of renewable energy on the continental shelf under Belgian jurisdiction in the North Sea and has a certain number of tariff and tax powers.

I. Current objectives (art.3)

Through the royal decree of 17 May 2004, the federal State has defined an area of around 200 km² in which to install wind turbines in the North Sea. This area could ultimately host a total of almost 2 000 to 2 400 MW of installed power.

II. Statistics (2002-2008)

Off-shore statistics: first feed into the grid at the end of December 2008, production from January 2009: C-Power project phase I of 6 wind turbines for an installed power of 31.5 MW commissioned between January and May 2009.

III. Support schemes (art.4)

1. Tariff support

This support is provided for by the royal decree of 16 July 2002 (http://www.just.fgov.be, published on 23 August 2002) on establishing the mechanisms covering the promotion of electricity produced from renewable energy sources. A federal system of off-shore certificates (quota free) has been provided for. The off-shore certificates are issued by the federal regulator (CREG) to plants producing green electricity in the North Sea. The royal decree provides for a guaranteed minimum price system (varying according to the technologies). Both the off-shore certificates and those issued in the Regions shall benefit from this mechanism. In accordance with the regional provisions made to recognise the off-shore certificates, the producer of green electricity also has the theoretical possibility of selling its green certificates on the market provided by each of the Regions. The regions do not presently recognise federal certificates.

The royal decree of 05 October 2005 amending the royal decree of 16 July 2002 reviews the guaranteed minimum price system. Thus, the grid manager, in its public service remit, is obliged to purchase the green certificates from any renewable energy electricity producer who makes such a request at a minimum price which varies according to the production technology used.

Production technology	Minimum price
Off-shore wind energy (production of the first 216 MW installed in each project)	107 €/MWh
Off-shore wind energy (production from the capacity of each project exceeding 216	90 €/MWh
On-shore wind energy	50 €/MWh
Hydro power	50 €/MWh
Solar	150 €/MWh
Other renewable energy sources (including biomass)	20 €/MWh

Table 2.1: Guaranteed minimum price per technology (Federal)

This purchase obligation commences on the commissioning of the production plant (certification date) for a period of 20 years in the case of off-shore wind turbines, and for a period of 10 years for other technology types. The royal decree of 31 December 2008 adds clarification to this rule and sets out the practical implications.

The law of 20 July 2005 enacting miscellaneous provisions includes, in its chapter IV Energy, a series of provisions intended to support the off-shore renewable energy projects. We will note, in particular, Article 62 which:

- stipulates that the grid manager shall fund, up to a third, and for a maximum of € 25 million, the cost of the submarine cable for each project of 216 MW or above
- introduces a measure to reduce the additional costs brought about by the differences in the production by the off-shore wind farms when those do not exceed 30 % compared to the nominated quarter-hourly demand (policies set out by the royal decree of 30 March 2009 (Official Gazette 31.03.2009)).
- Where an authority stops the development of an ongoing project, the federal State shall guarantee the security of the allocated investment.

2. Exemption from federal taxes

The royal decree of 24 March 2003 (http://www.just.fgov.be published on 28 March 2003) provides, in Article 5, that the transport grid manager is to exempt the grid users from liability to pay part of the federal taxes intended to fund certain public service obligations and the costs connected with the regulation and control of the electricity market, the part corresponding to renewable energy sources or quality co-generation units.

3. Tax reductions for energy saving investments

- **Tax reduction for residential accommodation**

The federal State has implemented a tax reduction system for residential accommodation for energy saving investments, particularly for investment in thermal and photovoltaic solar panels. This system is combined with the subsidies proposed in the regions, provinces and districts.

For the 2008 revenues, a tax reduction corresponding to 40% of the costs (with a ceiling of € 3,440) is granted to private individuals when they invest in the installation of photovoltaic and thermal solar panels.

- **Tax reduction for businesses**

As is the case for private individuals, businesses may also receive a tax advantage when they make energy saving investments. Investments aimed at producing energy from renewable sources are taken into account in the tax reduction.

4. Installation of photovoltaic solar panels in public buildings

Within the Council of Ministers of Louvain (March 2007), the federal authority set itself the objective of installing 1 km² of photovoltaic solar panels on public buildings and infrastructures.

Phase 1 of the process to achieve this objective is as follows:

- a procurement contract has been issued by the Public Buildings Administration with a view to the installation and operation of solar panels by the green energy producers in the form of roof concessions (30 000 m²).
- FEDESCO has received EUR 1 500 000, in the form of a capital increase, to install and operate solar panels on the roofs of other federal public buildings (± 3 200 m²).

FEDESCO has received EUR 500 000 in the form of a grant to cover all of the management costs of these 2 projects.

Other phases are also planned:

- Issuance of other contracts in the form of a concession according to the additional surfaces available;
- Involvement of public companies in the process (e.g. the SNCB group is currently leading a pilot project).

5. Additional measures

The government has also taken additional measures with the effect of reducing the relative cost of the production of electricity from renewable sources. For example:

- Adapting the taxation applied to energy products under Directive 2003/96/EC restructuring the community energy and electricity products framework. In this context, a special excise duty on diesel, kerosene and heavy fuel used, as well as an "energy" tax on professional use of coal and coke, have been introduced;
- An energy tax of EUR 15 per tonne is levied on the use of kerosene for the purposes of electricity production;
- An energy tax of EUR 3 per tonne has been levied on the use of coal, coke and lignite for the purposes of electricity production. This energy tax is in addition to the special excise duty of EUR 8.6526 per tonne;
- The federal tax is applied on a decreasing scale per consumption batch for businesses with an annual consumption greater than 20 MWh and subject to an industry-wide agreement or "covenants".

IV. Guarantee of origin (art.5)

The royal decree of 16 July 2002 (http://www.just.fgov.be published on 23 August 2002) on the institution of mechanisms aimed at the promotion of electricity produced from renewable energy sources provides that the issuance of green certificates to green energy production plants at sea is contingent upon the producer obtaining a guarantee of origin. The latter shall be issued by an approved entity. The decree describes what must appear on said guarantee (art. 4 §2).

The guarantee of origin certificate (for the plant) shall mention no less than

- the source or sources from which the electricity is produced;
- the technology used in the production;
- the technology used in classifying the production;
- the available net power at the production plant;
- the potential support and grants awarded for the construction or operation of the production plant, or for the production of electricity by this plant;
- the planned opening date of the plant;
- the place of production.

V. Current off-shore projects and planned production for 2010

1. North Sea Projects (continental shelf under Belgian jurisdiction)

There are currently five (verify whether all published in October 2009) projects that have obtained a state licence to construct and operate North Sea wind farms; the C-Power project, the Belwind project, the Eldepasco project, the Rentel project and the Norther project. There are no plans to commission the last three before 2011.

Two other areas may still be assigned for projects. State licence applications for these areas are currently undergoing appraisal by the federal regulator (CREG).

2. Contribution of the North Sea projects to the 2010 objective

Phase I of the C-Power (installed power of 31.5 MW) project was commissioned between January and May 2009. Its 2009 production is estimated at 70 000 MWh in 2009 and at 101 000 MWh in 2010.

Phase I of the Belwind project (installed power of 165 MW) is expected to be commissioned between September and December 2010. Belwind contribution phase I: minimum 80 000 MWh gross in 2010, as of September.

The wind energy capacity installed on the Belgian continental shelf could reach 196.5 MW at the end of 2010 if no other phase of any other project is commissioned in the meantime.

- Contribution 2009: 70 000 MWh gross.
- Contribution 2010: 180 000 MWh. gross.

Walloon Region

I. Current objectives (art.3)

The objective of the Walloon Region is to achieve a production of electricity from renewable energy sources of 8% for 2010. This objective was set in the Plan for Sustainable Energy Management in 2003.

II. Statistics (1997-2008)

GWh (Gross electricity production)						
Solar-PV	Hydro	Wind	Biomass	Biomass CHP	Biomass Waste incineration	Total E-RES
0.00	304.50	0.10	42.87	107.99	44.72	**500.18**
0.01	390.21	0.57	38.90	94.55	37.78	**562.02**
0.01	341.81	1.02	48.70	211.62	34.77	**637.92**
0.01	458.17	1.32	54.10	174.59	13.51	**701.71**
0.01	438.16	2.05	63.68	179.85	12.07	**695.82**
0.01	357.30	2.10	90.20	219.40	40.70	**709.72**
0.02	244.67	28.66	88.25	211.76	48.79	**622.14**
0.02	314.45	47.08	81.16	268.72	49.12	**760.55**
0.03	285.93	72.3 1	243.97	280.90	36.93	**920.07**
0.17	356.24	126.54	484.14	307.74	40.50	**1 315.33**
0.36	385.37	209.10	568.16	492.77	43.99	**1 699.75**
6.98	376.01	297.51	698.13	685.72	46.82	**2 111.16**

Table 3.1 Electricity produced from renewable energy sources (1997-2008) in Gwh/year

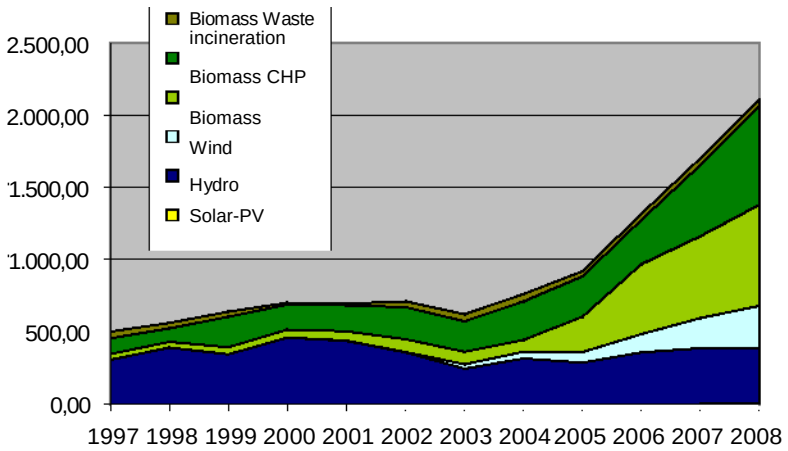


Figure 3.1: Electricity produced from renewable energy sources (1997-2008)

Year	Gross Elec. Cons. GWh/ Year	% RES-E Gross. Elec. Cons.
1997	24 965	2.00%
1998	25 306	2.22%
1999	25 628	2.49%
2000	26 472	2.65%
2001	26 831	2.59%
2002	26 854	2.64%
2003	26 635	2.34%
2004	27 032	2.81%
2005	27 006	3.41%
2006	27 950	4.71%
2007	28 016	6.07%
2008	28 200	7.49%

Table 3.2: Percentage of electricity produced from RES (1997-2008)

III. Support schemes (art.4)

1. Investment support

1.1. Private sector: RES investment grants

1.1.1. For private individuals

The ministerial decree of 20 December 2007 on the policies and the procedure for granting the subsidies aimed at promoting the rational use of energy (Official Gazette of 19/02/2008, p. 10415) provides for two green electricity production unit grants.

a. Photovoltaic

The grant shall be 20% of the eligible costs, plus VAT if the applicant is not liable to pay tax with a maximum of EUR 3 500 per plant and per EAN meter.

The eligible costs are limited to the plant's power product expressed in Wc, by:

- 7 EUR/Wc for a permanent system
- 8 EUR/Wc for an integrated system
- 9 EUR/Wc for a solar tracker

b. Cogeneration unit

The grant is 20% of the invoice amount (including VAT) with a maximum of EUR 15 000 per plant. When the applicant is liable to pay VAT, the grant is calculated on the basis of the invoice amount before VAT.

1.1.2. For businesses

In accordance with the norm “Guidelines on State aid for environmental protection” (ref. 200 1/C37/03) published on 3 February 2001, the Walloon Region has published the following texts:

- Decree of 11 March 2004 on the incentives intended to promote environmental protection and sustainable energy (Official Gazette of 08 .04.2004).
- AGW of 2 December 2004 enacting the decree of 11 March 2004 (Official Gazette of

30.12.2004).

- 29 September 2006. — Circular on the manner in which the decree of the Walloon Government of 2 December 2004 on incentives to promote environmental protection and sustainable energy is to be put into effect.
- New decree: Decree of the Walloon Government of 14 May 2009 amending the decree of the Walloon Government of 2 December 2004 enacting the decree of 11 March 2004 on incentives to promote environmental protection and sustainable energy (Official Gazette of 17 June 2009, p. 42421).

Beneficiaries: legal entities from the private sector performing agricultural or industrial activities or services in Walloonia.

Supported activities:

- Energy produced from RES
- Quality co-generation
- ERUs in the Process

Amount:

The rate of subsidy may reach 50% of the agreed investment, bearing in mind the following criteria:

- The subsidisable base is the eligible additional cost of the investment in relation to a reference unit (e.g. gas-turbine power plant 450 €/kW) with the same production capacity.
- The deduction of the profit in green certificates (at € 65) in the first 5 years.
- According to the terms of this new decree, one no longer takes into account the expenses over 5 years (fuel, maintenance etc.) nor the profit (energy, heat etc).

For the SMEs, the aid amount is capped at 1.5 million euros for the production of green energy (except in the case of internal consumption).

Small green energy producing companies must comply with the size criteria and not be part of a medium or large business whose activity falls within the energy sector, until the grant has been paid.

The scope of the small green electricity producer is extended to those producing green energy where the final beneficiaries are companies or authorities.

Agricultural companies are henceforth eligible.

1.2. Public sector and similar: UREBA

Supported activities: RES investment required for building purposes for new builds or renovations.

Amount: 30% including VAT reduced to 15% including VAT if there is more than

one subsidy for the same purpose

2. Production support: Green Certificates

In accordance with European Directives 2001/77/EC and 2004/8/EC, a support mechanism for the production of electricity from renewable energy sources and/or quality co-generation has been in place in the Walloon Region since 1 January 2003.

With regard to the increase in electricity produced from renewable energy sources, the

mechanism in place in the Walloon Region has turned out to be particularly effective insofar as one can guarantee today that the objectives set for the Walloon region for 2010 (8%) will be attained or even exceeded (10 %).

2008 comprised the entry into force on 1 January of a set of new legislative measures aimed at improving the system's functionality, particularly by ensuring compatibility between the level of support given to the green procedures and their production costs in comparison with traditional electricity production.

From these measures, the following will mainly be used:

- Application of a reduction factor on issuing the green certificates for so-called "historic" plants (commissioned prior to 1 May 2001);
- Increase in the issue period of the green certificates from 10 to 15 years, applying a reduction factor during the last 5 years. The possibility of reviewing these factors every 3 years is expected;
- Introduction of the concept of significant alteration to a plant giving rise to a new grant period of 15 years in order to promote the existing sites' improvement potential, subject to conditions;
- Limited issuance of green certificates for the first batch of 20 MW for the new biomass production sites with a view to promoting distributed generation;
- Possibility of applying, subject to conditions, a grant rate of 2 GCs/MWh up to the first batch of 20 MW (instead of 5 MW) for specific biomass co-generation sites, particularly innovative ones;
- Introduction of multiplier coefficients for the photovoltaic solar procedure with a view to developing this procedure. The possibility of reviewing both of these coefficients is also planned;
- Replacement of the production aid mechanism by a guaranteed purchase price mechanism (held at 65 EUR/GC) payable by the local grid manager (Elia) for a maximum period of 15 years (previously 10 years) and for all green procedures (previously limited to renewables).

The important distinction between the means implemented to financially support production (in particular the green certificates) and the means implemented to ensure transparency for end clients (guarantee of origin labels) should be noted. Because their aims are completely different, these two electronic certificates issued for a single quantity of electricity co-exist without possible confusion.

2.1. Principle

The green certificates are based on the concept of "**green electricity**". For the electricity to be considered "green electricity":

- it must be produced from renewable energy sources or quality co-generation systems;
- all of the production line (fuel preparation and possible combustion during electricity production) must be capable of reducing the carbon dioxide (CO^2) emissions by at least 10% compared to emissions from a referenced production procedure producing the same number of KWh (for the quality co-generation, the produced heat is taken into account).

Green electricity is thus a concept that is both broader (since it includes quality co-generation) and **narrower than the electricity produced from renewable energy sources**

(since the plants working wholly or partly from renewable energy sources, but not saving CO^2, are not considered to be producing green electricity (e.g. the incinerators).

A counting code sets out the principles and methods applicable to the measurement of relevant energy quantities on issuing green certificates and guarantee of origin labels. The counting code enables each site to set the particular counting algorithms in its attestation of conformity, in other words, the mathematical operations required to calculate these different quantities of energy. The following are essentially distinguished:

- the algorithm for counting the net electricity generated (Eenp);
- the algorithm for counting the net heat value (Eqnv);
- the algorithm for counting the net cooling energy value (Efnv);
- the algorithm for counting the input energies (Ee).

2.2. "Guarantee of origin certificate" (Attestation of conformity)

The procedure for issuing green certificates in the Walloon Region, as described by the decree of the Walloon government of 30 November 2006 consists in a green electricity guarantee of origin certificate (art 6 *et seq* of the decree of 30 November 2006).

The attestation of conformity shall be issued to a production site by an approved supervisory body. The attestation of conformity for the plant shall attest that the electricity produced by this site is measured according to the current norms and shall demonstrate that all or part thereof is produced from renewable energy sources or from co-generation. It is a prerequisite to issuing the green certificates and/or the guarantee of origin labels.

The attestation of conformity specifies:
1. the details of the producer of green energy;
2. the energy source or sources from which the electricity has been produced;
3. the production technology;
4. the production unit's available net power;
5. the technology to record the generation of electricity and, where appropriate, the heat, as well as to specify the accuracy of the metering points;
6. the production procedure's CO_2 emissions under normal production conditions;
7. the production unit's date of commissioning;
8. the production site;
9. where appropriate, the aid and subsidies granted for the construction or operation of the production unit.

Any application for attestation of conformity shall be addressed to an approved supervisory body. To be approved, a body must satisfy several conditions:

1. have the status of a legal entity and be independent of the producers, intermediaries and electricity suppliers;

2. satisfy the criteria of norm NBN EN-45004 for the relevant activities in accordance with the accreditation system in place in accordance with the law of 20 July 1990 on the accreditation of certifying and supervisory bodies, as well as the testing laboratories or through an equivalent accreditation system set up in a Member State of the European Economic Area;

3. satisfy the type C independence criteria as specified in the general BELTEST criteria to implement norm NBN EN-45004;

4. undertake to forward to the Minister and to CWaPE (the Walloon energy regulator) the reports drawn up following the visits to the green electricity production units concerning the guarantee of origin certificate.

The application for approval shall be made through the Minister or his delegate, accompanied by the relevant supporting documents. The latter will grant or refuse the approval following the advice of the CWaPE.

The approval shall be issued for a renewable period of three years. During this period, the supervisory body may, at any time, be inspected at the initiation of the Minister or CWaPE for the purposes of verifying its compliance with the approval conditions.

The Minister may decide to withdraw the approval should the supervisory body not satisfy the approval conditions or whenever repeated errors are noted in its tasks.

A simplified administrative procedure enables CWaPE, by way of derogation from these provisions, to issue an attestation of conformity according to a simplified procedure for plants whose available net power is less than or equal to 10 kW.

2.3. Allocation of green certificates

CWaPE shall allocate green certificates to green electricity producers for plants holding an attestation of conformity[1] granted by an approved supervisory body.

The green certificates are allocated based on the green electricity generated and the CO_2 savings rating of the production procedure used. A green certificate shall be allocated for a saving of CO_2 of 456 kg, which corresponds to the CO_2 emissions of a referenced electrical plant which produces 1 MWh. CWaPE must publish the reference plants' CO_2 emissions annually.

Once created, these certificates are freely transferable, regardless of the electricity generated. The green certificates expire after 5 years (in other words, they are no longer transferable or usable).

2.4. Green certificates quotas

Electricity suppliers and grid managers shall acquire the green certificates from the green electricity producers for a fee. Every quarter, the suppliers must supply CWaPE a certain quota of green certificates according to the electricity sales made in the Walloon Region. For example: when the quota is 5%, a supplier which sells 100 MWh to end clients must supply 5 green certificates to CWaPE.

These quotas have been set as follows:

- 7% in 2007
- 8% in 2008

[1] The decree of the Walloon Parliament of 12 April 2001 uses the term “guarantee of origin certificate”. See details below.

- 9% in 2009
- 10% in 2010
- 11% in 2011
- 12% in 2012

In certain conditions, suppliers to large-scale consumers have their quotas reduced for their supplies to these clients.

The quotas applicable as of 2013 shall be set no later than 1 January 2010 bearing in mind the development of the green certificates market and the objectives set by the European Union.

2.5. Sanctions in the event of a breach of the quotas

Each quarter, CWaPE shall verify the suppliers' and the grid managers' compliance with the quotas. Should the required quotas be breached, the supplier or grid manager in breach must pay an administrative fine for the quarter in question. The result thereof shall be added to the Energy Fund which finances CWaPE, ERU measures, the social measures and production aid. The fine is 100 euros per missing certificate.

2.6. Green certificates outside the Walloon Region

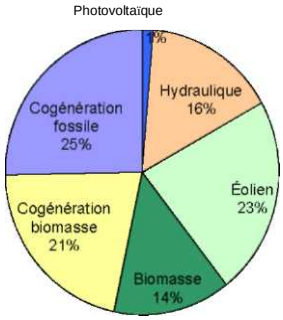
For green certificates granted for green electricity generated in other Belgian regions or in the North Sea, these certificates may ultimately, following mutual recognition, be included in the quota imposed on the grid managers and suppliers.

For green certificates granted for green electricity generated outside of Belgium, the Walloon Government shall specify the conditions for recognising these certificates based on the principle of mutual recognition.

3. Market conditions for green certificates

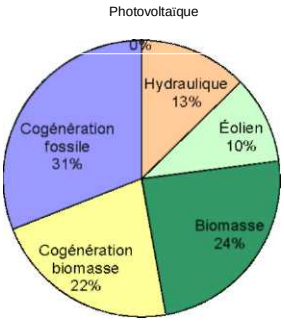
Installed power: 689 MWe

Photovoltaic 1%
Hydro-power 16%
Wind power 23%
Biomass 14%
Biomass co-generation 21%
Fossil co-generation 25%



2,896 GWh generated

Photovoltaic 0%
Hydro-power 13%
Wind power 10%
Biomass 24%
Biomass co-generation 22%
Fossil co-generation 31%



Number of GCs issued: 1 746 237

Photovoltaic 1%
Hydro-power 11%
Wind power 11%
Biomass 27%
Biomass co-generation 38%
Fossil co-generation 6%

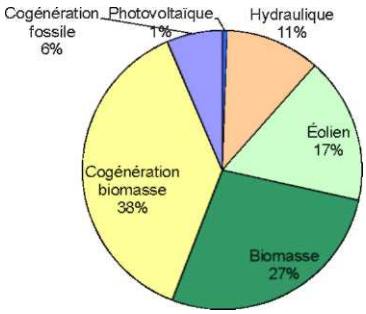


Figure 3.2: Generation system and green electricity produced in 2008

<u>Average market price of the green certificates</u>

Based on the information of which it is aware, CWaPE regularly publishes the average trading price of a green certificate in the Walloon Region. Currently, CWaPE is informed of the prices of most of the transactions performed under classic commercial conditions.

	Number of GCs	Average unit price
2003	164 943	84.38 EUR
2004	326 733	91.74 EUR
2005	413 720	92.10 EUR

2006	483 697	91.58 EUR
2007	1 561 359	89.95 EUR
2008	1 746 237	88.37 EUR

Table 3.3: Average price of trading in green certificates

At the end of 2008, 2 853 green electricity production sites (60 in 2003) shall hold guarantee of origin certificates entitling them to green certificates (2 817 if one only takes into account the green electricity production sites using renewable energy sources, to the exclusion of the cogeneration plants not using renewable energy sources). These 2 853 sites make a total power of around 688 594 kWe (514 376 kWe if one only takes into account the sites using renewable energy sources, to the exclusion of the cogeneration plants not using renewable energy sources).

Situation end 2008	**Number of sites**	**Power (kW)**
Solar	2681	8943
Hydro power	64	107524
Wind power	25	155101
Biomass	10	95634
Biomass co-generation	37	147174
Fossil co-generation	36	174218
Total	2853	688594

Table 3.4: Green electricity generation sites at the end of 2008

IV. Guarantee of origin of the electricity produced from renewable energy sources (Art. 5 of Directive 2001/77/EC)

The concept of "guarantee of origin label" is different to the concept of "guarantee of origin certificate". These two concepts are covered by Article 42 of the decree of 12 April 2001 on the organisation of the regional electricity market but their scope is different. In order to avoid any confusion with the concept of guarantee of origin according to Directive 2001/77/EC, this guarantee of origin certificate according to the decree of 12 April 2001 shall be called the "attestation of conformity" subsequent to this chapter and the guarantee of origin according to Directive 2001/77/EC shall be called guarantee of origin label in accordance with the decree.

The "guarantee of origin label" attests the quantity of the electricity produced from renewable energy sources in accordance with Directive 2001/77/EC or high-efficiency cogeneration in accordance with Directive 2004/8/EC, accompanies the electricity produced from renewable energy sources and/or quality cogeneration and specifies the energy source used in its production, the quantities produced, as well as the dates and place of production.

The decree of the Walloon Government of 30 November 2006, which entered into force on 1 January 2007, specifies the policies for issuance and transferral of the guarantee of origin labels.

1. Allocation of the guarantee of origin labels

CWaPE shall allocate the guarantee of origin labels on the basis of one GOL per MWh generated to the electricity producers for plants holding an attestation of conformity issued by an approved supervisory body. This attestation is the same one required to issue the green certificates. Once

created, these certificates are freely transferable, regardless of the electricity produced. The guarantee of origin labels shall expire on 31 December of the following year (in other words, they are no longer transferable or usable).

2. Use of the guarantee of origin labels

The guarantee of origin labels issued by Member States shall be recognised by the Walloon region to satisfy the obligations imposed by Directives 2001/77/EC, 2004/8/EC and 2003/54/EC. Particularly, the use of the guarantee of origin labels shall be recognised as the preferred means of establishing the quantities of renewable energy supplied. Also, only the guarantee of origin labels issued for a production in a given year shall be taken into account in that year's fuel mix. As of 2008, a supplier which wishes to market an electricity product, claiming to be renewable or the product of cogeneration must be supported by the guarantee of origin labels.

3. Sanctions

For the time being, CWAPE envisages publishing cases of non-compliance with this provision on its Internet site.

4. Guarantee of origin labels from outside the Walloon Region

The use of European guarantee of origin labels shall be recognised provided that the country issuing these certificates has implemented a guarantee of origin scheme that complies with the conditions of accuracy, reliability and resistance to fraud provided for by the Directive and set out in the order of the Walloon Government of 30 November 2006.

5. Guarantee of origin labels granted in 2008

2 391 977 GOL were granted by CWAPE for electricity produced in 2008[2], which represents 83% of the green electricity produced that year (and 82% and 50% of the renewable generation and cogeneration respectively). In other words, internal consumption represents around 18% of the renewable energy produced and 50% of the cogeneration electricity produced.

GOL products	GOL-RES	GOL-RES & CHP	GOL CHP	Total GOL
Photovoltaic	10			10
Hydraulic	358 989			358 989
Wind power	281 429			281 429
Biomass	680 393			680 393
Biomass cogeneration	285 413	27 889	81	313 383
Fossil cogeneration	0	0	757 772	757 772
Total	1 606 235	27 889	757 853	2 391 977

Table 3.5: GOLs granted by CWAPE in 2008
(GOL-RES: renewable energy sources; GOL-RES & CHP: renewable energy sources and high-efficiency cogeneration; GOL-CHP: fossil energy sources and high-efficiency)

V. Plans for 2010

Based on the quotas set for the period 2008-2012, CWaPE estimates that increasing the renewable energies system could lead to the generation of 2 953 GWh in 2012. As regards the RES-E share in the consumption of electricity, the regional objective of 8% RES-E would have been exceeded in

[2] Only electricity input into the grid or supplied locally confers entitlement to the issuance of a GOL

2009 and would have attained 11% in 2012 against only 2.70% in 2002, in other words, prior to the green certificates scheme being in place.

Year	Solar-PV	Hydro	Wind	Biomass	Biomass CHP	Biomass waste incineration	TOTAL E-
2008	1	317	362	668	471	44	1 863
2009	2	326	715	668	703	44	2 458
2010	3	335	796	668	875	44	2 721
2011	4	344	889	668	881	44	2 830
2012	5	352	998	668	886	44	2 953

Table 3.6: Electricity produced from renewable energy sources (2008-2012) in GWh/year

Year	Gross. Elec. Cons. GWh/year	% RES-E Gross. Elec. Cons.
2008	25 800	7.22%
2009	26 058	9.43%
2010	26 319	10.34%
2011	26 582	10.65%
2012	26 848	11.00%

Table 3.7: Percentage of electricity producedfrom RES (2008-2012)

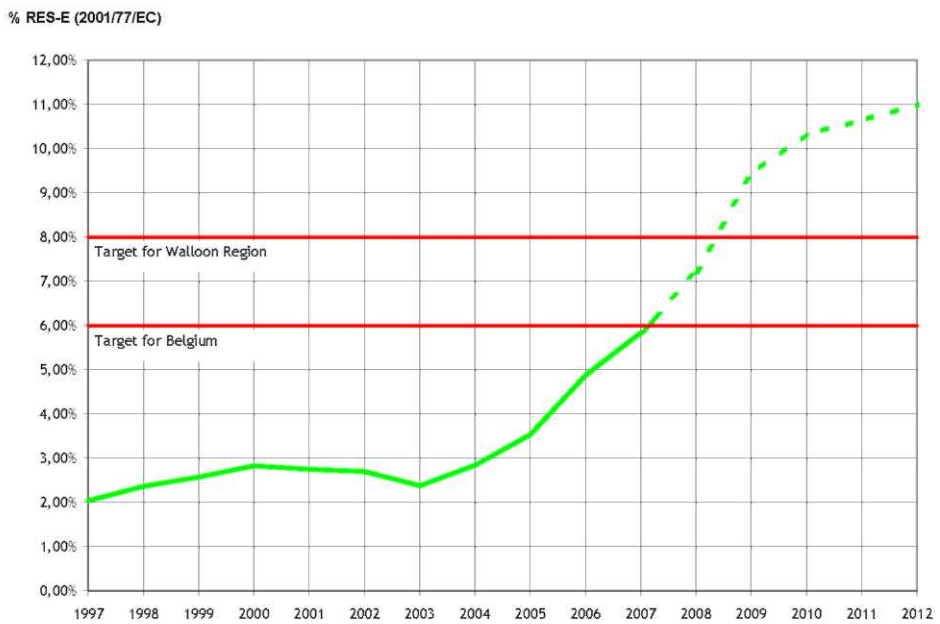


Figure 3.3: Percentage of electricity produced from RES (2008-2012)

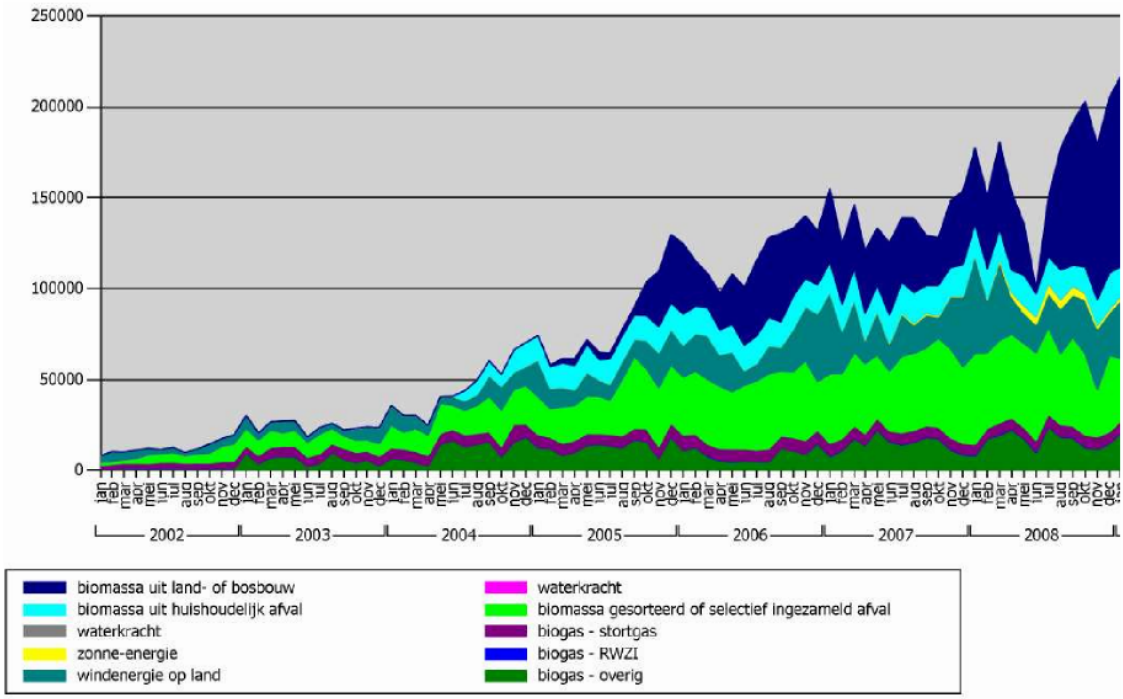
Flemish Region

	2009	2010
Hydro-power	4	4
Wind energy onshore	363	392
Solar	61	87
Green CHP engines	225	346
Green CHP steam turbines	317	526
Green CHP ORC	35	70
Waste incineration (organic fraction)	252	236
Biomass power plants	136	27
Co-combustion, biomass	763	619
Total green flow	2154	2307

Table 4.1: Forecasts : Total green electricity in th BAU scenario (GWh)

Green electricity production, MWh	2006	2007	2008*
Hydro-power	2.079	2.740	3.6
Wind energy	237.492	281.376	333.000
Solar (PV)	3.122	5.560	33.42
Waste incineration	208.184	256.120	267.112
Biomass	806.807	842.487	1.095.068
Biogas	173.375	252.094	265.102
TOTAL green electricity production	**1.431.059**	**1.640.377**	**1.997.302**
Gross domestic electricity consumption (= GDEC)	60.122.525	60.397.378	59.989.149
% green power/GDEC	**2,40%**	**2,70%**	**3,30%**

Table 4.2: Summary table: results of renewables inventory in Flanders (2006-2008)



Key: Lefthand column, from top: Biomass from agriculture and forestry; Biomass from domestic waste; Hydro-power; Solar energy; Onshore wind energy; Righthand column, from top: Hydro-power; Biomass, waste sorted or selectively collected; Biogas – landfill gas; Biogas – WWTP; Biogas – other.

Figure 4.1 : Monthly green electricity production, MWh

III. Measures

Green electricity quota (Electricity Decree of 17 July 2001):

Every year, electricity suppliers must submit green certificates to the VREG (*Vlaamse reguleringsinstantie voor de Elektriciteits- en de Gasmarkt* – Flemish regulatory body for the electricity and gas market) for a percentage of their production. This obligation creates a market demand for green electricity certificates and a market value. Electricity suppliers who do not submit enough certificates have to pay a fine of €125 per missing certificate (€100 from 2015). Throughout the management period green electricity certificates are allocated to green electricity producers at a rate of one certificate per thousand kWh. They are allocated for all renewable energy sources.

The green electricity quotas amount to 6% in 2010 and 13% in 2020. A partial exemption from the green electricity quota exists for large consumers: 25% exemption for the supply tranche between 20 and 100 GWh and 50% exemption for the supply tranche above 100 GWh.

In the event of a major drop in the value of the green electricity certificates a minimum certificate will be guaranteed for the smaller installations (connected to the grid):

1° for solar energy: €350 per transferred certificate, minus €20 each year for installations coming onto stream for the first time up to and including 2013 and minus €40 from 2014;

2° for hydro power, tidal and wave energy, geothermal energy, onshore wind energy, solid and liquid biomass, biomass waste and biogas, unless included under point 3: €90 per transferred

certificate;
3° for landfill gas, biogas from the digestion of waste water (non-sewage sludge) or from waste water treatment (sewage sludge) and the incineration of residual waste: €60 per transferred certificate;
4° for other methods: €60 per transferred certificate.
This minimum value applies from the coming on stream of a new production installation and is valid for ten years. In the case of solar energy the minimum support applies to installations put into service between 1 January 2006 and 31 December 2012 and is valid for 20 years. For solar energy installations put into service from 1 January 2013 the minimum support is valid for a period of 15 years unless previously decided otherwise by the Flemish Government on the basis of an evaluation report submitted to the Flemish Government and Parliament.

In recent years the market value of green electricity certificates has been between €105 and €110.

For the proportion up to 60% where biomass is burned in coal-fired power stations the certificates are 50% valid and are therefore worth half the market value.

Co-generation certificates:

Since 2005 there has been a system of cogeneration certificates similar to the green electricity certificate but with the following main differences:

- One co-generation certificate is allocated per 1000 kWh energy saving by comparison with separate generation;
- There is no partial exemption for large consumers;
- The market value has been between €40 and €43 in recent years and the fine per missing certificate is €45;
- Co-generation certificates decrease in value: they are at a maximum during the first four years after coming on stream, reducing gradually to zero after about ten years;
- The minimum amount of support is €27 for installations connected to the grid;
- The quotas increase to 5.23% in 2010 and remain constant thereafter.

The evaluation of the two certificate systems is based on calculation of top-end costs, the operating support needed to make a project acceptably viable. The Electricity Decree stipulates that the top-end costs must be recalculated every three years.

Financial support

Ecology support:

Ecology support enables businesses to receive investment support for investment in renewable energy sources. The support intensity is 40% of acceptable overheads for SMEs and 20% for large enterprises. Acceptable overheads vary according to the technology:

10% for wind energy;

30% for solar thermal applications;

50% for biomass electricity production of co-generation;

15% for photovoltaic solar panels;

80% for biomass heat production.

The annual budget is currently €120 million. Each year four calls are launched. Projects are ranked according to a performance factor which indicates the ecological benefit.

The acceptable overheads and the performance factor are fixed for each call.

This support can be combined with the green electricity and co-generation certificates.

Additional measures:

- Opening up agricultural land for wind turbines;
- Creation of provincial policy plans with wind turbine implantation zones;
- Abolition of the licensing requirement for photovoltaic solar panels;
- Drawing up a detailed inventory of biomass flows available for energy generation;
- Priority access to the Elia grid for renewable energy installations;
- Priority connection of renewable energy installations to the grid;
- Restriction of connection costs for renewable energy installations;
- Purchasing of 100% green electricity by Flemish authorities.

Most important trends in 2008-2009:

- Vast growth in photovoltaic solar energy: production in GWh:
  - 2002: 5
  - 2003: 82
  - 2004: 393
  - 2005: 715
  - 2006: 1.3356
  - 2007: 5.577
  - 2008: 33.600
  - 2009: 98.854
- Major increase in the number of licence applications for wind turbines and the number of wind turbine projects receiving positive recommendations:

2008: 17 applications, 76 wind turbines

2009: 63 applications, 294 wind turbines

Positive recommendations in 2009:

93 wind turbines on agricultural land

42 wind turbines on industrial land.

Brussels-Capital Region

I. Current objectives (art.3)

The Brussels-Capital Region (BCR) is described as an urban region, having a dense and relatively poorly insulated building stock dating essentially from the 19th and the 20th centuries.

It cannot therefore try to be a centre for significant production of renewable energies, not having significant potential for hydroelectric or wind power, for example. However, the Region is placing its hopes on a significant increase in solar energy collection devices as well as on "biomass" fuel cogeneration plants.

No renewable energy consumption objective has been decided in the Brussels-Capital Region besides the requirement for electricity suppliers to incorporate 2.5% of green energy. Such objective lies with the Region following the "burden sharing" process for the Belgian objective of 13% ordered in Directive 28/EC/2009.

II. Statistics

1. Electricity consumption[3]

Production in the Brussels-Capital Region can only cover a reduced share of the total consumption of electricity and is positioned around 5.7% (Table 5.1.). The remainder (94.3 %) is imported. Renewable energy production reaches around **1.11%** of the electricity consumed.

Year	Net production of utilities [1] GWh	Net production of autoproducers and co-operative producers [2] GWh	Total GWh	including net renewable production GWh	% of renewable energy in the consumption %	Total Regional electricity consumption GWh	share of the prod/consum %
2000	242	19,3	261,3	84,7	32,4%	5251,4	5,0%
2001	309,4	24	333,4	108,0	32,4%	5441,7	6,1%
2002	299, 1	24,2	323,3	104,6	32,3%	5490,8	5,9%
2003	280, 8	34,3	315,1	98,1	31,1%	5540,9	5,7%
2004	282,2	41,9	324	98,3	30,3%	5711,9	5,7%
2005 [3]	288,8	46,4	335,2	73,0	21,8%	5799,5	5,8%
2006	278,2	58,4	336,7	70,5	20,9%	5880,0	5, 7%
2007	283,3	58	341,3	63,5	18 .6%	5970,0	5 . 7%

Table 5.1: Summary of the total production and consumption of electricity in the Brussels -Capital Region (2000-2008)

[1] i.e. the Electrabel plants
[2] the production summarised here may differ slightly from that provided by the FPE in its statistical yearbook, since it summarises the additional sites and certain updated data.
[3]as of 2005, the calculation of the renewable energies' share in incinerated waste is changing, based on the NCV and no longer on the mass. [4]

[3]Data extracted from: Brussels Environment, energy balance of the Brussels-Capital Region 2007
[4]Prior to 2005, only the renewable energy production was calculated on the fraction of organic waste.

A reduced cogeneration share is also set out in these total electricity production figures.

Data 1991-2008								
Year	Maximum capacity			Production			Incoming combustion	Number of units
	Electricity		heat	Electricity		Heat		
	CHP MW	Gross MW	Net MW	CHP GWh	Gross GWh	Net TJ	TJ (NCV)	n
1991	1,7 MW	1,7 MW	2,1 MW	3,4 GWh	3,4 GWh	18 TJ	44 TJ	3
1992	1,9 MW	1,9 MW	2,4 MW	5,1 GWh	5,1 GWh	25 TJ	58 TJ	4
1993	1,9 MW	1,9 MW	2,4 MW	5,3 GWh	5,3 GWh	25 TJ	57 TJ	4
1994	2,9 MW	2,9 MW	3,8 MW	4,7 GWh	6,5 GWh	23 TJ	70 TJ	5
1996	4,0 MW	4,0 MW	5,3 MW	8,5 GWh	11,0 GWh	41 TJ	98 TJ	6
1997	4,0 MW	4,0 MW	5,3 MW	9,0 GWh	11,7 GWh	45 TJ	143 TJ	6
1998	4,0 MW	4,0 MW	5,3 MW	8,8 GWh	11,3 GWh	42 TJ	136 TJ	6
1999	5,0 MW	5,0 MW	5,6 MW	8,8 GWh	12,7 GWh	45 TJ	145 TJ	6
2000	5,8 MW	6,7 MW	7,8 MW	10,0 GWh	16,0 GWh	49 TJ	192 TJ	9
2001	11,6 MW	12,5 MW	12,0 MW	14,9 GWh	22,1 GWh	44 TJ	225 TJ	13
2002	13,2 MW	14,1 MW	14,2 MW	19,2 GWh	22,3 GWh	66 TJ	212 TJ	16
2003	22,1 MW	23,3 MW	25,0 MW	31,6 GWh	33,6 GWh	121 TJ	318 TJ	23
2004	20,4 MW	23,3 MW	25,0 MW	34,1 GWh	41,2 GWh	147 TJ	443 TJ	23
2005	20,0 MW	23,9 MW	26,3 MW	33,3 GWh	47,5 GWh	160 TJ	449 TJ	26
2006	19,7 MW	21,4 MW	26,3 MW	40,8 GWh	53,2 GWh	201 TJ	555 TJ	25
2007	21,0 MW	21,8 MW	26,6 MW	58,4 GWh	59,1 GWh	274 TJ	615 TJ	29
2008	21,6 MW	22,4 MW	27,5 MW	69,3 GWh	69,7 GWh	322 TJ	731 TJ	31

Table 5.2: Summary of the maximum capacity, as well as the power and heat produced by the Brussels' cogeneration plants (1991-2008).

2. Photovoltaic panels

In 2007, for the first time, the Brussels-Capital Region granted a subsidy for the installation of solar panels (of 1,750 euros). A high number of installations was confirmed in 2007 and 2008, thanks to the new production grant and aid formula implemented in 2007 (which is increased to€ 3/Wc). This decision largely explains the growth of the installed power compared to 2005.

(around 35 to 4 1%). But the organic NCV amounts to half (53%), thus it has been corrected. The renewable energy figures prior to 2005 were overestimated.

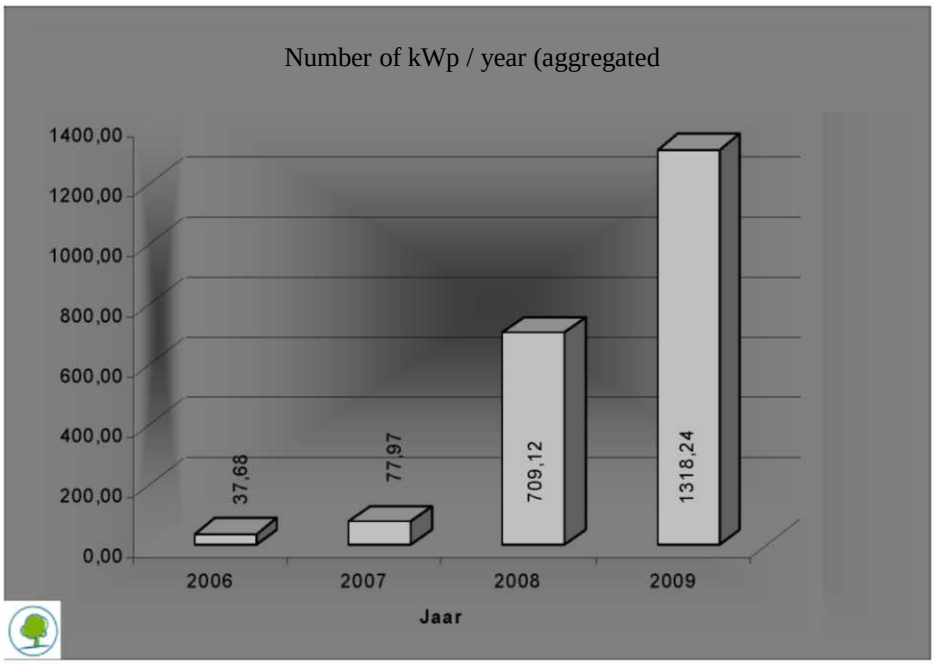


Figure 5.1. : Gross electricity production in kWp since 2006 from photovoltaic solar panels (year 2009: provisional)

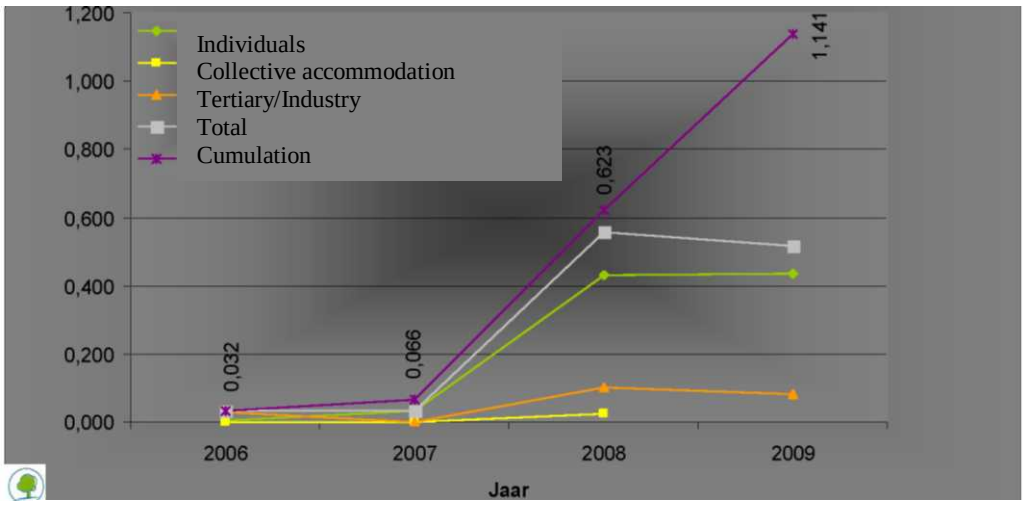


Figure 5.2.: Gross electricity production in GWh from solar panels (year 2009: provisional)

3. Biomass cogeneration

The first two colza oil cogeneration plants were commissioned in 2007 – and are therefore the first cogeneration plants using renewable energy in Brussels.

2008	Units	**Public utilities gas fired CHP**	**Autoproducers Gas fired CHP**	**Autoproducers CHP fired by Renewable Energy Sources**	**Totals**
Fuel input	TJ	586.7	140.2	4.4	731.3
Gross electricity generation	GWh	58.5	10.8	0.4	69.7
Net heat production	TJ	262.5	57.3	2.6	322.3

Table 5.3.: The increase in green energy produced from biomass cogeneration

4. Wind energy

There are no active wind energy installations in the Brussels-Capital Region.

5. Biomass (wood)

- **Biodegradable organic waste fraction**

The Brussels-Capital Region has one waste treatment operator in Neder-Over-Heembeek which produces energy by recovering the heat from incineration. Since 2006, a change in the method of calculation of the recovered energy has caused a jump in the statistics. The data concerning the period preceding this jump appear in Table 5.4. The data in Table 5.5 consider an organic waste fraction of 53% corresponding to a NCV of 1 179 kWh/kg. All of the (apparent) reduction in the production of renewable energy arises from the change in the calculation method. The latter, more realistic than the former, shows that the renewable energy produced from waste had previously been overestimated.

Table 5.4: Tonnes of incinerated waste and electricity produced by the waste treatment operator at Neder-Over-Heembeek (1990-2004)

INCINERATOR						
	Quantity of treated waste		Gross electricity produced (waste + gas)	Net electricity produced (waste + gas)	Gross electricity produced from RES	Net electricity produced from RES
Year	Kilotonne	Including 35% organic (renewable)	GWh	GWh	GWh	GWh
1990	511.5	179.0	268.3	262.1	93.9	91.7
1991	519.9	181.9	265.4	259.1	92.9	90.7
1992	532.5	186.4	270.9	264.5	94.8	92.6
1993	526.9	184.4	278.4	271.6	97.4	95. 1
1994	526.2	184.2	268.6	261.9	94.0	91.7
1995	528.9	185.1	285.6	278.8	100.0	97.6
1996	531.2	185.9	285.0	278.2	99.8	97.4
1997	515.3	180.4	274.0	258.1	95.9	90.3
1998	505.8	177.0	287.3	274.0	100.6	95. 9
1999	516.0	180.6	259.9	234.5	91.0	82.1
2000	535.0	187.3	248.7	241.9	87.0	84. 7
2001	536.6	187.8	316.4	308.5	110.7	108.0
2002	531.6	186.1	305.7	298.7	107.0	104.6
2003	517.4	181.1	286.9	280.2	100.4	98.1
2004	510.7	178.7	287.2	280.7	100.5	98.2

Table 5.5: Tonnes of incinerated waste and electricity produced by the waste treatment operator at Neder-Over-Heembeek (2005-2006)

	Quantity of		PCI		recovered energy			Electricity produced (waste + gas) Gross	Electricity . produced (waste + gas) Net	Electricity produced from RES Gross	Electricity produced from RES Net
	treated	waste	waste	organic	waste	organic fraction	Total (waste + gas)				
Year	kilotonne	Inc. 53% organic	GJ/tonne	GJ/tonne	TJ	TJ	TJ	GWh	GWh	GWh	GWh
2005	509.4	270.0	8.0	4.24	4074.90	1144.6	4514.9	295.0	287.6	74.8	72.9
2006	509.4	270.0	8.0	4.24	4074.90	1144.6	4514.9	284.8	277.8	72.2	70.4
2007	499.6	264.8	8.0	4.24	3996.80	1122.8		285.4	275.5	63.5	61.3

– **Biogas, organic products and waste from agriculture and forestry**

There are currently no biogas or biomass plants (wood, pellets etc) in the Brussels-Capital Region.

– **Distribution of the green energy produced in BCR:**

TOTAL GWh gross

	2006		2007		2008	
	Mwh	GWh brute	MWh	GWh brute	Mwh	GWh brute
Biomassa	/	/	137	0,137	400	0,4
Biogas	0	0	0	0	0	0
Organische fractie restafval	72.200	72,2	63500	63,5	56554	56,554
zonne E	0,038	0,032	0,078	0,066	0,709	0,623
wind E	0	0	0	0	0	0
waterkracht	0	0	0	0	0	0

Key to lefthand column, from top: biomass; biogas; organic waste fraction; solar energy; wind energy; hydro power

Table 5.6: Distribution of the green electricity produced in BCR

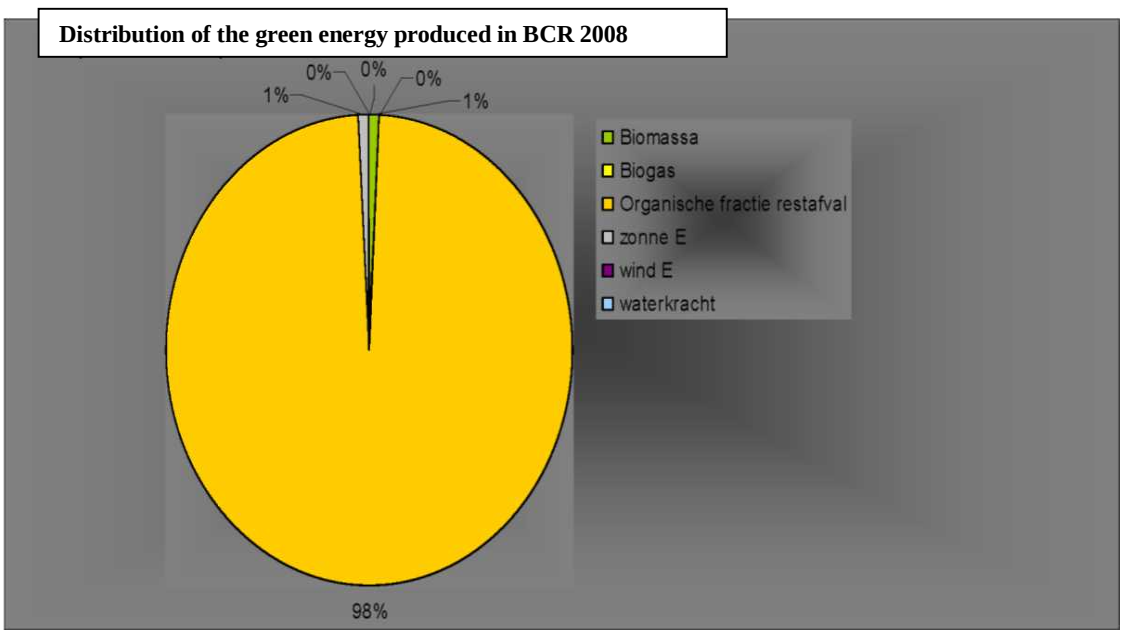


Figure 5.3.: Distribution of the green energy produced in BCR

Key as for table 5.6 above

III. Support schemes (art.4)

1 Subsidising the Brussels-Capital Region

Summary table of grants 2009				
Sector 2009	no. 2009	New / reno.	Purpose	Amount 2009[5]
A. Study & Audit grants				
TI/LC	A2	N&R	Feasibility study	50% of the amount of the study
TI/LC	A3	N&R	Energy design study	50% of the amount of the study
C. Cost-effective heating				
TI/LC	C4a	N & R	Heat pump	40% of the invoice 40% of the invoice (max. € 2 500 per accommodation for domestic water and max. € 5,000 per accommodation for heating) 50% of the invoice (max. € 2 500 per accommodation for domestic water and max. € 5 000 per accommodation for heating)
P	C4b			
D. Use of renewable energies				
TI/LC	D2a	N&R	Solar panels	€ 3 per watt peak (max. 40% of the invoice)
P	D2b			€ 3 per watt peak (max. 50% of the invoice)
T	D3	N&R	Use of other renewable energies	40% of the invoice
D. Cost-effective energy investments				
TI/LC	E2a	N&R	Cogeneration plant	25% of the invoice (<= 50 kW) 20% of the invoice (> 50 kW)
P	E2b			25% of the invoice

Key: TI = Tertiary Sector/Industry; LC = Collective Housing Sector; P = Private; N= new buildings; R = renovation

Table 5.7.: Grants for the Brussels-Capital Region for the promotion of electricity produced from renewable energy sources

[3] The specific grant requirements are given in the brochures.

2 Green electricity certificates

The green electricity certificates scheme (conditions, method of calculation, issuance, purchase and sale) is also specified in the ministerial decree of 6 May 2004[6]
The Gas and Electricity Regulatory service, Brugel, manages the green electricity certificates.

As of 6 September 2007[7], the number of GECs, for a photovoltaic solar power plant over the ten year period following its commission, has been recorded as follows:
In production sites where one or more solar power electricity production plants are located, a coefficient of 4 is applied to the green certificates issued for the electricity produced by the first 20 m² of photovoltaic cell facility, a coefficient of 3 for the following 40m² in the same facility and 2 for the remaining m².

These certificates are issued every quarter, in fractions at a standard rate, for panels of less than 4 m², according to the estimated annual electricity production.

A multiplying coefficient of 5 is applied to the number of green certificates granted according to a calculation formula for the electricity produced by the biomethanisation plants making use of the organic waste collected within the perimeter of the plant.
The number of green certificates issued is limited to 2 green certificates per net MWh of electricity produced when the total electrical power of the plant (or plants) is greater than 1 MW or the electricity efficiency of the plant (or plants) is less than 20 %.

The cogeneration production plants which have been certified (see part IV: Guarantee of Origin) and meet the environmental quality criteria, shall receive "green electricity certificates" each quarter. Compliance with this criteria is assessed by IBGE. This criteria presently corresponds to a 5% saving of CO_2 compared to the production plants serving as a reference, in other words, in this particular case, compared to the best classic separate electricity, heat and cooling production plants.

The certification of green energy and cogeneration production plants is also specified in the ministerial decree of 6 May 2004.[8]

[6]Moniteur belge, n° 232, Monday 28 June 2004 (second edition): Minister of the Brussels-Capital Region,
06 MAY 2004. — Order of the Government of the Brussels-Capital Region on the promotion of green electricity and quality cogeneration, pages 52603-526 12.
[7]Moniteur belge, 6 September 2007: Order of the Government of the Brussels-Capital Region (19 July 2007) laying down the arrangements for issuing the guarantee of origin labels, specifying the obligations falling to the suppliers, and amending the decree of 6 May 2004 on the promotion of green electricity and quality cogeneration.
[8]Id.

The certification attests that the plant in question is a green electricity production or cogeneration plant and that its design enables the quantities of energy consumed and produced to be recorded according to the metering code decreed by the Minister, at the recommendation of the independent Brussels Institute for Environmental Management service ("Brugel").

Following a positive assessment of the application for certification, an attestation of conformity is issued which is valid for the entire life of the plant and grants the producer the right to obtain the green electricity certificates.

The number of green electricity certificates issued to a plant is obtained by dividing the saving in CO_2 made by the plant in question during the quarter in question by the emission factor of CO_2 from natural gas.
The CO_2 emission factor of the plant is determined by Brugel according to the data established for this quarter.

In 2009, the unit value of a GEC is around € 92 on the green certificates market and it is guaranteed by Elia at € 150 /MWh. The price varies only on the basis of supply and demand.
Each green electricity certificate is freely transferable and negotiable. The GECs obtained are valid for 5 years and may be sold at any time by the producer.

GECs issued by other national or foreign authorities may be recognised; they are to be valid for a period of ten years, under the following conditions:

- the GECs must concern the production of green electricity or cogeneration;
- the GECs must be issued to plants having been certified according to a procedure in line with that implemented by the Brussels-Capital Region;
- the GECs must be issued according to the electricity produced and/or the CO_2 savings made compared to the reference plants;
- the GECs must be supplied in accordance with a reliable system which guarantees that the green electricity certificates may not be copied and which prevents any reuse of GECs already registered with other authorities or which have already expired.

The quotas for the following years were given in the decree of 29 March 2007[9] and are as follows:

- 2.5 % for the year 2008;
- 2.5 % for the year 2009;
- 2.75 % for the year 2010;
- 3 % for the year 2011;
- 3.25 % for the year 2012.

Administrative fines will be imposed should the required annual quota not be complied with. These fines went up to EUR 100 in 2007.

- **Guarantee of origin (art.5)**

[9]Official Gazette, 30 May 2007, p 29159: Decree of 29 March 2007 of the Government of the Brussels-Capital Region fixing the green certificates quotas for the year 2008 and the following ones in accordance with Article 28(2)(3) of the order of 19 July 2001 on the organisation of the electricity market in the Brussels-Capital Region.

For a given period of production, a "guarantee of origin label" is to be issued to the owner of a certified plant for electricity produced from renewable sources[10]. This "guarantee of origin label" must indicate the energy source from which the electricity is produced, the period and the place of production and, for a hydroelectric plant, the production capacity.
When the plant produces electricity from renewable energy sources, particularly, biomass and other energy sources, the "guarantee of origin label" must be issued for the proportion of the green electricity corresponding to the biomass used.
Such issuance for a given production period excludes the issuance of green electricity certificates.
Each guarantee of origin issued by the service is freely transferable and negotiable following the example of the green electricity certificates.

3 Tax reduction and credits

Where subsidies are granted by the Brussels-Capital Region, any energy grant for private individuals, the tertiary sector and the collective accommodation sector mayalways be cumulated with the subsidies proposed by the federal public authorities.

V. Measures to increase the share of renewable energies

With a view to enabling uninterrupted growth of the share of renewable energies in the regional energy audit, a stable and permanent grant policy is an important tool, together with a series of other measures such as awareness, demonstration projects and training of those involved in the market.

In this context, this chapter presents the measures suggested to increase the share of renewable energies in the Brussels-Capital Region. To be implemented, they must be inserted into an action plan.

The measures have been classified as follows, enabling the recipients and the beneficiaries to be identified, while underlining those responsible for change:

- Sociocultural measures: elements connected with knowledge, training and information
- Economic measures: elements concerning investors' and users' financial capacity, elements promoting the profitability of the plants
- Administrative measures
- Technical measures

[10] Official Gazette No 232, Monday 28 June 2004 (second edition): *Minister of the Brussels-Capital Region*, 06 MAY 2004. —Order of the Government of the Brussels-Capital Region on the promotion of green electricity and quality cogeneration, pages 52603-52612.

– **Sociocultural measures**

Increase the visibility of the measures and potential in terms of renewable energy sources

Undertake communication campaigns

Heightened visibility is an essential factor in the success of the measures supporting the development of the renewable energy sources. For this purpose, greater visibility will be given to the different measures and initiatives of the Brussels-Capital Region via communication campaigns aimed at all the target groups involved, the media and the local energy agencies. The latter must also target warehouse, office block, hotel, hospital and sports centre developers. A growth in information activities and technical aid for consumers will be developed pending the new 2009-2014 legislation.

Ensure the public authorities set an example

The Region must set an energy example in its own buildings. The Brussels public authorities will gradually be obliged to integrate a share of the green energy production of 30% of the consumption of newly built buildings. Furthermore, any new building must at least comply with the passive standard and any extensive renovation must comply with the very low energy standard. The same applies to public bodies or similar which receive funds from the Region.
The Brussels-Capital Region will encourage the other levels of authority to do the same with regard to infrastructures located on its territory and pay special attention to mentoring business/entrepreneurs.

Increase professional levels of knowledge

Increase and enhance the specialist training offer

The training of fitters will become a priority, alongside the ongoing transmission of information and training accessible to all construction professionals. At the present time, training for solar panel fitters is organised twice a year in the Brussels-Capital Region.
Special attention to vocational training will be one of the priority activities in the new legislation. Furthermore, increased training activities are planned from the new eco-construction trades to these new technologies.

Ensure the transfer of knowledge

Running parallel to the training, emulation among professionals can be a powerful means of delivery in the transfer of skills and in enhancing knowledge. In order to encourage professionals to develop this sentiment, campaigns involving success stories and the improvement of the businesses that have contributed thereto will be pursued, or enhanced. Additionally, the systematic processing of data and the communication of the different cogeneration systems shall improve the knowledge relevant to these plants.

– **Economic measures**

The Region will actively support and encourage commercial activity to create new jobs, in other words, to direct the activities toward the frontier technology sectors and the priority objectives.

Ensure the stability and visibility of the support measures

The last thing investors want is surprises and risks. Any insecurity in the investments automatically leads to additional costs in the form of risk premiums. That is why the long term stability and visibility of a support policy are conditions essential to the success of such a policy. Measures must be taken both on this point and in regard to the investment aids and production. As for the investment aids, it is advisable first of all to make the grant aid durable for the renewable energy projects, including biomass, thereby ensuring the regular assessment of the transparent, predictable support granted.

Promote access to investment

The investment hurdle is still a difficult stage to overcome for a number of users. In order to promote access to investment, encouragement and clarification of "off-balance sheet" formulae – leasing, third party investors or partnerships – must become a major action point with a view to encouraging the interested parties to take the plunge and opt for a renewable energy production system, whether cogeneration or solar power. Issuing a financial guarantee or loans at preferential rates is also a possibility. In this regard, we note that the first loans of this type were issued in 2007 in the Brussels-Capital Region.

Access to the energy will be made by encouraging joint purchases of energy supplies and renewable energies, including through support in creating cooperatives.

Increase the circle of public eligible to receive the grants

A relaxation of the conditions for grants to install photovoltaic solar collectors in terms of changing the requirement that the production and the consumption must be in the same place, would increase the public eligible to receive this incentive. With regard to the prerequisite to own an interest in the building, this renders some projects ineligible for the grant.

Such relaxation would enable projects to be developed that are not yet profitable today. A form of assistance would be available, for example, to installations on better positioned neighbouring roofs.

Optimise the GC mechanism

The GCs changed from 1.82 GC/MWh to 7.28 GC/MWh (for the first 20 m²) in September 2007. This increase induces a significant reduction in the return on investment period and, together with the tax incentives, reduces this period to between three and six years for private individuals and between 8 and 15 years for the tertiary sector, excluding maintenance costs, discount rates or any possible increase in the cost of fossil fuels.

However, certain difficulties regarding the delays in certifying the plants have been discovered. These can easily be resolved in one of the following manners

- Implement structural actions to eliminate the delays in processing files and accelerate the certification procedure
- Amend the text of Article 14 of the Decree of May 2004 to cover the term of a green certificate, thus after the period required to certify the plant

Furthermore, in order to optimise the green certificates mechanism in the Brussels-Capital Region, certain matters must be discussed over these coming years, for example, the term of the green certificates. Indeed, regarding the electricity production plants whose return on investment time exceeds 10 years or those with potentially significant operating costs (plants operating on biomass, cogeneration plants and photovoltaic plants larger than 10 kWc), the issuance of green certificates for an extended term (from 10 to 20 years) and the fixing of a minimum price for a longer term (20 years for example) for these green electricity certificates would provide an additional user guarantee.

It may be desirable for these measures to be implemented jointly with the other regions with a view to potential future interchangeability of the GC between Regions, whilst ensuring that the different GCs correspond to the energy gains or in equivalent CO_2 terms.

Supplement the compensatory mechanism

Commercial plants are disadvantaged owing to the application of the point of injection compensatory measures. A compensatory measure adapted to this type of plant would enable available, well positioned public spaces to be used for a solar power operation. This could be applied both to co-ownership properties and certain public buildings. A draft order undergoing approval ought to resolve this point.

Furthermore, with regard to the plants currently benefiting from a compensation scheme, a regulation on a guaranteed minimum resale price of the electricity produced, if the electricity produced exceeds consumption, in the form, for example, of an amount that would be equal to the electricity purchase price, would establish its profitability.

- **Administrative measures**

Promote the incorporation of a share of the renewable energy sources into buildings

Restricted final energy consumption has been required since July 2008 with regard to new construction projects; this objective may be achieved through, in particular, using renewable energy sources to reduce the total E value.

Furthermore, a feasibility study – aimed in particular at assessing the profitability of a cogeneration solution, of a thermal solar system or a photovoltaic plant – is required for new construction projects greater than 1 000 m² and building renovations in excess of 5 000 m².

An extension of this obligation to all buildings located in the Region, or even an obligation to incorporate a share of production from renewable energy sources in this area (unless this is not possible or due to prohibitive implementation costs), would doubtless be greatly effective in increasing the share of renewable energy sources.

Establish an energy register

The Region should be able to hold an energy register concerning the buildings and infrastructures

located on its territory to enable it to release the energy saving potential, the feasibility and the real implications of using renewable energy sources.

Guarantee quality, secure uniform methodologies

Approval or quality certification scheme

In order to increase user confidence by guaranteeing the quality of the solar power plants, a consultation shall be required on the potential advisability of opting for an approval or quality certification scheme, which would intervene in the event of execution problems or non-compliance with the code of practice by a fitter.

Simpler procedures

Legislation

The Brussels-Capital Region has launched the draft COBRACE, the Brussels atmosphere, climate and energy code, which includes the development of a legal framework to encompass the measures decided by the Government and simplify the atmospheric quality, atmospheric emissions, energy and climate legislation.

Connection to the grid

At the present time, research on a solution to the inherent technical problems in connecting to the electricity distribution grid requires in-depth reflection within the framework of the distribution grid manager's technical regulation.

To facilitate the electricity grid connection procedure, it shall be necessary to adapt the technical regulation by allocating a specific passage to the connection of the solar panels.

Obtaining the GCs

A simplification of the system for obtaining the green certificates would encourage use of the renewable energy sources. Such simplification should thus be added to the commercial optimisation measures of the GC mechanism.

Environmental constraints

The establishment of norms, allowing plants strict levels of emissions of fine dust particles in order to benefit from an energy grant, is essential for a city such as Brussels. Unambiguous regulatory support should be provided for this purpose.

Increase the biomass cogeneration share via the development of heat networks

The extension of the possibilities of using heat produced by cogeneration would increase the potential of constructing these further electricity production plants. To do so, it would be necessary to implement a framework facilitating the development of the heat grid.

Identify and promote new technologies

Several market studies were performed to highlight the frontier technologies in the Brussels-Capital Region.

Following these studies identifying the unexploited potential of the Brussels-Capital Region, a grant support framework and a clear procedure through the drafting of technical conditions could lead to the opening of the market for such systems.

- Technical measures

Implement a logistics, stock management and biomass import channel

Within the scope of promoting biomass as a green energy source, it is currently more realistic to turn toward the micro-economy (in other words, at a very local level) rather than toward the macro-economy (the entire Region). The regional biomass potential such as wood and colza oil will indeed always be limited in Brussels, with the exception of imports.
In order to significantly develop the share of this renewable energy source in the regional energy audit, biomass imports must thus be addressed. An imported quota could indeed supplement the biomass available in the Brussels-Capital Region to supply the cogeneration plants. Yet, by sea or waterway, the energy impact of transporting the biomass is relatively reduced. In this hypothetical case, implementing a supply channel by delivering raw materials through the Brussels canal could be planned in line with the adoption of sustainability criteria.

Finally, in order to finalise this supply channel, it is important to identify the available storage locations in the region.

Ensure technological developments

The research and development activities in the biomass field in the Brussels-Capital Region are as yet greatly unexploited; significant technological improvements could yet be obtained, both through optimising power plant output and with regard to processing the biomass. It is important for the public authorities to provide sufficient support measures for this purpose and an energy requirements register.

Plans for 2010 – national synthesis

I. Gross electricity consumption plans in 2010

The estimated gross electricity consumption set out in the preceding chapters does not incorporate the effects of the economic crisis. The estimates have been corrected in this chapter (internal calculation) so that they may be taken into account.

The gross electricity consumption projections taken into account under this chapter are set out as follows:

	2007	2010
Walloon Region	5 970	5 734
Flemish Region	28 016	26 702
Brussels-Capital Region	60 389	57 759
TOTAL	94 375	90 195

Table 6.1: Expected gross electricity consumption in 2010 (GWh)

Source: internal calculation

Following the impacts of the economic crisis, the gross electricity consumption estimates have been significantly reduced.

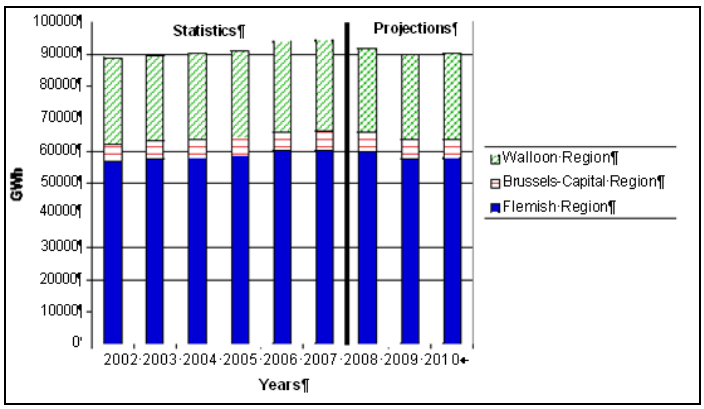


Figure 6.1: Evolution of the gross electricity consumption on Belgium (2002– 2010)

II. Attaining the Belgian objective of 6% for 2010

1 Aggregated RES-E production statistics 2002-2007

In Belgium, electricity produced from renewable energy sources has increased during the 2002-2007 period as follows:

	2002	2003	2004	2005	2006	2007
Federal (Off-shore wind farm)	0	0	0	0	0	0
Walloon Region	710	622	761	920	1 315	1 700
Flemish Region	326	437	628	967	1 431	1 640
Brussels-Capital Region	105	98	98	73	71	64
TOTAL	1 141	1 157	1 487	1 960	2 817	3 404

Table 6.2: Aggregated renewable electricity production statistics in Belgium (2002– 2007) (GWh)

2 2008-2010 RES-E production projections

The expected increase in renewable electricity produced in Belgium during the 2008-2010 period is set out as follows:

	2008	2009	2010
Federal (Off-shore wind power)	0	70	181
Walloon Region	2 111	2 458	2 721
Flemish Region	1 997	2 154	2 307
Brussels-Capital Region	79	85	91
TOTAL	4 187	4 767	5 300

Table 6.3: Aggregated projections for renewable electricity produced in Belgium (2008– 2010)

The production estimates in 2010 were significantly reduced. It is largely due to:

- the carry-over of certain investments to be made in the North Sea;
- a substantial reduction in the renewable electricity produced in the Flemish Region.

3. Synthesis

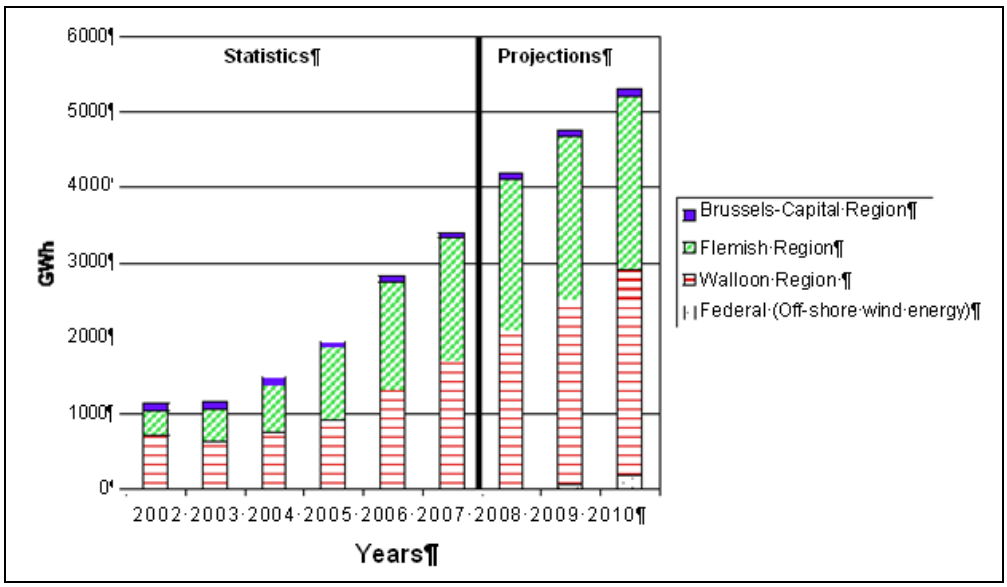


Figure 6.2: Increase in renewable electricity produced in Belgium (2002– 2010)

III. Conclusions on achieving the objective

The policies and measures undertaken in Belgium have enabled a remarkable growth in the production of renewable electricity. This growth is indeed close to 200% against the 2002-2007 period, and should achieve – if the projections are fulfilled – over 360% against the 2002-2010 period. Although spectacular, this growth is less than that previously expected owing, in particular, to the effects of the economic crisis.

The share of electricity produced from renewable energy sources in the gross electricity consumption changed from 1.8% in 2002 (prior to the various green certificates schemes being implemented) to 3.61% in 2007, and should reach 5.88% in 2010, in other words – according to the nearest statistical differences – the indicative target of 6% set forth in Directive 2001/77/EC.

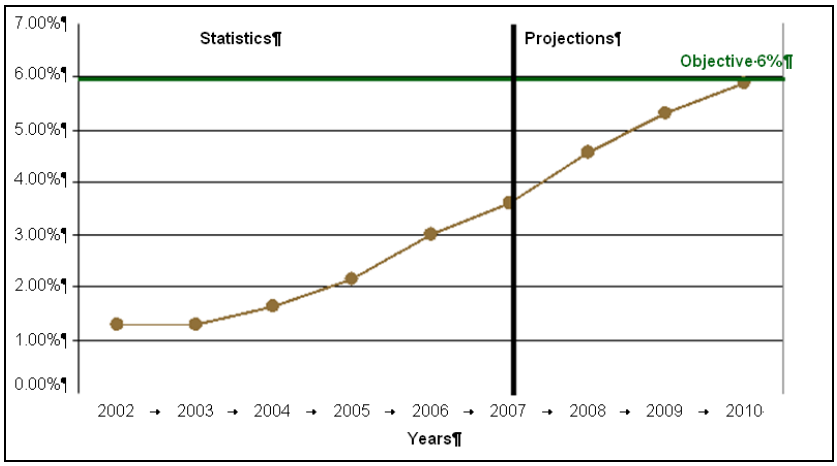


Figure 6.3: Increase in the share of renewable electricity production in the gross electricity consumption in Belgium (2002 – 2010)

Annex: Statistical data and projections (2002 – 2010)

I. Expected increase in the electricity produced from renewable energy sources

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Federal (Off-shore wind	0	0	0	0	0	0	0	70	181
Walloon Region	710	622	761	920	1 315	1 700	2 111	2 458	2 721
Flemish Region	326	437	628	967	1 431	1 640	1 997	2 154	2 307
Brussels-Capital Region	105	98	98	73	71	64	79	85	91
TOTAL	1 141	1 157	1 487	1 960	2 817	3 404	4 187	4 767	5 300

Table 7.1: Expected increase in the renewable electricity produced in Belgium (year 2002-2010) (GWh)

II. Expected increase in the gross electricity consumption

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Brussels-Capital Region	E 5 490	5 540	5 711	5 799	5 880	5 970	6 020	5 711	5 734
Walloon Region	26 854	26 635	27 032	27 006	27 950	28 016	25 800	26 596	26 702
Flemish Region	56 612	57 556	57 806	58 417	60 139	60 389	59 973	57 529	57 759
Total	88 956	89 731	90 549	91 222	93 969	94 375	91 793	89 836	90 195

Table 7.2: Statistics and expected evolution of the gross electricity consumption in Belgium (year 2002-2010) (GWh)

III. Expected increase in the share of electricity produced from renewableenergy sources in the gross electricity consumption

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Share of RES-E in the	1.28%	1.29%	1.64%	2.15%	3.00%	3.61%	4.56%	5.31%	5.88%
Prod. RES-E	1 141	1 157	1 487	1 960	2 817	3 404	4 187	4 767	5 300
Cons.gross Elec.	88 956	89 731	90 549	91 222	93 969	94 375	91 793	89 836	90 195

Table 7.3: Expected increase in the share of electricity produced from renewable energy sources in the gross electricity consumption (2002-2010) (%)