



RENEWABLE ENERGY POLICY COUNTRY PROFILES

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www.reshaping-res-policy.eu

Eva Teckenburg, Max Rathmann, Thomas Winkel, ECOFYS

Mario Ragwitz, Simone Steinhilber, FRAUNHOFER ISI

Gustav Resch, Christian Panzer, Sebastian Busch, EEG

Inga Konstantinaviciute, LITHUANIAN ENERGY INSTITUTE

With contributions from:

Sacha Alberici, Carolin Capone, Jean Grassin, Paul Noothout, Siobhan O'Keeffe, Georgios Papaefthymiou, ECOFYS

Egidijus Norvaiša, Dalius Tarvydas, Viktorija Bobinaite, LITHUANIAN ENERGY INSTITUTE

Botond Weöres, EnergoBanking Advisory, Hungary

Arturo Lorenzoni, Niccolò Cusumano, Bocconi University, Italy

Mauro Roglieri, Thetis, Italy

Franck van Dellen Ramon, FactorCO2, Spain

Arjan Visser, Djadadjji, Bulgaria

Cristian Tantareanu, Enero, Romania



Programme area: ALTENER, RES

Coordinator: Dr. Mario Ragwitz
Fraunhofer Institute for Systems and
Innovation Research (ISI)
Email: m.ragwitz@isi.fraunhofer.de
Phone: +49-721-6809-157



Partners: Energy Economics Group (EEG) at TU Vienna, Austria
Ecofys b.v. (Ecofys), The Netherlands
University of Cambridge (UCAM), United Kingdom
Lithuanian Energy Institute (LEI), Lithuania
Utrecht University, The Netherlands
EnergoBanking Advisory Ltd, Hungary
Bocconi University, Italy
KEMA, The Netherlands

Website: <http://www.reshaping-res-policy.eu>

Objective: Derivation of effective and efficient policies supporting renewable energies in a liberalised European energy market and assisting EU Member States in the implementation of the RES Directive for 2020.

Benefits: A more effective promotion of RES at lower costs for consumers

Keywords: RES, Policy, Legislation

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The core objective of the project RE-Shaping is to assist Member State (MS) governments in preparing for the implementation of Directive 2009/28/EC and to guide a European policy for RES in the mid- to long term. The past and present success of policies for renewable energies will be evaluated and recommendations derived to improve future RES support schemes.

The effectiveness and the efficiency of current and future RES support schemes is analysed with specific focus on a single European market for renewable electricity products. Current best practices are identified, and (future) costs of RES and the corresponding support necessary to initiate stable growth are assessed. Better integration of RES policies with climate and innovation policy as well as liberalised energy markets will be analysed and promoted. Options for flexibility between Member States will be analysed. The future deployment of RES in each MS will be calculated based on the Green-X model to assist MS in implementing national action plans and to support a long term vision of the European RES policy. The latter will be based on an in-depth analysis of the long term RES potentials and costs. The impact of policies on risks for RES financing will be analysed and improved policies and financing instruments will be proposed.

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Relationship of this document with NREAPs

Article 4 of the renewable energy Directive (2009/28/EC) required EU Member States to submit national renewable energy action plans (NREAPs). In the NREAPs Member States describe how they envisage implementing the Directive and reaching 2020 targets. Each NREAP sets out sectoral targets, expected technology mix, and measures and reforms to overcome barriers to developing renewable energies.

The content of the NREAPs is not explicitly mentioned in this report. The content of this report is based on local experts independent from Member State governments. While the NREAPs have been published throughout the year 2010, this report describes the policy situation as it applies in March 2011. Due to these reasons differences may exist between the content of NREAPs and this report.

All NREAPs can be accessed on the European Commission's Energy Transparency Platform: ec.europa.eu/energy/renewables/transparency_platform/action_plan_en.htm

The European Environment Agency has contracted ECN to create an external database and quantitative report of the NREAPs: www.ecn.nl/units/ps/themes/renewable-energy/projects/nreap/

Explanation graphs and tables shown on first page of each Member State section

Below the figures and tables shown on the first page of each Member State section are explained.

- All values are final energy as defined by the Renewables Directive.

First box: Graph – production and potential of RES-E, RES-H & RES-T

Allows visually comparing the relevance of the different sectors to each other, to the 2020 national RES target and to total final consumption

- The three dark-colored boxes represent the 2009 production of RES-E (left box), RES-T (middle box) and RES-H (right box):
 - The width of the box on the x-axis corresponds to the share of that sector's final energy consumption (incl. non-RES consumption) in total final consumption (value given in table).
 - The height of the box on the y-axis corresponds to the share of RES in the respective sector's final energy consumption (value given in table).
 - Therefore the area of each box corresponds to the final energy produced by that RES sector (value given in table). This allows visually comparing the relevance of the different RES-sectors to each other.
- The 2020 target is represented by the dotted line.
- The three light-colored boxes represent the realizable potential in 2020 of RES-E (left box), RES-T (middle box) and RES-H (right box). Note that the realizable potential is shown as share of 2009 consumption in the respective sector, and is therefore not corrected for change in respective consumption until 2020 (otherwise sector shares / box width in the graph would differ for 2009 production and 2020 potential).
- The total area of the graph (= the full quadrant between x- and y-axis) corresponds to total final energy consumption in that Member State. This allows visually comparing the relevance of the different RES-sectors to total final consumption.
- For definition and source of values see box below.

First box: Table – production and potential of RES-E, RES-H & RES-T and in total

This table presents the data used in the first graph plus average annual growth rates

- Row 1: E.g. RES-E production in 2009 divided by electricity consumption in 2009
- Row 2: E.g. electricity consumption in 2009 divided by total national final energy consumption in 2009
- Row 3-7: Production and growth of production from RES in the respective sector
- Row 8: Potential for renewable energy production in the respective sector in 2020: The realisable potential from the Green-X database shown here represents the achievable potential in 2020 assuming that all existing barriers can be overcome and all driving forces are active. The realisable potential is limited by assumed maximum market growth rates and planning constraints. Assumptions on maximum market growth rates and planning constraints are based on historic experience – i.e. at technology level a “best practice” evolution is preconditioned as observed in lead

markets. Consequently, the realisable potential should not be misinterpreted as an absolute maximum: If policies, markets or technologies develop extraordinarily fast, the realisable potential given here can be exceeded. The realisable potential has to refer to a certain year – it becomes substantially higher the further one looks into the future.

- Row 9: Average annual growth of total RES production needed between 2009 and 2020 in that Member State in order to achieve the national 2020 RES target.
Assumptions for this calculation: (a) No physical import or export of RES or statistical transfer; (b) 2020 energy consumption is taken from the PRIMES efficiency scenario (2008 version).

Second box: Graph – production and potential per RES technology

Allows visually comparing the relevance of the different RES technologies to each other – also across sectors

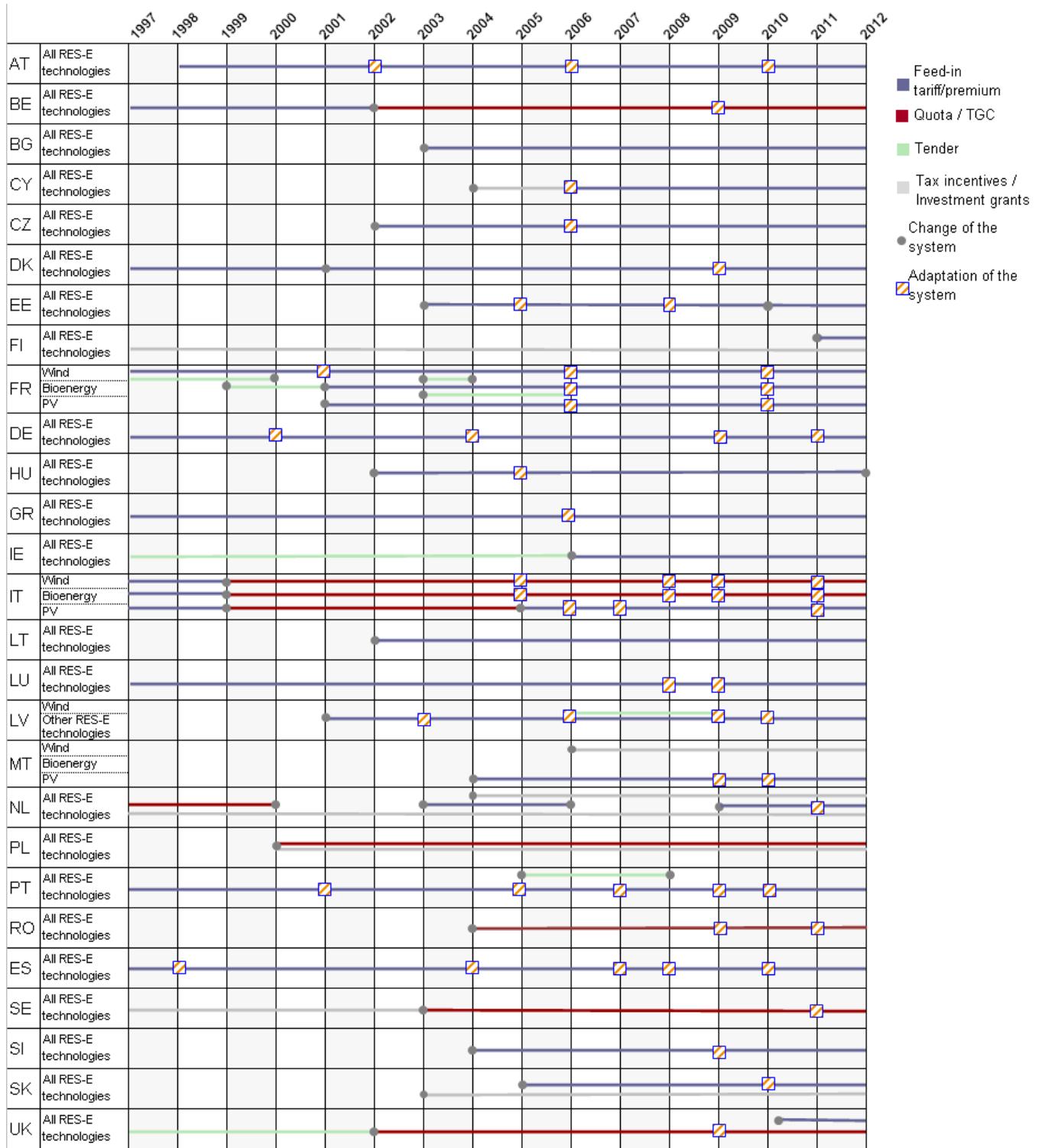
- Per technology the production in 2009 is shown (blue bar) and the realizable potential in 2020 (red bar) and 2030 (light red bar). See box above for definition of realizable potential.
- All technologies in all three sectors are shown in the same scale in order to be able to compare across sectors. Certain biomass resources can be used in various technologies and sectors. In order to be able to present technology-specific potentials, the total biomass resource potential available domestically has been allocated to specific technologies. As the biomass potentials can also be allocated in a different way, the potentials of the technologies shown in the dotted box are to be seen as indicative.
- The biomass potentials shown contain imports of primary solid biomass to the EU of on average (at EU level) of 30% compared to the domestically available additional forestry potential.
- Note that in many countries a larger share of transport biofuels is imported. As imported biofuels count towards the 2010 biofuel target, the total consumption (including import) is shown by the blue bar called ‘production’. This is the reason why the bars and figures for biofuel ‘production’ may in some countries be higher than the biofuel ‘potentials’.

Second box: Table – production and potential per RES technology

This table presents the data used in the second graph plus average annual growth rates

- The same kind of data as shown in rows 3-8 of the table in the first box is here shown per technology. See explanation of that table above.

Overview evolution of RES-E support instruments

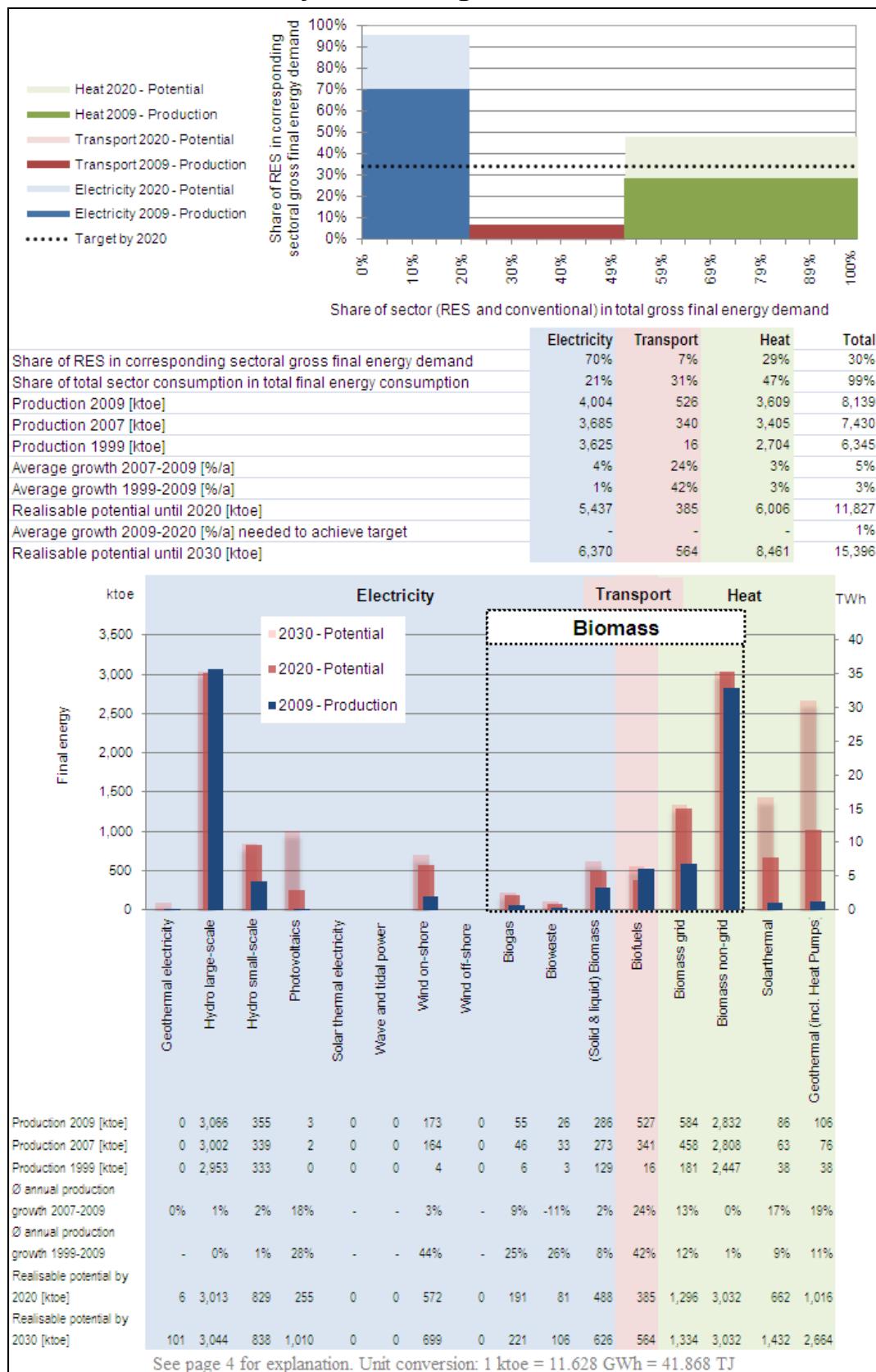


National binding 2020 RES targets

Table 1: National binding 2020 RES targets

EU Member State	RES in 2005	2020 RES Target	% increase required
Austria	23.3%	34%	10.7%
Belgium	2.2%	13%	10.8%
Bulgaria	9.4%	16%	6.6%
Cyprus	2.9%	13%	10.1%
Czech Republic	6.1%	13%	6.9%
Denmark	17.0%	30%	13.0%
Estonia	18.0%	25%	7.0%
Finland	28.5%	38%	9.5%
France	10.3%	23%	12.7%
Germany	5.8%	18%	12.2%
Greece	6.9%	18%	11.1%
Hungary	4.3%	13%	8.7%
Ireland	3.1%	16%	12.9%
Italy	5.2%	17%	11.8%
Latvia	32.6%	40%	7.4%
Lithuania	15.0%	23%	8.0%
Luxembourg	0.9%	11%	10.1%
Malta	0.0%	10%	10.0%
Netherlands	2.4%	14%	11.6%
Poland	7.2%	15%	7.8%
Portugal	20.5%	31%	10.5%
Romania	17.8%	24%	6.2%
Slovak Republic	6.7%	14%	7.3%
Slovenia	16.0%	25%	9.0%
Spain	8.7%	20%	11.3%
Sweden	39.8%	49%	9.2%
United Kingdom	1.3%	15%	13.7%
EU 27	8.5%	20%	11.5%

AUSTRIA – Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

From the 2009 perspective, the sector that clearly was most in need of improvement was the electricity sector and in the meantime the changes that had already been envisaged in 2009 have become effective. This concerns on the one hand a significant amendment of the Austrian Green electricity act, which included a new RES-E target of 15% for 2015, an extension of the support duration and increased overall budget; on the other hand this has been accompanied by an adjustment of the feed-in tariffs to recent cost developments (Ökostromverordnung 2010).

1. Summary: RES Support Policy

RES-E

The key policy instrument at the national level to support RES-E is the Austrian Green Electricity Act (Ökostromgesetz). After its adoption in 2002, finely tuned feed-in tariffs caused a particularly strong deployment of wind energy, biomass and biogas. After a decline of support levels and further modifications (i.e. budget restrictions and reduced guaranteed duration of support) in recent years, the development of new RES-E projects in Austria had almost stopped. As a consequence, on September 23rd, 2009, the federal parliament passed an extensive amendment which included several improvements, notably longer support periods, adjusted tariffs and slightly increased and technology independent overall budget. These changes have recently stimulated capacity additions especially in wind and hydro power and biomass plants.

RES-H&C

In Austria, national support policy for RES-H&C projects is provided by the Environmental Support Act (Umwelförderungsgesetz), which promotes RES mainly in the form of investment grants. It has recently been revised and a new extended support structure has been effective since October 1st, 2009. This national regulation addresses commercial entities, non-profit organizations, public institutions and utilities. Private households receive investment grants for RES-H&C projects at the provincial level. From a financial point of view and also with regard to the observed effectiveness, these programs clearly represent the main promotion scheme for RES-H in Austria.

RES-T

In Austria, RES in the transport sector are mainly supported in the form of biofuels. The support strategy is twofold. On the one hand, minimum blending obligations guarantee market access for biogenic products and, on the other hand, tax incentives provide financial support for biofuel production.

2. Details RES-Electricity Support Policy

The federal support policy for electricity from RES is regulated by the Austrian Green Electricity Act (Ökostromgesetz), which was implemented in 2002 and has been amended several times since. The current legal situation is based on the Austrian Green Electricity Act from 2002 in addition to several amendments, with the most recent one dating from 2009. This has replaced the legislation described in the 2009 edition of the Renewable Energy Country Profiles. Additionally, a new act has been passed in 2010 (Ökostromverordnung) that regulates the feed-in tariffs. In the following, the current support conditions for RES-E will be described and a brief outlook on possible future developments and adjustments will be given.

Feed-in tariff: The Current Situation

The main promotional instrument to support electricity from RES in Austria is a feed-in tariff system offering technology-specific incentives with purchase obligation. The purchase and selling of green electricity is administered by the settlement centre, OeMAG (www.oem-ag.at). The electricity fed into the grid is remunerated by OeMAG, whereby the height of the tariffs is predetermined (i.e. depending on the tariffs effective at the time when the supporting agreement is signed) and guaranteed for the whole supporting period (E-Control, 2010). The resulting support expenditures are paid through two sources:

- (i) The electricity is allocated to the power traders, according to their market share and they have to pay a yearly defined settlement price for it. Two price categories were defined in this respect. For small-scale hydropower, the settlement price amounts to 6.44 €cent/kWh, and for all other RES-E 12.42 €cent/kWh are paid in 2010.
- (ii) The residual (minor) part of support expenditures is directly transferred to the final consumers who pay a yearly flat charge for the electricity meters (§ 22a Ökostromgesetz). The fee depends on the grid level to which the consumer is connected, but is independent from his actual consumption. The fee in the period 2007 to 2012 ranges between 15 €/year/meter for grid level 7 (i.e. the household level) to 15.000 €/year/meter for grid levels 1 to 4.

The annual budget regarding net support expenditures for yearly new RES-E installations is set at 21 million Euros, which has resulted in € 340 million of cumulative net support expenditures for new RES-E installations in 2009. The budget is defined over the difference between the feed-in-tariff and the electricity market price and correspondingly the electricity market price development will have an influence on the effectively available support volumes. The budget is not pre-allocated to specific technologies, with the exception of photovoltaic installations, where the reserved annual budget is set to 10% (€ 2.1 million).

Based on the 2006 amendment, the OeMAG is required to publish each day the amount of feed-in tariff budget still available for each RES technology category for the according year. As of 2010 the subdivision of the budget has been lowered from four to two categories (PV and all other eligible RES electricity), with 10% being reserved for PV. The guaranteed duration of the feed-in tariff is currently 13 years for all non-feedstock dependent technologies (e.g. wind, solar) and 15 years for feedstock-dependent

technologies (e.g. biomass). The legal act to determine the tariffs for each technology is the “Ökostromverordnung”. Table 2 below gives an overview on the currently effective tariffs as defined in the “Ökostromverordnung 2011”. Some further noteworthy changes that became effective with the 2009 electricity act amendment are listed below:

- Small hydro is supported by investment grants of up to 30% instead of feed-in tariffs, funding is provided by OeMAG (<http://www.oem-ag.at/>)
- PV installation with an installed capacity up to 5kWp receive investment grants, funding is provided by KLI.EN (<http://www.klimafonds.gv.at/>)
- A new intermediate target for RES-E deployment from feed-in tariffs has been set at 15% for 2015.
- In future, tariffs will be set in accordance with average generation costs of the specific technologies, whereby feedstock prices are capped at the level of electricity market revenues.

Table 2: Feed in tariffs for electricity from RES in Austria

Feed-In Tariffs 2011		cent/kWh
non-feedstock-based technologies		duration 13 years
Wind Power		9.7
Photovoltaic	building integrated	up to 5 kWp 5kWp to 20 kWp over 20 kWp
		investment grants 38 33
	stand alone	up to 5 kWp 5 kWp to 20 kWp over 20 kWp
		investment grants 35 25
	Biogas (waste)	sewage gas landfill gas
		6 5
Geothermal		7.5
feedstock-based technologies		duration 15 years
Solid Biomass	up to 500 kW	14.98
	500 kW to 1 MW	13.54
	1 MW to 1,5 MW	13.1
	1,5 MW to 2 MW	12.97
	2 MW to 5 MW	12.26
	5 MW to 10 MW	12.06
	over 10 MW	10

Feed-In Tariffs 2011		cent/kWh
Waste with a high biogenic fraction	depending on size and type of source ¹ :	Solid biomass minus 25% Solid biomass minus 40% 5
Co-firing of biomass	solid biomass depending on size and type of source ² : depending on size and type of source ² :	6.12 minus 20% minus 30%
Liquid biomass	liquid biomass bonus for efficient CHP	5.8 2
Biogas (agricultural digestion)	up to 250 kW 250 kW to 500 kW over 500 kW Cofermentation of waste bonus for efficient CHP bonus for conditioning to natural gas standard	18.5 16.5 13 minus 20% 2 2

Feed-in tariff: Future developments

Besides the specific regulation concerning RES-E support that has been explained above, some additional documents have been released recently that may allow some conclusions on future priorities in RES-E support, namely: The Energy Strategy for Austria released in March 2010 and the National Renewable Energy Action Plan (NREAP) for Austria released in June 2010. In the energy strategy some technological priorities have been set with regard to RES-E: It is expected that the majority of renewable electricity generation will come from hydro and wind power. Agricultural biomass shall mainly be used for biofuel production, solid biomass for heat generation. The deployment of PV shall be dependent on the future cost development of this technology. Electricity generation from renewables shall grow by 4.7 TWh from 2008 to 2020, whereby the technology specific targets of 3.5 TWh growth for hydro power and 2.8 TWh for wind power lead to a higher overall value. These technology specific trajectories have largely been adopted in the NREAP and they also correspond well with current applications for approval for new RES installations. In addition to the above

¹ Defined in §8 of the Ökostromverordnung

mentioned possible future adaptations on the technology side, the Economics Ministry has set up a working group to dispute the future financing of support mechanisms.

3 Details RES-Heating and Cooling Support Policy

The support market for RES-H in Austria is diverse. This concerns the distinction between federal and provincial support schemes as well as between a set of support instruments. In the following it will be distinguished between investment subsidies, tax incentives, feed-in tariffs and promotional activities. The most substantial form of support is available on the provincial level through investment subsidies for solar thermal, heat pumps and biomass heating systems (Kranzl et al., 2009). A recent amendment to the Environmental Support Act (Umwelförderungsgesetz) has also extended the support available on the federal level. Next, support schemes for RES-H at the federal level are illustrated before measures at the provincial level are discussed.

Feed-in Tariff for Biomass Electricity Exclusively for CHP

This mechanism has already been explained in the section on RES-E above. For power plants run with solid biomass, liquid biomass, waste with a high biogenic fraction, or biogas as well as mixed combustion, it is only possible to receive a feed-in support for the electricity in the case of combined heat and power production (CHP) as otherwise the requested total conversion efficiency standards (> 60%) cannot be met (§2 Ökostromverordnung 2009).

Financial Grants

Financial grants at the federal level are awarded on the basis of the Environmental Support Act. The corresponding support program is called "Environmental Support in the Inland" and is managed by the Kommunalkredit Public Consulting GmbH (www.public-consulting.at). Target groups for this support are all private and legal persons, but the application needs to be connected with the exercise of some commercial activity, a confessional or non-profit institution, a public entity or a utility. From the installations that receive financial support, district heating, biomass plants, solar thermal and heat pumps are those that are relevant for heating and cooling support policies. Table 3 gives an overview of the level of support that these technologies can receive under the Environmental Support Act. In most cases the support is granted "de-minimis" which means it may not exceed € 200,000 in three fiscal years. The currently available yearly budget for this program is € 90.2 million.

Tax Incentives

Three categories of taxes incentivize the use of RES for heating & cooling. First the value added tax for agricultural and forestry products is reduced to 10%, whereas the value added tax on fossil fuels is 20%. Moreover, the Austrian mineral oil tax poses additional tax costs on fossil fuels. This further increases the cost of heating oils by € 60 per 1.000 kg. Thirdly, since 1979, the Austrian income tax act defines energy saving measures as special expenses for which tax allowances can be reclaimed. These measures also include expenses for heat pumps, solar thermal and bioenergy systems. These expenses can be deducted from the taxable income. In this context it is important to note that there is no restriction regarding the combination of tax allowance schemes and investment grants, thus a combination of these schemes is possible.

Table 3 Tariffs under the „Umweltförderung im Inland“ support scheme

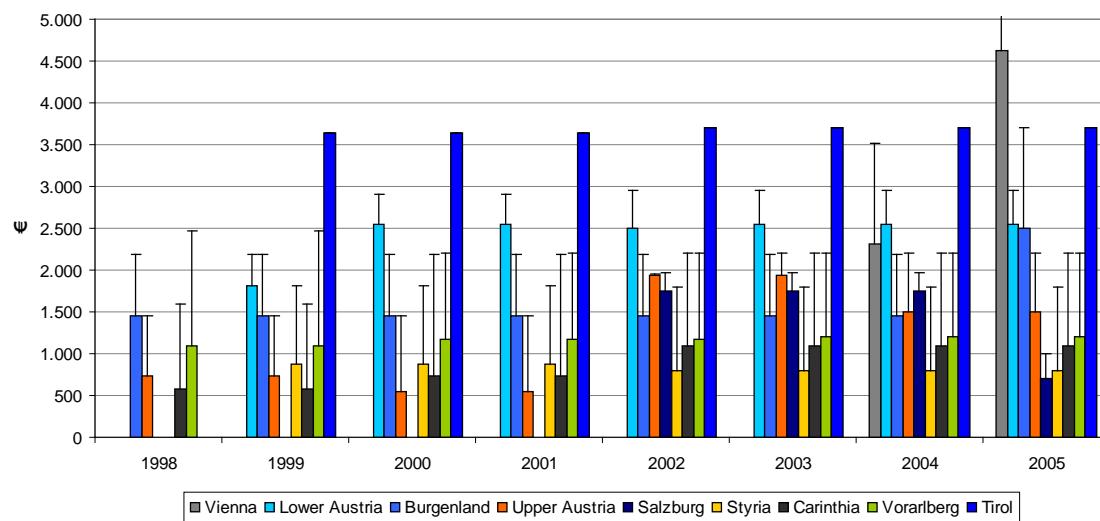
RES	capacity	subject to receive support	level of support
connected to district heating	≤ 400 kW	investments that are made inside the property of the receiver, are owned by him and are required to connect to the grid	<ul style="list-style-type: none"> • € 56/kW for 0 to 100 kW, then € 32/kW for every additional kW up to 400 kW • When connected to a fossil district heating grid the allowance is only half of this • For external energy consultancy services (at least 8 h) an allowance of € 300 is granted • The support is granted "de-minimis" and is limited to 30% of the environmentally relevant costs at the max • De-minimis support: based on all environmentally relevant investment costs; support above de-minimis threshold: based on additional env. rel. inv. costs (which are determined by Public Consult) • 20% of environmentally relevant investment costs for RES installations and 10% for those of non-RES installations • projects above de-minimis threshold: max. 40% of the additional env. relevant investment costs
	> 400 kW	investments that are made inside the property of the receiver, are owned by him and are required to connect to the grid	<ul style="list-style-type: none"> • 120 €/kW for 0 to 50 kW; € 60/kW for every additional kW up to 400 kW • Boiler plants that fulfil "Umweltschutzrichtlinie Nr.37" are granted another € 10/kW • For external energy consultancy services (at least 8 h) an allowance of € 300 is granted • The support is granted "de-minimis" and is limited to 30% of the environmentally relevant costs at the max • De-minimis support: based on all env. relevant inv. costs; support above de-minimis threshold: based on additional env. rel. inv. costs • 20% of env. rel. costs; bonus of 5% is possible if 80% regionally sourced woodchips (timber) are used • projects above de-minimis threshold: max. 40% of the additional env. relevant inv. costs <ul style="list-style-type: none"> • For flue gas cleaning a bonus of 5% or max € 20.000 is possible for installations with a capacity between 400 and 1.000 kW • De-minimis support: based on all environmentally relevant investment costs; support above de-minimis threshold: based on additional env. rel. inv. costs (which are determined by Public Consult) • 25% of env. rel. costs; bonus of 5% is possible if 80% regionally sourced woodchips (timber) are used • projects above de-minimis threshold: 40% of the additional env. relevant inv. costs (max) <ul style="list-style-type: none"> • For flue gas cleaning a bonus of 5% or max € 20.000 is possible for installations with a capacity between 400 and 1.000 kW
biomass plants	≤ 400 kW	biomass firing plants as central supply unit at operational level	<ul style="list-style-type: none"> • 120 €/kW for 0 to 50 kW; € 60/kW for every additional kW up to 400 kW • Boiler plants that fulfil "Umweltschutzrichtlinie Nr.37" are granted another € 10/kW • For external energy consultancy services (at least 8 h) an allowance of € 300 is granted • The support is granted "de-minimis" and is limited to 30% of the environmentally relevant costs at the max • De-minimis support: based on all env. relevant inv. costs; support above de-minimis threshold: based on additional env. rel. inv. costs • 20% of env. rel. costs; bonus of 5% is possible if 80% regionally sourced woodchips (timber) are used • projects above de-minimis threshold: max. 40% of the additional env. relevant inv. costs <ul style="list-style-type: none"> • For flue gas cleaning a bonus of 5% or max € 20.000 is possible for installations with a capacity between 400 and 1.000 kW • De-minimis support: based on all environmentally relevant investment costs; support above de-minimis threshold: based on additional env. rel. inv. costs (which are determined by Public Consult) • 25% of env. rel. costs; bonus of 5% is possible if 80% regionally sourced woodchips (timber) are used • projects above de-minimis threshold: 40% of the additional env. relevant inv. costs (max) <ul style="list-style-type: none"> • For flue gas cleaning a bonus of 5% or max € 20.000 is possible for installations with a capacity between 400 and 1.000 kW
	> 400 kW	biomass firing plants as central supply unit at operational level	<ul style="list-style-type: none"> • 120 €/kW for 0 to 50 kW; € 60/kW for every additional kW up to 400 kW • Boiler plants that fulfil "Umweltschutzrichtlinie Nr.37" are granted another € 10/kW • For external energy consultancy services (at least 8 h) an allowance of € 300 is granted • The support is granted "de-minimis" and is limited to 30% of the environmentally relevant costs at the max • De-minimis support: based on all env. relevant inv. costs; support above de-minimis threshold: based on additional env. rel. inv. costs • 20% of env. rel. costs; bonus of 5% is possible if 80% regionally sourced woodchips (timber) are used • projects above de-minimis threshold: max. 40% of the additional env. relevant inv. costs <ul style="list-style-type: none"> • For flue gas cleaning a bonus of 5% or max € 20.000 is possible for installations with a capacity between 400 and 1.000 kW • De-minimis support: based on all environmentally relevant investment costs; support above de-minimis threshold: based on additional env. rel. inv. costs (which are determined by Public Consult) • 25% of env. rel. costs; bonus of 5% is possible if 80% regionally sourced woodchips (timber) are used • projects above de-minimis threshold: 40% of the additional env. relevant inv. costs (max) <ul style="list-style-type: none"> • For flue gas cleaning a bonus of 5% or max € 20.000 is possible for installations with a capacity between 400 and 1.000 kW
		biomass microgrid & biomass local heat	<ul style="list-style-type: none"> • 120 €/kW for 0 to 50 kW; € 60/kW for every additional kW up to 400 kW • Boiler plants that fulfil "Umweltschutzrichtlinie Nr.37" are granted another € 10/kW • For external energy consultancy services (at least 8 h) an allowance of € 300 is granted • The support is granted "de-minimis" and is limited to 30% of the environmentally relevant costs at the max • De-minimis support: based on all env. relevant inv. costs; support above de-minimis threshold: based on additional env. rel. inv. costs • 20% of env. rel. costs; bonus of 5% is possible if 80% regionally sourced woodchips (timber) are used • projects above de-minimis threshold: max. 40% of the additional env. relevant inv. costs <ul style="list-style-type: none"> • For flue gas cleaning a bonus of 5% or max € 20.000 is possible for installations with a capacity between 400 and 1.000 kW • De-minimis support: based on all environmentally relevant investment costs; support above de-minimis threshold: based on additional env. rel. inv. costs (which are determined by Public Consult) • 25% of env. rel. costs; bonus of 5% is possible if 80% regionally sourced woodchips (timber) are used • projects above de-minimis threshold: 40% of the additional env. relevant inv. costs (max) <ul style="list-style-type: none"> • For flue gas cleaning a bonus of 5% or max € 20.000 is possible for installations with a capacity between 400 and 1.000 kW
solar thermal	≤ 100 m ²	Solar heating systems to supply warm water or space heating	<ul style="list-style-type: none"> • € 100/m² for standard collectors, € 150/m² for vacuum collectors • For external energy consultancy services (at least 8 h) an allowance of € 300 is granted • The support is granted "de-minimis" and is limited to 30% of the environmentally relevant costs at the max • De-minimis support: based on all env. relevant inv. costs; support above de-minimis threshold: based on env. rel. additional inv. costs (determined by Public Consult) • within de-minimis: 20% of env. rel. investment cost, above up to 40% of additional costs
	> 100 m ²	Solar heating systems (>100 m ²) to supply warm water or space heating & installations for the thermal drive of cooling systems	<ul style="list-style-type: none"> • De-minimis, max 30% of env. relevant investment costs • Water heat pumps: 0-80 kW: € 85 kW, every other kW € 45 up to 400 kW • Air heat pumps: 0-80 kW: € 70 kW, every other kW € 35 up to 400 kW • For external energy consultancy services (at least 8 h) an allowance of € 300 is granted • De-minimis support: based on all env. relevant inv. costs; support above de-minimis threshold: based on env. rel. additional inv. costs (determined by Public Consult) • within de-minimis: 15% of env. rel. investment costs, above up to 40% of additional costs
heat pumps	≤ 400 kW	Heat pump systems for warm water and heating supply	<ul style="list-style-type: none"> • De-minimis, max 30% of env. relevant investment costs • Water heat pumps: 0-80 kW: € 85 kW, every other kW € 45 up to 400 kW • Air heat pumps: 0-80 kW: € 70 kW, every other kW € 35 up to 400 kW • For external energy consultancy services (at least 8 h) an allowance of € 300 is granted • De-minimis support: based on all env. relevant inv. costs; support above de-minimis threshold: based on env. rel. additional inv. costs (determined by Public Consult) • within de-minimis: 15% of env. rel. investment costs, above up to 40% of additional costs
	> 400 kW	Heat pump systems for warm water and heating supply	<ul style="list-style-type: none"> • De-minimis, max 30% of env. relevant investment costs • Water heat pumps: 0-80 kW: € 85 kW, every other kW € 45 up to 400 kW • Air heat pumps: 0-80 kW: € 70 kW, every other kW € 35 up to 400 kW • For external energy consultancy services (at least 8 h) an allowance of € 300 is granted • De-minimis support: based on all env. relevant inv. costs; support above de-minimis threshold: based on env. rel. additional inv. costs (determined by Public Consult) • within de-minimis: 15% of env. rel. investment costs, above up to 40% of additional costs

Provincial Support Schemes

Financially speaking, investment grants for RES-H systems and for residential building construction on the provincial level clearly represent the main promotion scheme for RES-H in Austria (Kranzl et al., 2009). Since these programs belong to the authority of the province governments as many as nine different schemes exist.

With respect to biomass heating systems, investment incentives are granted in every province, but each amounts and set of conditions is different. In Carinthia and Vorarlberg, fixed amounts are paid, whereas in other provinces such as Burgenland or Styria the investment incentives account for certain proportions of the total investment costs. In some provinces there are also additional requirements and restrictions and thus a comparison between the different support schemes is not straightforward. Austria has been successful in recent years in developing sustainable energy technologies like biomass heating systems or water heating. Figure 1 illustrates the dynamic development of the average investment aids for domestic biomass heating systems with typical capacities of 15 to 25 kW in the Austrian provinces in the last years. The impact of these measures was the accelerated substitution of old and inefficient single stoves and boilers with modern low emission systems.

Figure 1 Development of investment incentives for domestic biomass heating systems



Source: Haas, Havlickova, Kalt, Knapek, Kranzl, Weger 2005

Investment grants for solar thermal systems in the provinces started during the 1980's and were developed more strongly during the 1990's. The level of support varies for solar thermal systems between 20% and 40% of the investment costs depending on the size of the installation, the type of collector and the type of systems. This results in grants of € 600 to € 1.700 for water heaters and € 1.100 to € 3.500 for combined solar systems.

For heat pumps, investment incentives are in the range of 10% to 30% of the investment costs, depending on the type of heat source, coefficient of performance, etc. For heat pumps some utilities provide additional incentives like investment aids or reduced electricity tariffs.

To complement the above mentioned promotional measures offering financial support, a number of awareness campaigns and training programs have been carried out by regional energy agencies as well as by the federal government.

Support schemes for RES-Cooling exist in Austria and similarly for RES-Heat both at the provincial and at the federal level. In Lower Austria, air conditioning systems, that are powered by photovoltaic systems can receive financial support of 30% of the investment costs (up to € 1.500) and in Vienna, grants up to 30% of the investment costs for solar cooling systems are possible. At the federal level commercial entities, non-profit organizations, public institutions and utilities can claim support for up to 30% of the investment cost under the program, "Umweltförderung im Inland" that has been mentioned above for RES-H support, managed by Kommunalkredit Public Consulting GmbH.

4 Details RES-Transport Support Policy

In Austria RES, the transport sector is primarily supported in the form of biofuels, whereas recently support is also offered for the introduction of electric cars in demo regions through the Austrian Climate and Energy Fond (<http://www.klimafonds.gv.at>).

The support strategy for biofuel products is twofold. Minimum blending obligations guarantee their market access and, also, tax incentives provide financial support.

The substitution requirement is regulated in the Biofuel Directive that came into force on November 4th in 2004. It requires the obligated parties to increase the share of biofuels or other renewable fuels on their total fuel sales stepwise from year to year.

- As of October 1st, 2005: 2.5% for petrol and diesel;
- As of October 1st, 2007: 4.3% for petrol and diesel;
- As of October 1st, 2008: 5.75% for petrol and diesel

In 2007, the total biodiesel on the Austrian market accounted for 370.000 Mt and the total bioethanol for 406.000 Mt, which averaged a share of 4.7 % on the total diesel supply and the total petrol supply respectively.

Further tax incentives have been introduced through changes to the Austrian Mineral Duty Act. The precondition to receive the funding is that the fuels contain at least 44 litres of biofuels per 1,000 litres. Given these preconditions as of October 2007, the mineral oil duty for petrol per 1,000 litres is € 442 instead of €475 and as of July 2007 the mineral oil duty for diesel per 1,000 litres is € 347 instead of € 375. Pure biofuels are exempt from mineral oil duty. For fuels with a high share of bioethanol, the blending of bioethanol is regulated in the "Bioethanolgemischverordnung". As of October 1st, 2007, fuels that are produced between October 1st and March 31st and contain between 65% and 75% bioethanol or fuels that are produced between April 1st and September 30th and contain between 75% and 85% bioethanol are reimbursed 0.442 € per litre bioethanol from their mineral oil tax.

5 RES-E Grid Integration

The topic of grid integration in Austria is discussed regarding grid access, balancing responsibility and associated costs for RES-E projects.

The first question that has to be answered is whether RES-E projects have priority in grid connection compared to conventional generators. In Austria this issue is dealt with in the Electricity Economy and Organizational Act (EIWOG) and §23 states that all plant operators have the same right to the grid connection of their plants, irrespective of the type of energy source they use. While RES-E installations are not given priority regarding grid access, the question of priority in dispatch is handled differently. The priority of RES-E projects in case of grid congestions is based on §19 (EIWOG), which states that the transmission of electricity from renewable energy sources is to be given priority over transmission of electricity from non-renewable energy sources if the capacity is not sufficient to meet all demands for grid usage. Apart from that, the grid operator may deny grid usage to electricity from traditional energy sources after having taken into account the present market prices, if this prevents the crowding out of electricity generated by RES (§ 20, par 1 EIWOG).

Another important aspect is the financing of grid extensions. In accordance with the general provisions of energy law, the costs of a grid expansion are borne by the receiver. The receiver is either the final consumer or the grid operator that receiving electricity from the grid (§ 7 EIWOG). This interpretation would suggest a “shallow” charging on RES-E project side. Practically it has shown that the cost charging on the RES-E project side is rather “deep” in Austria. The reason for this is that costs for the grid extensions are based on bilateral contracts with the grid operator who in many cases is in a stronger bargaining position. The method to determine the cost of upstream grid reinforcement is not uniform. In some cases, RES-E project developers pay a lump sum fee and in other cases the calculation is done on a project specific basis. For example, in Burgenland and Lower Austria, the provinces with the highest share of wind power, the cost charging is based on a technical evaluation that has been developed for wind projects and is now applied proportionally to new developments.

Balancing responsibility for RES-E generation within the Austrian support scheme lies with the single buyer (OeMAG) and costs resulting from settlement of balancing energy are born by customers (Weissensteiner et al., 2008). For RES electricity that is not supported under the Green Electricity Act, the RES producers negotiate the bearing of balancing costs with the respective balancing responsible party they are associated with. According to the Green Electricity Report 2010, the costs for balancing energy were 0.478 €cent/kWh for wind power and 0.039 €cent/kWh for all other RES. In total in 2009, electricity generated through the Austrian Green Electricity Act resulted in balancing costs of 10,84 million Euros, almost solely caused by fluctuating wind power generation.

6 RES Production, Potential and Market Development

RES-E

The production of electricity from RES demonstrated a moderate growth during the second half of the 1990s followed by a slight decline starting in 2001. The limited growth in relative figures has to be seen in context to the high overall production and share of RES-E dominated by large hydropower. The development of small hydro lags far behind

the potentials that are seen for this source in Austria, due to lack of financial support but also the societal constraints at a regional level.

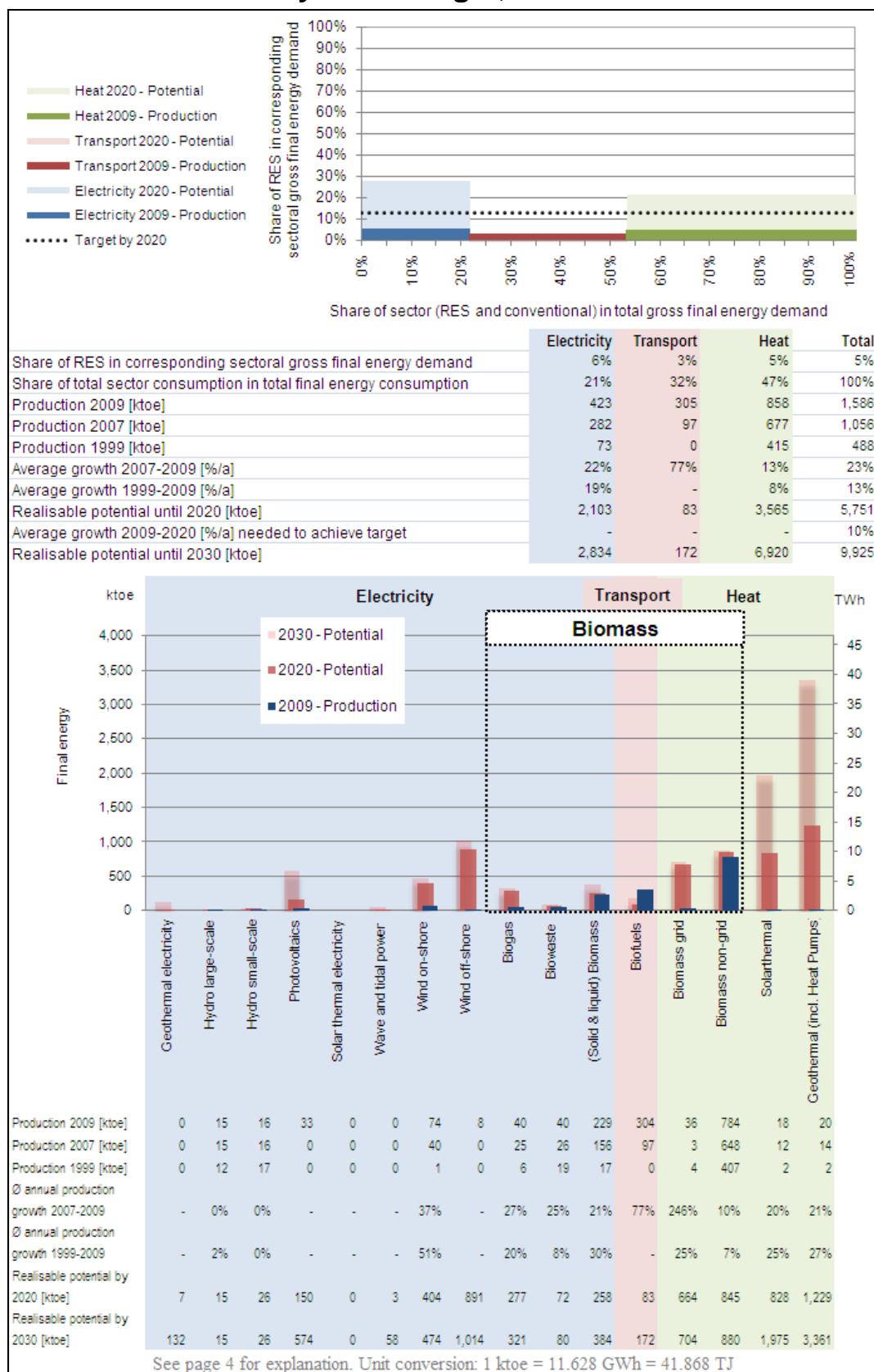
A major share of the biomass electricity is attributed to industrial wastes, especially in the paper industry. In contrast to the European definition, the biomass plants based on industrial waste are not considered in light of the expressed targets in the Austrian Green Electricity Act. In the case of wind energy, a very strong growth could be observed in the period 2003 to 2005, an effect of the strong feed-in tariffs effective for new installations during these years.

Since the phase out of the favourable support conditions (effective for RES-E producers which received permission in the period 2003 to 2004) stagnation could be observed in recent years where almost no new RES-E projects were realized. The most recent amendment of the feed-in tariffs has brought some new dynamics into the market and especially several new wind and hydropower projects are either being implemented or awaiting approval.

RES-H&C

The use of biomass is by far the most important source for RES-heat. The strong position is related to the continued and widespread use of traditional biomass-based heating. While the growth rate for biomass is low, the heat production from solar thermal heat and from geothermal heat including heat pumps increased. Even higher growth rates were reached for geothermal heat.

BELGIUM - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

As Belgium is still waiting for a new government, no major changes occurred in their energy policy. There were only changes in financial aspects of the energy policies, minimum prices, budgets and tax advantages were lowered in the past period.

1 Summary: RES Support Policy

RES-E

The green certificate system with a quota obligation is the main instrument to increase the share of renewable electricity generation in Belgium. The system is applied in all three regions, but the minimum prices and fines (for suppliers that do not meet the monthly obligation) differ per region. System operators are obliged to purchase certificates from producers for the established minimum price. These prices have been lowered in 2010.

There are no important changes expected. A potential change is the separation of guarantees of origin from green certificates in Flanders. Additional regulation and policy is also expected to stimulate the integration of decentralised power generation in the electricity network.

Apart from the green certificate system, implemented on a regional level, there are several small incentives in the form of tax deduction, subsidies or tenders; however, the impact of these schemes is probably small compared to the green certificate system.

RES-H&C

There is no large scale policy on the federal level for RES-H&C. For households, tax reductions are in place for the installation of RES-H production units.

In Flanders, the main instrument is the quota obligation for high quality² CHP (not necessarily renewable), combined with CHP certificates. In Walloon, high quality CHP is integrated in the green certificates system.

There are no important changes expected.

RES-T

The main instrument to promote RES-T is tax exemptions for the production of biodiesel and bioethanol. The exemption is only valid for a quoted production.

No important policy changes are expected at the national level and there are at the regional/local level no important additional instruments to stimulate RES-T.

² CHP is regarded as „high quality“ when the CO₂ emissions of the electricity generation are at 10% lower than that of conventional electricity generation methods.

2 Details RES-Electricity Support Policy

The main promotion scheme for RES-E in Belgium is a quota obligation on electricity suppliers to supply an increasing proportion of their electricity from renewable sources.

At federal level, it is possible to receive a tax deduction of up to 20.5%³ on the investment costs for improvements of efficiency in existing installations and the use of renewable energy sources.

Federal Instrument: Quota Obligation with Green Certificates

The following technologies are covered by the scheme:

- Co-firing of biomass in coal plants
- Biogas production from bio degradable waste and sewage treatment
- Burning of waste
- Solid or liquid biomass
- Biomass waste
- Unspecified biogas
- Hydropower
- Tidal-and wave power
- Geothermal heat
- Wind onshore
- Solar PV
- Other technologies

The quota obligation system is implemented in three regions with different minimum prices. The regulators (CREG (national, only offshore wind energy), VREG (Flanders), CWaPE (Walloon) and Brugel (Brussels)) issue certificates. Installations producing RES-E receive certificates for 10 years. In Flanders, exceptions are solar PV and offshore wind, which receive certificates for 20 years.

Green certificates can be traded between suppliers and producers (OTC) and trading corps, and suppliers have a monthly obligation to surrender certificates (virtually) to the regulators. Producers can also trade certificates with DSOs for the regional minimum prices and with the TSO (Elia) for the national established minimum prices.

Information is available on the websites of VREG, CWaPE, CREG and Brugel:

- <http://www.vreg.be/> (Vlaamse Reguleringsinstantie voor de Electriciteit- en Gasmarkt)
- <http://www.cwape.be/> (Commission Wallone pour l'Energie)
- <http://www.brugel.be/> (Reguleringscommissie voor Energie in het Brussels hoofdstedelijk gewest)

³ <http://www.unizo.be/energiecoach/>

- <http://www.creg.be> (Commissie voor de Regulering van de Elektriciteit en het Gas)

The instrument is not regularly revised, but the certificates system is linked to the RES-E goals in Belgium and its regions.

The green certificates system was first mentioned in a royal decree of 29 April 1999 regarding the organisation of the electricity market. The federal renewable electricity scheme was further established in a royal decree (national) of 16 July 2002 regarding the promotion of renewable electricity. Regional legislation was developed, based on this decree and European legislation.

In Flanders, the first certificates were traded in 2002 and in Walloon in 2003. The certificates system was further established in Flanders in a decision of the Flemish government of 5 March 2004, regarding the promotion of renewable electricity. In March 2009 the Flemish Government approved a draft amendment of the Flemish Electricity Decree. The system in the Walloon region was established by decree of the Walloon Government adopted on 12 April 2001.

In Flanders, minimum prices are applicable until 2020 and in Walloon until 2012. However, no end dates are set on national laws and regulations.

The prices are paid by the electricity suppliers and traders and, in case of the "fall back" minimum prices, by the TSO and DSOs. However, the quota obligation determines the size of the green certificates market. Investment premiums and tax reductions can be combined with this scheme.

The regulation does not make support conditional to the use of certified equipment and/or certified installers.

Minimum prices for new projects are presented in the table below. Subsidies only hold for new installations.

Table 1: Minimum prices for RES-E projects and targets.

			Flanders	Walloon	Brussels	Federal
Target	%		2009-2020: 4.8 - 13%	2003-2012: 3%- 12% (RES-E and CHP)	2004-2012: 2%- 3.25%	
Duration	years		10	10		10
Min price* (fixed)	(€/MWh)	Wind offshore	n.a.	n.a.	n.a.	€90 (20 years)
	(€/MWh)	Wind onshore	€80	€50		€50
	(€/MWh)	Hydro, tidal, wave	€95			€50
	(€/MWh)	Biomass and other	€80	€20		€20
	(€/MWh)	Solar (from 2011)	€330/90 (up to 20 years) ⁴	€150		€150
Penalty	(€/MWh)		€125 (2005- 10)	€100 (2005-07)	€100 (2007- 2010)	

⁴ See Table 2 for a detailed scheme on solar PV

New minimum prices in Flanders as of 2010, defined in the amendment in 2009:

co-firing of biomass in coal plants	60€/MWh for 10years
Biogas production from bio degradable waste and sewage treatment	
Burning of waste	
other technologies	
Solid or liquid biomass	90€/MWh for 10years
Biomass waste	
Unspecified biogas	
Hydropower	
Tidal-and wave power	
Geothermal heat	
Wind onshore	
Biogas fermentation installations	125 €/MWh ⁵

Table 2: Detailed scheme on minimum prices solar PV in Flanders as from 10 December 2010 ⁶

Year	< 1MWp	> 1MWp > 50% own use	> 1 MWp < 50% own use	
2011	330 €/MWh	330 €/MWh	330 €/MWh	20 years
2012	250 €/MWh	150 €/MWh	90 €/MWh	
2013	190 €/MWh	90 €/MWh	90 €/MWh	15 years
2014	150 €/MWh	90 €/MWh	90 €/MWh	
2015	110 €/MWh	90 €/MWh	90 €/MWh	
2016	90 €/MWh	90 €/MWh	90 €/MWh	
2017	90 €/MWh	90 €/MWh	90 €/MWh	
2018	90 €/MWh	90 €/MWh	90 €/MWh	

Solar energy installations that are installed on houses after January 1, 2010 are only eligible for green certificates when the roof or attic ⁷floor is insulated.

In Walloon, only PV is being promoted with minimum price; the guaranteed price is €150 / MWh and is fixed for 10 years⁸. Other RES options are supported on a federal level⁹:

The RES-E target in the Walloon region is 7-12% of gross electricity consumption in 2007-2012 for renewable electricity and CHP. In Flanders, the target increased from 0.8% in 2002 towards 6% in 2010, afterwards the quota increases to 13 % in 2020. In Brussels, the target is 2.5 % in 2009 to 3.25 % in 2012.

5 <http://energiesparen.be/node/2439>

6 <http://www2.vlaanderen.be/economie/energiesparen/doc/overzichtstabelGSC.pdf>

7 Artikel 7.1.5: <http://codex.vandenbroele.be/ALLESNL/wet/detailframe.vwp?WETID=-1&SID=1>

8 <http://www.cwape.be/?dir=3.4.01&title=Transactions+des+CV>

9 <http://www.cwape.be/?dir=3.4.01&title=Transactions+des+CV>

Furthermore, there is a penalty for non-fulfilment. The penalty is 125 €/MWh in Flanders and 100 €/MWh in Brussels and Walloon. The two tables below present the price for green certificates during the last years in Flanders and Walloon:

Table 2. Prices for green certificates in Flanders (Source: VREG¹⁰)

	Without Guarantee of Origin (GoO)		With GoO	
	Number of GCs	Average price (€)	Number of GCs	Average price (€)
1 Jan 2002 - 31 Mar 2003	94,645	73.85	0	0
1 Apr 2003 - 31 Mar 2004	158,713	91.57	0	0
1 Apr 2004 - 31 Mar 2005	226,505	109.01	0	0
1 Apr 2005 - 31 Mar 2006	535,448	110.30	42,944	111.58
1 Apr 2006 - 31 Mar 2007	274,352	109.19	500,646	109.17
1 Apr 2007 - 31 Mar 2008	395,522	109.06	602,375	108.81
1 Apr 2008 - 31 Mar 2009	585,447	109.36	540,954	106.72
1 Apr 2009 - 31 Mar 2010	615,783	108.28	1,443,214	106.93
1 Apr 2010 - 31 Mar 2011	554,890	106.89	1,022,679	105.99

Table 3 Prices for green certificates in Walloon (Source: CWape¹¹)

	Number of GC's	Average price (€)
2004	254,446	90.48
2005	294,613	92.10
2006	483,465	91.56
2007	537,982	89.84
2008	919,828	88.22
2009	1,275,676	88.13
2010	1,819,451	84.85

Walloon: Green certificates

To promote RES, Walloon uses green certificates and minimum prices for RES-E. According to the Walloon definition, electricity production is eligible for green certificates when electricity is generated from renewable energy sources or from high quality CHP. CHP is defined as “high quality” when the CO₂ emissions of the electricity generation are at least 10% lower than that of conventional electricity generation methods. In order to reach the European target of 20% renewable energy in final energy consumption, the Walloon government will increase its RES-E target. By augmenting their annual growth rate from 1% to 3.65%, Walloon aims to reach a target of 30.5% RES-E in 2016. This rate will be revised three times a year, according to the evolution of the market¹².

10 <http://www.vreg.be/statistieken-groene-stroom-0>

11 <http://www.cwape.be/xml/themes.xml?IDC=1559>

12 www.energymarketprice.com, newsletter March 10

Federal Instrument: Tax Deduction

Tax deduction of 40 % of the investment from income tax for PV solar panels managed by the federal tax agency. The instrument is periodically revised and can change per municipality.¹³

The deduction is regulated by Royal decree regarding investment- and tax-deductions for energy saving measures of 1 September 2006.¹⁴

The scheme started in 2003 and there is no end date specified. The maximum budget per installation is capped at €3,680. The tax deduction can be combined with an investment premium and green certificates. Technologies are to be installed by a registered installer. The following technical standards apply:

- For crystalline PV: IEC 61215 standard and minimum efficiency of 12 %.
- Thin film PV: IEC 61646 standard and minimum efficiency of 7 %.
- Invertors: Efficiency for grid connected systems must be higher than 91%, for autonomous systems this must be higher than 88%.

Flanders: Ecologiepremie plus

Ecologiepremie is an investment premium only eligible for enterprises (capital grant), via tenders, managed by the Agency of Enterprises (Agentschap Ondernemen). In December 2010 the Ecologie premie was revised to the Ecologiepremie plus. More information is available at:

http://ewbl-publicatie.vlaanderen.be/servlet/ContentServer?c=Page&pagename=Ondernemen%2FPage%2FMVG_CMS4_VT_Special_Subnav&cid=1296471353926

Every year there are new calls, however there is no established adjustment mechanism.

The last adjustment was adopted on 24 January 2011.¹⁵

The total legal framework can be found here:

http://ewbl-publicatie.vlaanderen.be/Uploads/EP-PLUS%20-%20Algemene%20informatie%20DEF20110201,0.htm#_Toc283387504

There is no set end date.

The Flemish government uses the Ecologiepremie to stimulate entrepreneurial investments in sustainable and more efficient production processes. There is no maximum plant size, but the premium is only paid out to enterprises.

In the new plans the 2011 budget was set to 102 million Euros, a reduction of 20% compared to 2009 (120 million Euros). In the new system, approved investments are

¹³http://www.energiesparen.be/subsidies/subsidieregel_detail?id=1822&verstr=769&doelgroep=1

¹⁴ <http://reflex.raadvst-consetat.be/reflex/pdf/Mbbs/2006/09/08/100189.pdf>

¹⁵ <http://ewbl-publicatie.vlaanderen.be/Uploads/20090403%20BVR%20versoepelingen.pdf>

limited to about 150 predefined technologies¹⁶. These include a wide range of technologies and are not limited to RES-E. The subsidy is calculated by an “ecology score” (depending on the environmental impact) and the subsidy percentage (dependent on the size of the company). Granted subsidies are set at a maximum of €1,000,000 over three years and 15% of the investment for large enterprises and up to 30% for small enterprises. Additional to these subsidies a subsidy bonus can be granted¹⁷, when the company chooses to:

- Perform a primary environmental, energy or efficiency audit;
- Obtain an environmental certificate;
- Implement an environmental management system (ISO 14001 / EN 16001 / EMAS);

If the enterprise is in an energy intensive sector, it is eligible only in case it committed itself to the audit agreement (for energy use between 0.1 PJ and 0.5 PJ) or the benchmarking agreement (energy use over 0.5 PJ)¹⁸.

Technologies that are also supported with CHP- or Green Certificates are excluded from the Ecologiepremie¹⁹.

The regulation does not make support conditional to the use of certified equipment and/or certified installers.

The subsidised investments must be exploited for at least five years after the last payments have been received²⁰.

Flanders: Permit Exemption

In Flemish agricultural areas, policy for small wind turbines is very restrictive, because of their visibility and their possible disturbance of fauna. In areas with valuable nature the restraints are even bigger. Small wind turbines are only eligible in the nearby presence of houses, enterprises and aboveground utilities²¹. The decree on spatial planning, permit and enforcement policy was enacted on 27 March 2009 (“Decreet tot aanpassing en aanvulling van het ruimtelijke plannings-, vergunningen- en handhavingsbeleid”)²². This instrument is operational and there is no set end date.

16 <http://ewbl-publicatie.vlaanderen.be/Uploads/LTL-EPPlus-2011-02-type.pdf>

17 <http://www.unizo.be/energiecoach/>

18 http://ewbl-publicatie.vlaanderen.be/Uploads/EP-PLUS%20-%20Algemene%20informatie%20DEF20110201,0.htm#_Toc283387511

19 http://ewbl-publicatie.vlaanderen.be/Uploads/EP-PLUS%20-%20Algemene%20informatie%20DEF20110201,0.htm#_Toc283387521

20 http://ewbl-publicatie.vlaanderen.be/Uploads/EP-PLUS%20-%20Algemene%20informatie%20DEF20110201,0.htm#_Toc283387513

21 http://www2.vlaanderen.be/economie/energiesparen/milieuviriendelijke/Wetgeving/Windenergie/Omzendbrief_LNE_200901_RO.pdf

22 Decreet tot aanpassing en aanvulling van het ruimtelijke plannings-, vergunningen- en handhavingsbeleid <http://212.123.19.141/ALLESNL/wet/detailframe.vwp?SID=0&WetID=1017905> f

Brussels: Energy Premiums (capital grant)

Energy premiums for households, owners of collective housings and the services and industrial sector are in place in Brussels. In 2010 these premiums were only granted for solar energy²³. The instrument is managed by the Brussels instituut voor milieubeheer (BIM)/ Institut Bruxellois pour la gestion de l'environnement (IBGE).

<http://www.ibgebim.be/>

The budget is adjusted every year. It has been in place since 2004 and was laid down in a decision of the Brussels Government, regarding support for energy saving and RES-E production of 2 April 2009.²⁴ Applications are received continuously. The maximum reimbursement is 30% (industrial) – 40% (households, collective housing) of the total eligible costs. For 2009, the total budget cap was 35 million Euros. In 2010 and 2011 the budget has been lowered to 11.7 million Euros²⁵. The instrument may be combined with green certificates.

The regulation makes support conditional to the use of certified equipment²⁶:

- For crystalline PV: IEC 61215 standard and a minimum efficiency of 12 %
- For thin film PV: IEC 61646 and a minimum efficiency of 7 %.

More information about PV panels for households can be found at:

http://documentatie.leefmilieubrussel.be/documents/Gids_Energie_fotovoltaisch_part_NL.PDF?langtype=2067

3 Details RES-Heating and Cooling Support Policy

Flanders: Quota Obligation via CHP Certificates

The support schemes for RES-E do not encourage the use of combined heat and power (CHP) and there is no promoting scheme on the consumption of district heating and RES-H/C. However, there is a quota obligation system for CHP (not related to RES-E/H sources).

Quota obligation via CHP certificates was established in a decree of the Flemish government of 30 April 2004 regarding the establishment of the independent VREG and it was further reiterated in a decision of 7 July 2006 regarding the promotion of power production from high quality CHP installations. The CHP certificate attests that per certificate, 1,000 kWh primary energy is saved in comparison to the separate electricity production. CHP certificates are only rewarded to installations that are newer than 1

23<http://www.leefmilieubrussel.be/Templates/Professionnels/informer.aspx?ID=4108&langtype=2067>

24 <http://www.envirodesk.be/node/48716> (Dutch).

25<http://www.leefmilieubrussel.be/Templates/Professionnels/Niveau2.aspx?ID=4032&langtype=2067>

26http://www.leefmilieubrussel.be/uploadedFiles/Contenu_du_site/Particuliers/01_Gestes/09_Mes_primes/Primes_Energie_2010/NL_PRED02b.pdf?langtype=2067

January 2002 and meet the quality standards of the VREG²⁷. For installations larger than 1 MW a specific CHP-test is mandatory²⁸

The quota obligation system is implemented only in the Flemish part of Belgium. The Wallonia and the Brussels region only have the green certificate scheme for RES-E in place. The regulator is VREG. Installations producing CHP-E receive certificates for 10 years. Coal fired power plants that are converted to 100% biomass plants, will in the future only receive 70% of the GCs²⁹.

More information:

<http://www.vreg.be/>

<http://www.cogenvlaanderen.be>

The scheme started in 2005, there is no end date set. There is no cap on the annually available budget or volume of new installations, and tax deductions or investment premiums may be combined with the certificates. For 2011, minimum prices of CHP certificates have been increased from €27 to €31³⁰.

The regulation does not make support conditional to the use of certified equipment and/or certified installers.

Federal: Tax Deduction

Tax reduction of 40 % of the investment from income tax for households, for:

- Solar thermal if panels are installed between east and west, facing south. The angle has to be between 0 and 70° with the horizon
- Heat pumps if the heat pump has an EG-label and the coefficient of performance is higher than 3
- Wood burning stove if it has an efficiency of 60% according to norm EN303-5
- Insulation of roof, walls and floor:
 - o For roof insulation the thermal resistance R should be at least 2.5 m²K/W;
 - o For insulation of outside walls, the thermal resistance R should be at least 2.0 m²K/W, for inner walls this must be at least 0.75 m²K/W;
 - o For insulation of the floor the thermal resistance R should be at least 2.0 m²K/W for insulation that is connected to the **outer side** and 1.0 m²K/W for that at the **inner side** of a floor connected to the soil or a non-heated and unprotected from frost
- Placement of highly insulating windows with an overall conductivity, calculated using the simplified formulas of the applicable standard (NBN B 62), lower or equal to 2.0 m²K/W.

27 <http://www.vreg.be/kwalitatieve-wkk>

28 <http://www.vreg.be/algemene-info-0>

29 <http://energiesparen.be/node/2439>

30 <http://energiesparen.be/node/2439>

The federal tax agency manages the tax scheme.³¹ The instrument is periodically revised, see: <http://www.energiesparen.be/node/1805>

The scheme started in 2003 and there is no end date. The current tax instrument was established by royal decree, regarding investment- and tax-deductions for energy saving measures on 1 September 2006.³²

The maximum budget per installation is capped at €2,830 per installation. The measure can be cumulated with an investment premium.

The regulation makes support conditional to the use of certified equipment and certified installers.

Flanders: Heating and Cooling from RES in Industrial Applications

The following support schemes are in place to encourage the use of heating and cooling from RES.

“Ecologiepremie plus” (Ecology bonus): Enterprises in Flanders can get a bonus for the investment in certain technologies. These technologies have to be better than the European performance standards. Only additional investment costs are eligible. The maximum is established per technique. See section on RES-E.

Walloon:

In Walloon CHP is eligible for green certificates if it is classified as “high-quality”. See RES-E section for more information.

Brussels: Energy Premiums (capital grant)

Energy premiums for households, owners of collective housings and the services and industrial sector are in place in Brussels. In addition to stimulating renewable energy, there are also premiums for energy efficiency in housing³³. See the RES-E section for more information on this scheme.

Other:

- Flemish agrarian investment funds (“Vlaams Landbouwinvesteringsfonds”, VLIF): Agrarian enterprises who want to invest in energy crops will be supported. The support is up to 28% of the investment costs in form of a capital bonus, interest rate subsidy or a guarantee³⁴.
- Several DSOs have a subsidy for the installation of a heat pump, depending on the size of the system.

31 <http://www.energiesparen.be/subsidies/belastingvermindering>

32 <http://reflex.raadvst-consetat.be/reflex/pdf/Mbbs/2006/09/08/100189.pdf>

33 <http://www.leefmilieubrussel.be/Templates/Professionnels/informer.aspx?ID=4108&langtype=2067>

34 <http://lv.vlaanderen.be/nlapps/docs/default.asp?id=1989>

- Subsidy of 20 % to public organisations for the installations of a heat pump or micro-CHP³⁵.

4 Details RES-Transport Support Policy

There is a biofuel quota combined with a (gasoline) fuel tax exemption for recognised biofuel producers. The tax exemption will only be applied for a specific quota. The exemptions were assigned via tenders. The instrument is managed by the Federal Public Service Economy, SMEs, Self-employed and Energy.

More information:

http://economie.fgov.be/nl/consument/Energie/hernieuwbare_energieen/Biobrandstoffen/index.jsp

This instrument is regulated by the law regarding bio-fuels, enacted on 10 June 2006.³⁶ The production quota and tax exemptions are established until 30 September 2013. The overall biofuel share target is 5% in 2009 and 5.75% in 2010 with tax exemptions.

The quotas for Ethanol and Biodiesel are:

- Ethanol:
 - 250 million litres/year between 2008 and 2012
 - 187.5 million litres between 1 January 2013 and 30 September 2013
- Biodiesel:
 - 380 million litres/year between 2009 and 2012
 - 284 million litres/year between 1 January 2013 and 30 September 2013

Tax exemption is applied only for the amount produced under these quotas. There are no other supporting measures for biofuels produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material (meeting the criteria of Article 21(2) of the Renewable Energy Directive).

The selection of producers was based on criteria as listed in the law of 10 June 2006. Projects outside the scope of the quota can apply for fuel tax exemption, if the biofuels are consumed for a specific project.

There is no specific support for electric vehicles that use renewable electricity.

5 RES-E Grid Integration

RES-E projects have priority in grid connection. However, the system operator is required to secure the continuity of the electricity supply, i.e. integration of renewable

³⁵http://www2.vlaanderen.be/economie/energiesparen/milieuvriendelijke/SubsidieLokalebesturen_WP-microWKK_BesluitVR.pdf

³⁶ <http://reflex.raadvst-consetat.be/reflex/pdf/Mbbs/2006/06/16/98575.pdf>

energy should not lead to imbalances in the system³⁷. RES-E projects also have priority in case of grid congestions (priority in dispatch).

Grid extension and reinforcement in Belgium follows “shallow” grid connection charging: only the costs of the physical connection to the nearest grid connection point have to be carried by the RES-E project; upstream reinforcement costs are paid by the system operator/ split among all network users.

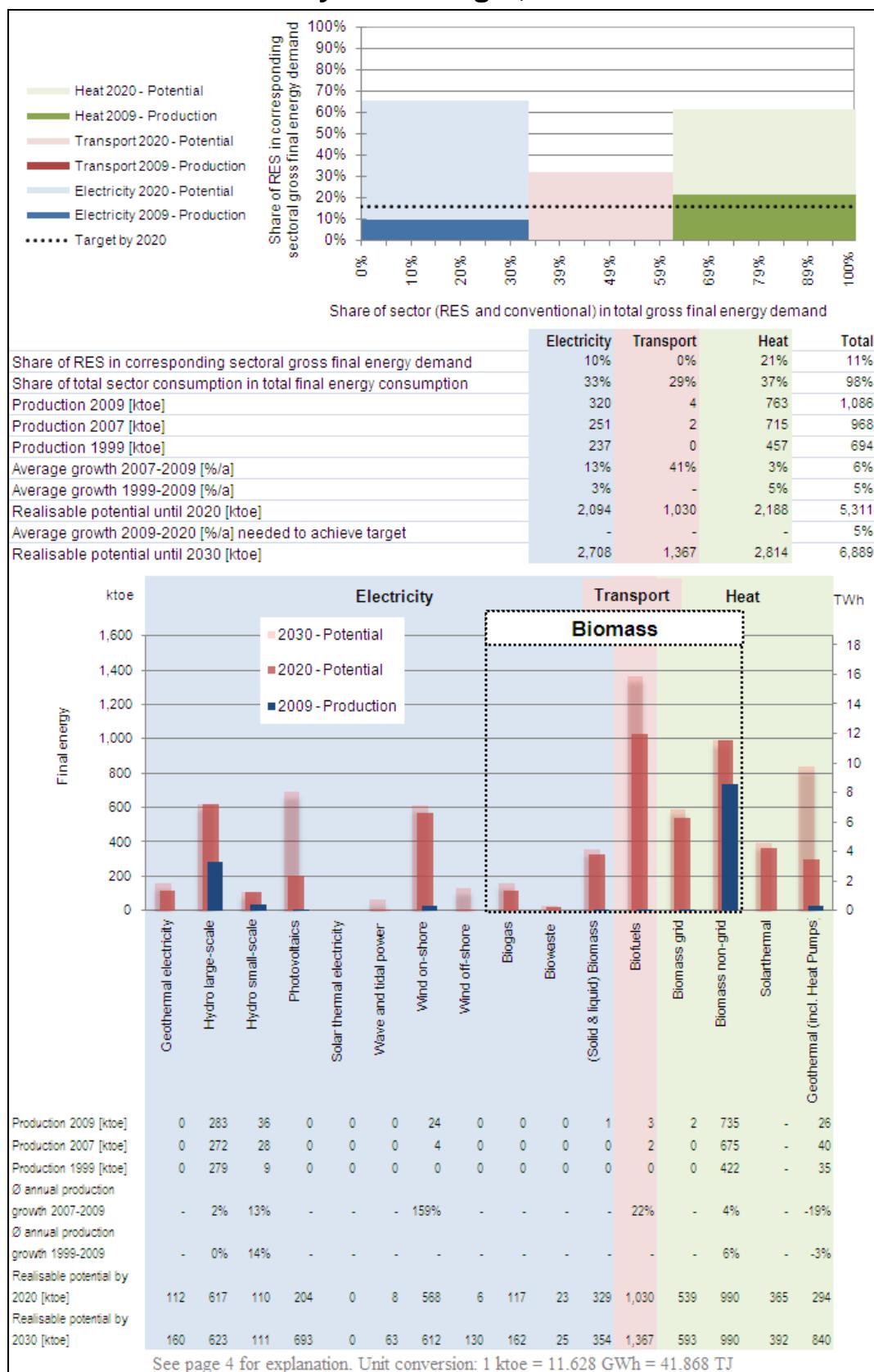
The Belgium government requires Elia to pay 1/3 of the costs of the undersea connection of an offshore wind farm, up to 25 M€³⁸.

All technologies are balancing responsible. Only to offshore wind power a special regime applies: Within a tolerance margin of 30% (of the prediction) for offshore wind the TSO Elia has to cover the costs.

37 Artikel 385, §2: http://suisse.juridat.be/cgi_loi/loi_N.pl?cn=2002121942

38 http://www.creg.be/nl/greenelec3_nl.html

BULGARIA - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

A New RES Law, the ‘Act for Energy From Renewable Sources’ was announced to be adapted by December 2010, but is still awaiting its final approval. It is currently (early April 2011) at its final reading in the Bulgarian Parliament, after several earlier sessions. The new law is supposed to fully reflect RES Directive 2009/28/EC and would include the visions of the RES business in Bulgaria. The law represents a complex of RES stimuli but in the same time requires a very extensive regulatory framework to be implemented that could enforce and guarantee the implementation of the different incentives. At the moment, the RES sector is eagerly awaiting the changes to the RES law, stalling investment decisions. Although concept versions of the law have looked promising, as the sector has seen a legislator that was willing to take up suggestions, the final law text is only expected to be published in the state gazette in May 2011.³⁹

Earlier, due to the large number of projects requesting permission and grid connection, with a lack of capacity and lack of funds, the government had publicly stated (late 2009) that a moratorium for the approval of new RES projects can be expected. This led to market panic and cooling in the RES energy development sector in 2010. Further, a ban has been announced early 2010 for RES projects (wind and solar PV) on fertile agricultural land, adding to the unrest, especially among project developers in the fertile northeast of Bulgaria, where many of the wind and solar PV projects are designated. The ministry of agriculture announced in February 2011⁴⁰ to ban RES projects on agricultural land with fertility grades 1-8. That idea was immediately opposed by the RES sector, which stated that such measures should be applied to other energy projects as well, referring to a thermal power plant where over 2,000 ha of arable land will be used.

In March 2011, due to public discussions and country wide demonstrations, initiated from the transport sector and citizens, the government decided to delay the implementation of biofuel blending.

39 The final new Law on Renewable Energies, including regulation on feed-in tariffs, was published in May 2011 and can be found here <http://www.mi.govtment.bg/eng/gzakone/gzakone/docs.html?id=340279>, including some last minute changes compared to its draft version; these changes are not included in this report

40 http://www.dnevnik.bg/ekobiznes/2011/02/08/1039318_zabranata_za_vei_v_zemedelski_zemi_otnovo_izleze_na/

1 Summary: RES Support Policy

RES-E

The primary support policy instrument at national level is the Feed-in tariff system ('FiT'). The levels of the feed-in tariffs are adjusted on April 1 of each year. The FiT has led to the first large scale wind energy projects, in addition to solar PV farms. The Bulgarian feed-in tariffs have sparked wide interest among local and international project developers. However, during the last 1.5 years only a limited number of projects have actually been delivered.

RES-H&C

The credit line of the EBRD ('BEERECL') runs quite successfully in supporting RES-H (as well as RES-E and energy efficiency) projects, on a large, industrial scale and for households/SMEs (energy efficiency, only RES-H&C).

The EBRD in 2010 has announced the continuation (expected from late 2011 on) of another credit line for households ('REECL2') that supports small scale RES-H&C combining 'incentive grants' from the KIDSF, the Kozloduy Nuclear Power Reactor Decommissioning Fund. This fund was established to cushion the loss of production capacity after switching off the oldest reactors of the nuclear power station in Kozloduy, a condition for EU entry.

Legislative changes supporting RES-H&C in Bulgaria are expected with the new RES law, to be voted upon in Bulgarian parliament April 2011, mentioning that RES heating and cooling will be supported and plans are made to develop a centralized network for RES H&C, where economically viable;

RES-T

Late 2009, the Bulgarian Council of Ministers passed decisions which would require the petrol sector to blend 2% of biodiesel with mineral diesel for the whole transport sector by March 2010, increasing to 3% a year later, as well as blending 2% bio-ethanol component from March 1, 2011. However, the implementation of this quota was delayed in March 2011.

2 Details RES-Electricity Support Policy

Project owners and investors, partially associated under the Bulgarian Association of Alternative Energy Producers⁴¹ and the Bulgarian Photovoltaic Association, lobby intensively, particularly with the intent of getting as high as possible FiTs for their RES-E projects. There is also discussion about the procedures for Environmental Impact Assessment, where there is so far no common procedure among the regional environmental inspectorates, how to assess solar PV activities. Hydro power plants and wind power plants are regarded as industrial installations, while nothing is mentioned about solar PV projects⁴².

A new association for wind energy (the Bulgarian Wind Energy Association⁴³) was established in 2010 and turned into an active player, channelling the interests of its members, as well as being a constructive partner.

There are no additional instruments at regional/local level contributing substantially to the growth of RES-E. Some Bulgarian Municipalities have joined the Covenant of Mayors initiative which requires them to develop local Sustainable Energy Action Plans till 2020 but no such proper plan is in place yet. Several municipalities are more active when it comes to energy planning including RES. An example is the city of Dobrich, which is the heart of a (windy) agricultural region.

Feed-in Tariff

The key support policy instrument in Bulgaria at the national level is the feed-in tariff system. The levels of the feed-in tariffs are annually adjusted on April 1. The Bulgarian FiT framework has been functioning for a few years and has recently led, after many single turbines and smaller wind farms in the early years, to the first large scale wind energy projects (totalling over 400 MW), as well as a surge in the connection of medium and large size solar PV farms (>100 kW, totalling some 20 MW). The number of biomass projects producing RES-E is limited, considering the potential of the country (wood and agricultural residues).

The seemingly interesting feed-in tariffs have sparked wide interest among local and international project developers and investors leading to hundreds of (wind, solar PV) projects that have applied for (preliminary) grid connection with regional and national grid operators, totalling some 2 to 3 GW. It is not likely that all these applications will prove successful. Many RES projects exist only on paper and are not financed and seriously developed. Further, the grid operators of the country cannot connect this large capacity to the grid, as there are hardly any investment funds available, even though by law RES projects need preferential treatment in being connected.

The Bulgarian government has actively sought to dampen the interest in RES in 2010 in several ways. The announcement of a potential moratorium early 2010 for RES projects and the subsequent proposal to make certain categories of land ineligible for RES

41 http://www.apeebg.org/index_en.php

42 <http://www.energetika.net/eu/novice/interviews/bulgarian-ministry-of-environment-and-water-prepares-a-report>

43 www.bgwea.org

projects has cooled the market in 2010 and 2011 and the RES sector is eagerly awaiting the new RES law, initially announced for December 2010 but now expected in April 2011.

The feed-in tariff in Bulgaria consists of a specific tariff by the respective grid operator, depending on the type of RES. Unlike other countries with a FiT system, in Bulgaria the FiT can be and is adjusted, also for RES projects in operation, within some limitations, where changes to the FiT can be a few percent compared to the respective tariff of the previous year.

The conditions to benefit from the tariff are to prepare an investment project according to 'usual' investment procedures (zoning, permitting, land acquisition). For building integrated PV, procedures may be more simplified with the new RES law.

At the moment, there is no cap, in any form, on the total volume of electricity produced from RES source, in total or per technology.

Table 1: Feed-in tariffs in Bulgaria from 1st April 2011

	EUR/MWh	Change 2010- 2011
Wind		
<800 kW	75.97	-0.1%
<2250 hours	96.27	-1.2%
=> 2250 hours	88.43	-0.9%
Solar PV		
<5 kW	388.83	-4.1%
=> 5 kW	357.45	-4.0%
Biomass		
Wood waste (from 2011: >5MW from forestry pruning)	111.77	0.6%
Wood <5 MW	129.22	
Wood, CHP <5MW	147.27	
Agricultural residues <5 MW	85.66	-0.7%
Energy crops <5 MW	95.35	-1.2%
Biogas		
<150 kW	217.31	113.5%
150 kW-500 kW	203.49	116.8%
500kW - 5 MW	154.78	80.1%
Hydropower		
<10 MW ('in operation before 19 June 2007')	57.51	1.5%
<200 kW	113.97	
200 kW-10 MW, max 30m head	108.95	
200 kW-10 MW, 30-100m head	91.36	
200 kW-10 MW, >100m head	87.52	
'tunnel' max. 10 MW	129.60	

Energy from waste			
<150 kW	135.96	-2.3%	
150 kW-500 kW	130.88	-2.2%	
500kW - 5 MW	125.80	-2.1%	
Energy from WWTP sludge			
<150 kW	76.89	-0.2%	
150 kW-500 kW	69.97	0.3%	
500kW - 5 MW	61.66	1.1%	

As indicated in the table, the tariffs depend on the project size (for solar PV, wind and hydro). For wind, the number of annual full load hours is also taken into account: projects which produce more than 2250 hours a year receive a lower feed-in tariff for the additional production. For biomass, the number of categories has increased and adjusted over the last two years. As per April 2011, most FiTs were reduced marginally, solar PV somewhat more, compared to the previous year, but biomass FiT gained, especially for biogas, which gained substantially (around 100%).

The current legislation (March 2011) indicates that FiTs will be available for RES producers who start projects before 2015. The period to get the respective feed-in tariff for projects that are brought online before 31 December 2015, is 25 years for solar PV and geothermal and 15 years for small scale hydro (maximum 10 MW), wind energy, biomass and other forms of RES-E.

Preferential prices for RES-E from other sources, not defined in the annual FiT table issued by the Bulgarian regulator (DKEVR⁴⁴), but defined under the Renewable and Alternative Energy Sources and Biofuels Act⁴⁵ may be prepared by the regulator, when the first investment project is considered.

A big disincentive for many interested investors is that the preferential tariffs cannot be guaranteed to remain at the same level for the entire support period, making the development of the tariffs difficult to be estimated, let alone to be fully predicted. The Bulgarian RES sector has urged the government to work on improving this ‘predictability’ of FiTs.

The tariffs for new projects and for existing projects can be and are adjusted on an annual basis by the Bulgarian regulator. The regulator has the discretion to adjust the tariffs, without using a publicly available method. However, some limitations apply. The preferential tariffs are determined by two components: the Base and the Addition. The level of the Addition differs per technology.

Annually, the Base is set at 80% of an (unspecified) basket of electricity market prices of the previous year. The Addition can be adjusted, but should year-on-year be minimally 95% of the level of the Addition of the previous year. It is expected that the regulator includes inflation in setting the Addition, but this is not a requirement.

44 www.dker.bg

45 <http://www.mi.government.bg/eng/gzakone/gzakone/docs.html?id=212967>

Overall, the Bulgarian FiT leads to much financial insecurity for existing and new investors in RES-E.

Financial Support for Investment: industrial EBRD Credit Line

A prolonged EBRD credit line, or Bulgarian Energy Efficiency and Renewable Energy Credit Line⁴⁶, is a scheme run by local banks, and with the help of experts, where (larger) RES-E, RES-H&C and industrial energy efficiency investment projects are credited. On successful completion, the applicant can keep 15-20% of the loan as incentive.

Registered companies can apply. All RES-E and RES-H&C technologies can benefit from this scheme, although most investors in solar PV farm schemes were not successful. Applications are received and granted continuously. The loans are up to Euro 2.5 million. On that basis, the incentive can be maximally Euro 500,000. The budget has been extended to be used until H2-2011 with Euro 55 million, while Euro 13 million still remains from the original budget.

Project applications are limited by the maximum loan size, not the installed capacity.

Structural Funds

Some of the EU structural funds are designed to support RES. Notably, the Rural Development Fund (RDF) and the Structural Fund ‘Competitiveness’ include a substantial number of ‘priority axis’ for the support of RES, but most of these have not yet opened. One priority axis under the RDP had already seen several rounds of applications and received hundreds of applications for solar PV projects. So far (March 2011), only some of the applications are rewarded under the Rural Development Programme. (RDP)

Many RDP axes refer (in)directly to developing locally, small scale biomass projects by farmers and rural communities (8 out of 32 axes). Again, the government announced that about Euro 100 million would be made available for RES (and a same amount for energy efficiency) under the Operational Fund ('OP') Competitiveness. The OP Regional Development is expected to start in 2011 where RES integrated into public buildings could be funded.

General Support for Investment: Class A Certificate

The Bulgarian Investment Agency runs a programme to attract FDI (Foreign Direct Investment), where investors can apply for a Class A certificate. This certificate helps them in obtaining support for their investment projects. This support is not specific for RES, but the scheme was openly advertised to attract RES investors as well.

Advantages are:

- shorter deadlines on approvals and permits by the state administration
- sale or restricted disposal on land or property – state or municipal owned, without a tender and on price that reflects the market levels or is under the market levels;

- financial aid on the development of infrastructure;
- Financial aid for education and professional training of certain employees.
- Investors can benefit if their project size exceeds ca. Euro 16 million (Leva 32 million).
- Applications can be received and granted continuously.

The budget for financial aid for infrastructure is limited (and varies per year). The Bulgarian government assumes that by attracting (foreign) investors, Bulgaria receive many benefits (labour, expertise, income tax etc). The agency responsible for this scheme did support wind and solar PV projects in the past, but has now stopped some RES categories.

Miscellaneous

In Bulgaria, several smaller funds, sometimes of temporal nature, and usually from foreign donors, exist:

- UNDP has been running the Small Grant programme, which also funds small scale solar energy, energy efficient buildings, usually in a wider environmental context⁴⁷.
- Some of the EU structural funds are designed to support RES. More recently, the deputy minister for the economy announced that about 100 million Euros would be designated for RES (plus the same amount designated for energy efficiency) under the Operational Programme 'Competitiveness'. However, so far only limited results have been booked with Structural Funds in terms of delivering RES. More reliable is the delivery from (small to medium) RES-E projects that use a credit line from the EBRD ('BEERECL').
- A Green Investment Scheme, selling AAUs ('hot air') carbon credits was announced and the national EkoFund was awarded to run a programme to spend the proceeds of selling AAUs on green energy including RES. A preliminary round looking for projects has been announced early 2011.

From early 2009, existing RES project operators have been required to account for the production of their investment in terms of green certificates, following an ordinance of 2007 for format, content and circumstance for issuing of certificate of origin⁴⁸ which was amended 6 Feb 2009⁴⁹.

Expected future changes

The following important policy changes at national level are to be expected:

- A Green Investment Fund has been announced and will be 'hosted' by the EkoFund organisation. A provisional application round for RES projects has been announced in March 2011.

47 <http://sgp.undp.org/web/countries/BUL/bulgaria.html>

48 http://www.dker.bg/laws/ordinance_el.pdf (Bulgarian only)

49: http://www.dker.bg/laws/cert_vei.pdf (Bulgarian only)

- New Energy Strategy (announced to be available before the end of 2009 – then postponed. After a series of public discussions and fine-tuning the new energy strategy till 2020 was approved by the Councils of Minister on 2nd March 2011⁵⁰.

3 Details RES-Heating and Cooling Support Policy

There is currently no regulatory support for RES-H&C. This is likely to change with the new RES law.

Although there is no specific legislative or regulatory support for RES-H&C in Bulgaria, such projects are financially supported, by means of:

- The first EBRD credit line BEERECL (see chapter on support for RES-E)
- The (announced) second EBRD credit line REECL2
- Structural Funds and Rural Development Fund (when open)

Financial Support for Investment: EBRD residential credit line (REECL)

EBRD launched the continuation of its residential credit line, (first version: www.reecl.org), which offered households and SMEs a credit through a set of local banks, when, on successful completion, the applicant could keep up to 35% of the loan amount as incentive. At the moment, preparations are on their way to launch a second version, i.e. REECL2. The focus will be on (registered) homeowners associations, while still also individual home and apartment owners can apply for a loan, for example for two or more EE and RES measures. The credits are offered at commercial tariffs. The incentives come from the KIDSF (see previous).

It is expected that at least the following measures will be supported:

- Insulation and double glazing measures
- Solar thermal systems with or without associated space heating and hot water storage systems
- Cooling and heating heat pump systems

The beneficiaries of this credit line are basically households and homeowners associations as the continuation emphasises more on the associations, but also SMEs and shop owners are granted support. The maximum amount of money that can be granted per household is not clear yet.

The expected scheme will distribute 40 mio EUR over 4 years. The previous scheme as a comparison had a budget of 50 mio Euro of which almost 15 mio Euro had been used for the grants and project management costs. The website of REECL indicated that about 30,000 home improvements have been funded through the credit line during the first stage of the programme.

50 http://society.actualno.com/news_337798.html

Financial Support for Investment: Structural Funds and Rural Development Fund

Several structural funds are responsive to RES. The Structural Fund ‘Competitiveness’ has witnessed some references to RES, but priority axes have barely been open for applications. The Rural Development Programme (RDP) includes strong references to RES, specifically biomass, and in particular the ‘production’ of biomass. Out of 32 priority axis, 8 (in)directly refer to biomass. If one can apply and one is successful, the RDP grants a substantial portion of investment needs (50-75%).

Beneficiaries of the SP Competitiveness are (SME) companies. Beneficiaries of the RDP can be divided into local authorities and farmers. Only applicants from areas listed to be rural municipalities (231) can apply.

Many of the priority axes have not yet been announced or have not yet opened. The Bulgarian government is eager to improve the absorption of EU funds. For RES, several applications have been rewarded that were supporting solar PV projects (of around 50 kW each).

For some of the axis, an installation should not exceed 1 MW. Different axes have different type of activities and maximum financial sizes. No sustainability criteria for producing or using biomass are mentioned in the conditions towards local applicants.

Euro 53 million under the Rural Development Fund is explicitly allocated in the overall budget of RDP to biomass. Indirectly, over one billion Euro may be linked to biomass (production), when we account for afforestation activities under the RDP.

Building Obligations

There are currently no building obligations that require the use of renewable energy. This may change in the new RES legislation.

CHP

There is a FiT scheme for combined heat and power (CHP). However, there is no additional or higher tariff for renewable energy produced with a CHP installation. Electricity from CHP may be supported from the biomass FiT.

There is no specific support scheme in place to encourage the use of district heating (DH) and cooling using RES. However, with the EBRD Credit Line, a biomass boiler (5 MW_{th}) delivering heat to a local, small DH network, has been approved and implemented. Further similar projects are under preparation. Dalkia has made some announcements in fuelling the DH network of Varna with heat (and electricity) from biomass on a considerable scale. Bansko municipality has a running district heating network for a number of hotels in this mountain resort that is fed by a biomass boiler of 10 MW (heating only).

4 Details RES-Transport Support Policy

A National Long term programme for biofuel utilization in the transport sector 2008-2020⁵¹ was adopted on 15 November 2007.

The program consists of information on national policy, other relevant legislative requirements, a national target for biofuel consumption in the transport sector, and current potential for biofuel production.

Upcoming Biodiesel Quota

On October 21 2009, the Bulgarian Council of Ministers passed a decision which would require the petrol sector to blend 2% of biodiesel with mineral diesel for the whole transport sector by March 2010, increasing to 3% a year later. On November 18, 2009, a proposal to blend a minimum of 2% bio-ethanol component from March 1, 2011, passed the parliamentary economic committee, to be enforceable from March 1, 2011.

This was followed by the announcement of the following scheme:

Starting date	Applies to	Minimal blend
	fuel for diesel engines with biodiesel	3% vol
March 1, 2011	fuel for diesel engines with biodiesel	5% vol
March 1, 2012	fuel for diesel engines with biodiesel	6% vol
September 1, 2014	Fuel for petrol engines with ethanol or ethers produced from bioethanol	2% vol
March 1, 2015	Fuel for petrol engines with ethanol content or ethers produced from bioethanol	3% vol
September 1, 2015	Fuel for petrol engines with ethanol or ethers produced from bioethanol	4% vol
March 1, 2016	Fuel for petrol engines with ethanol content or ethers produced from bioethanol	5% vol
September 1, 2016	Fuel for petrol engines with ethanol or ethers produced from bioethanol	6% vol
March 1, 2017	Fuel for petrol engines with ethanol content or ethers produced from bioethanol	7% vol
September 1, 2017	Fuel for petrol engines with ethanol or ethers produced from bioethanol	8% vol;
1 March 2018	Fuel for petrol engines with ethanol content or ethers produced from bioethanol,	9% vol.
1 January 2020	Biofuels blended in all transport fuels	10% vol

51 http://www.mee.government.bg/energy/energy_doc/Biofuels_Program_EN.pdf

However, due to fierce protests from the Bulgarian transport sector and citizens on increases in transport fuel prices early 2011, the Bulgarian government announced to delay the implementation of any biofuel scheme (indefinitely) in order ‘not to further increase’ fuel prices for consumers.

Earlier, still also sustainability criteria for biomass/biofuels, required by Directive 2009/28/EC are integrated in the draft law. Biofuels should:

1. Not be from sources grown on land important for biodiversity;
2. Not be from sources grown on land with high carbon stocks, except where the terrain in January 2008 and during the extraction of raw material has had such status;
3. Should not be derived from raw materials grown on land which was peatland in January 2008, unless evidence is that the cultivation and harvesting of the raw material does not require drainage of previously undrained soil;
4. lead resulting in the consumption of their production of biofuels and liquid biomass fuels to the following reduction of greenhouse gases:
 - a) at least 35% - up from 31.12.2016 onwards;
 - b) at least 50% - from 01.01.2017 onwards;
 - c) at least 60% for biofuels and liquid fuels from biomass produced in plants where production has started from 01.01.2017 on - from 01.01.2018

No specific support to biofuels produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material (meeting the criteria of Article 21(2) of the Renewable Energy Directive) has been observed in the recent cabinet decision.

Sofia municipality has introduced free parking in the city centre for electric vehicles and considers granting free parking for plug-in electric cars recently. The development of plug-in stations in the city is only at a conceptual stage. The municipality is planning to buy electric vehicles when replacements in its fleet will take place⁵².

5 RES-E Grid Integration

Grid integration is currently the most significant obstacle to connect well developed wind (and solar PV) projects to the national grid. The north-eastern area (Kavarna, Kaliakra, Dobrich) particularly suffers from this, but also, according to the national grid operator, NEK, the south-western part may have some problems, because so many solar PV projects have been applying for grid connection permits in this part of Bulgaria.

RES-E projects do have priority in grid connection by law. However, the grid operators do not prioritize in practice on getting RES capacity connected, due to lack of funding. RES-E project are therefore delayed. It is not clear whether RES-E projects have priority in case of grid congestions (i.e. priority in dispatch).

There is no generic financial mechanism at the moment for grid extensions / upstream grid reinforcements in Bulgaria. Recently, the regulator, the State Energy and Water Regulatory Commission (SEWRC, or DKEVR in local abbreviation) has introduced an idea that RES investors will pay a one-off fee to fund power transmission grids. This could be integrated in the new Renewable Energy Act. The fee can be relative to the

52 <http://sofia.dir.bg/2011/02/11/news7979927.html>

project size “but the calculation mechanism is yet to be discussed”⁵³. The current fee covers grid operators’ expenses to the connection point and developers are forced to build their own cables and substations, as grid operators refuse to hook up new projects. Project owners are required to forecast their production.

Earlier, a representative of the regulator, stated that “the grid is clogged up and NEK has halted grid-connection in north-eastern Bulgaria” while “1700 MW [of] clean energy projects are in the pipeline” in this part of Bulgaria⁵⁴. NEK has indicated⁵⁵ that they, as national grid operator, are discussing extending a transport line to the north-eastern area of Bulgaria in order to deliver the capacity for a number of wind energy projects. Negotiations take place between wind farm investors/owners and NEK to share costs and assist, for example, with the purchase of land for the poles, which is, due to the very fragmented ownership of land in Bulgaria, another barrier.

It is now proposed and is expected in the new RES law that every project that requests permitting will initially pay a deposit of 5,000 BGN (Eur 2,500) per MW to show commitment and 50,000 BGN (Eur 25,000) per megawatt to the grid operator as a fixed price per MW for the connection.

Also to avoid the delays over licensing – often extending far beyond the legally required terms, the legislator envisages the system of ‘silent approval’ i.e. if a permit is not granted or rejected within the legal deadline, the developer can consider it approved.

6 RES Production, Potential and Market Development

RES-E

Key technologies, in terms of potential are biomass (woody, agricultural residues), wind energy, hydropower, geothermal and solar (thermal, PV). Key technologies in terms of deployment and/or growth rates are wind energy, solar PV and hydropower if some large schemes, that have been in preparation for many years, will be built or (finally) finished.

Some wind farms have been developed in or close to nature reserves or IBAs ('Important Bird Areas') of which there are many, along the Black Sea coast and in the Bulgarian mountains. The EC has started infringement procedures towards Bulgaria by not observing such criteria for several locations. Several wind energy projects may therefore risk closure, or compensation may need to be arranged for loss of biodiversity. Also, for the application of biomass (European) sustainability criteria are unlikely to be fully adhered to or brought properly into practice, given the very limited experience in Bulgaria with certification of forests, and lack of proper forestry management in the country.

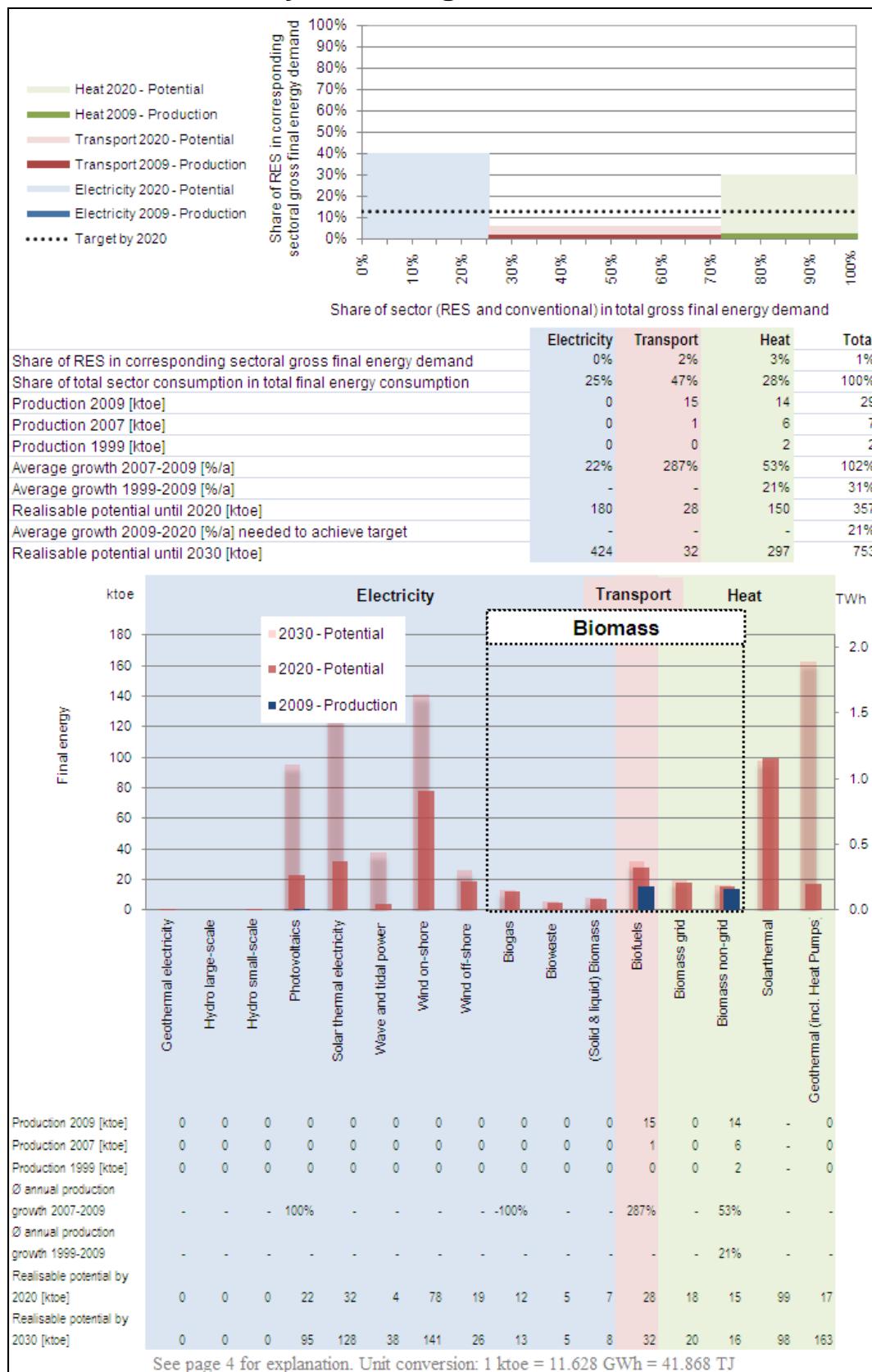
The market for RES-E has seen a strong interest from local and international investors and project developers, especially in wind and solar PV. A smaller number of players concentrate on medium and large scale hydropower schemes.

53 <http://news.dnevnik.bg/?y=2009&m=11&d=19>

54 <http://news.dnevnik.bg/?y=2009&m=11&d=11>

55 Interview with Mr Todorov, head of transmission Assets Division, October 21, 2009

CYPRUS - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

Concerning changes in RES-E support policy, in 2010 the energy tax for the creation of the “Energy Fund” for the promotion of the use of RES and energy efficiency was raised from 0.022€ct/kWh to 0.044€ct/kWh.

The plans for the construction of 100MW wind capacity additional to the 165MW foreseen within the FIT were not approved although PPAs for 157,5MW of wind parks were already approved. The PV installed capacity reached 6,3MW while the total volume of application was 22MW and additionally PPAs for 25MW CSP were approved.

Concerning RES-T, the support instruments of direct subsidies for the purchase of energy efficient vehicles were replaced in 2010 by incentives for the replacement of old vehicles with new, energy efficient ones.

1 Summary: RES Support Policy

RES-E

The key support instruments at national level are feed-in tariffs for large projects guaranteed for a 20 year period and direct subsidies for small scale projects. The framework was introduced in 2008/2009. No problems have been reported on its operation so far.

The plans to introduce a tendering process for the construction of 100MW wind capacity additional to the 165MW foreseen within the feed-in tariff target were not approved, as decided in 2010. In total, Power Purchase Agreements (PPAs) for the construction of 157,5MW of wind parks were approved till the end of 2010 and an 82MW wind park is already in operation. In the National Renewable Energy Action Plan (NREAP⁵⁶), submitted in 2010, a target of 300MW of wind power capacity is set for 2020, as extension to the current target of 165MW for 2013. Additionally, the PV installed capacity in 2010 reached 6,3MW, while the total volume of applications received was 22MW. Additionally, PPAs for a total capacity of 25MW CSP were approved in 2010. For small-scale RES installations, other subsidy schemes apply, for instance regional schemes or de-minimis subsidies.

RES-H&C

The key support instruments are direct subsidies. The current framework was introduced in 2008/2009 and no problems have been reported on its operation so far.

No important policy changes are expected, since the current framework was only recently introduced. Regional subsidies apply. This option applies to all regions of the country.

RES-T

The support instruments of direct subsidies for the purchase of energy efficient vehicles were replaced in 2010 by incentives for replacement of old vehicles with new, energy efficient ones. The current framework for installations for the production of biofuels was introduced in 2008/2009 and no problems are reported on its operation so far. No important policy changes are expected, since the current framework was only recently introduced. Regional subsidies apply. This option applies to all regions of the country.

56 http://ec.europa.eu/energy/renewables/transparency_platform/action_plan_en.htm

2 Details RES-Electricity Support Policy

In Cyprus, the policy framework for RES has been revised and approved in 2009. An update of the framework is expected in 2011 while no significant changes were performed in 2010. Three frameworks are defined based on the size of the project and the type of implementing enterprise. The instrument is managed by the Cyprus Institute of Energy ⁵⁷, which supports the operation of the Energy Fund. The final approval of investments is done by the Energy Fund Management Committee comprising six members from the main public energy and industry authorities in Cyprus. Detailed information is available from the Cyprus Institute of Energy ⁵⁸.

The current system was enforced by the Act 33(I)/2003 ⁵⁹.

There are no maximum sizes of eligible plants, but there is a cap in the annual and total volume of new installations per technology.

The maximum capacities per technology are as follows:

- Wind power: total capacity of 165MW till 2013
- Large PV (21-150kW): 2MW per year
- Solar thermal: total capacity of 25MW till 2013

It is not possible for support to be cumulated with other subsidies from European or from national funding.

The producer has to submit the techno-economic data for the investment. An on-site control is performed to confirm the installation and operation of the equipment. The producer needs to acquire a certificate of origin, provided by the responsible authority.

Framework 1: for large commercial wind, solar (thermal or PV) or biomass systems: a feed-in tariff system is defined,⁶⁰

For large-scale RES-E, the main support instrument is a feed-in tariff system, which differs, based on the type of RES technology, installed capacities and ownership of the generation facility (Framework 1). According to the Act 33(I)/2003 ⁶¹, a special "Energy Fund" for the promotion of the use of RES and energy efficiency was created by imposing an energy tax of 0.022€ct/kWh to the consumption of electricity. This fund is used for subsidizing the difference between the feed-in tariff and the current market price for electricity. In 2010, this energy tax was raised to 0.044€ct/kWh. Framework 1 is valid

57 <http://www.cie.org.cy/index.php>

58 <http://www.cie.org.cy/>

59 [http://res-legal.eu/en/search-for-countries/cyprus/legal-source/land/zypern/instrument/354/ueberblick/rechtsquelle.html?bmu%5blastPid%5d=150&bmu%5blastShow%5d=1&cHash=03ea35aa0d](http://res-legal.eu/en/search-for-countries/cyprus/legal-source/land/zypern/instrument/354/ueberblick/rechtsquelle.html?bmu%5blastPid%5d=150&bmu%5blastShow%5d=1&cHa sh=03ea35aa0d)

60 http://www.cie.org.cy/APE/Sxedio%20paroxis%20Xorigion%20gia%20onomika%20proswpa%20APE_v9.pdf

61 <http://res-legal.eu/en/search-for-countries/cyprus/legal-source/land/zypern/instrument/354/ueberblick/rechtsquelle.html?bmu%5blastPid%5d=150&bmu%5blastShow%5d=1&cHash=03ea35aa0d>

for the period 2009 to 2013 and was enacted in July 2009. No additional subsidy is in place for installations that fall under framework 1.

According to the Framework 1, the tariffs per technology for grid connected installations for the period 2009/2010 are presented in table 1 below. The tariffs for installations under Framework 2 and 3 are given in table 2. Changes of this tariff system are expected in 2011.

Table 1: feed-in tariffs per technology for grid connected systems (2009/2010).

Framework 1		Price (€/MWh)
Wind		166
PV	Small (<20kW)	360
	Large (21-150kW)	340
Solar Thermal		260
Biomass		135 (117.9+17.1)
Biogas		114.5 (97.4+17.1)

For the case of biomass and biogas, the premium of 17.1€/MWh is considered only in the case of technologies such as fuel cells, cogeneration, gasification, dry fermentation, etc.

In Framework 1, for wind installations with annual energy production higher than 1750kWh/kW, only the market price is paid for the wind energy production above this limit. For large projects (Framework 1) the PPA is issued for 20 years. For small projects (when applicable) the duration is 15 years. The support is guaranteed to remain at the same level for the whole support period. The tariffs for new projects are constant for the agreed timeline. After this period they are adjusted for 5 year periods based on the market prices of that period. No option for feed-in premium exists in the current framework.

Framework 2 and Framework 3: subsidy schemes

Financial support in terms of investment incentives is foreseen only for the cases of small RES systems (Frameworks 2 and 3). In this case, direct subsidies are given corresponding to a specific percentage of the budget, depending on the type and size of the company. Specific caps in the allowed subsidies are applied based on the type of technology and subsidy schemes.

Any public/private company that is not under regime of bankruptcy is eligible to benefit from these schemes. Applications are continuously received.

Framework 2 is for public authorities or private companies that exercise financial activities and consists of different subsidy schemes while Framework 3 applies to public authorities or private companies/persons that do not exercise financial activities:

In Framework 2, up to 55% of project costs are financed through grants. This can be combined with a specific FIT in some cases. The framework includes measures on energy efficiency (including mobility), RES-E and combined heat (cold) and power technologies. Three types of subsidies are considered:

- a) Regional subsidies: according to the map of regional support (Act N814/2006⁶²) and the EU definition of Small/Medium Enterprises⁶³.
- b) Subsidy de minimis: according to this support scheme, subsidies from different public authorities should not exceed €200,000 for a period of 3 years according to the EC Act 1998/2006⁶⁴.
- c) Agricultural subsidy: this support scheme defines the subsidies for small and medium enterprises (SME) that are active in the primary production of agricultural products based on the EC Act 1857/2006⁶⁵. Beneficiaries of this subsidy are SME that use the majority of the energy produced by RES (above 50%) for the energy needs of their own installations. In case they sell the majority of the renewable energy to a third party they are not eligible for this but for regional or de minimis subsidy.

Within framework 3, direct subsidy schemes are considered and can be combined to specific feed-in tariffs. The framework includes measures on energy efficiency (including mobility), RES-E and combined heat (cold) and power technologies.

For RES-E, the latter two frameworks apply mainly to smaller scale projects (wind generators up to 30kW or small PV systems up to 20kW). Regional subsidies are defined in Framework 2, according to the map of regional support (Act N814/2006⁶⁶).

In the case of small systems (wind generators up to 30kW or small PV systems up to 20kW), subsidy schemes are available, up to 55% of project costs, based on the two frameworks presented above, depending on the ownership type and size of the enterprise (Frameworks 2 and 3). In 2011, the subsidies are expected to be removed and a unified FIT system will be implemented.

Frameworks 2 and 3 are valid for the period 2008-2010 and are revised each year.

62 http://ec.europa.eu/community_law/state_aids/comp-2006/n814-06.pdf

63 http://ec.europa.eu/enterprise/enterprise_policy/sme_definition/index_en.htm

64 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32006R1998:en:NOT>

65 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:358:0003:0021:EN:PDF>

66 http://ec.europa.eu/community_law/state_aids/comp-2006/n814-06.pdf

Table 2: Investment subsidy schemes for different technologies (following framework 2 and 3).

N.B. Where no feed-in tariff (“price”) is given, the installations obtain the market price.

	Subsidy percentage over project budget			
	Framework 2			Framework 3
	Regional	de minimis	Agricultural	
Wind systems (<30kW)	15%: LE 25%: ME 35%: SE max €45,000	40% max €45,000	35% max €45,000	55% max €51,500
PV systems (<20kW) (PPA 15 years)		40% max €48,000 Price: €205/MWh max €200/kW/a		Choice 1: 55% max €65,000 Price: €225/MWh Choice 2: 0% Price: €383/MWh
Small hydro (run-of-river)	15%: LE 25%: ME 35%: SE max €105,000	40% max €105,000	35% max €105,000	

According to Framework 2 for PV systems, additionally to the subsidy de minimis (40% of the total budget with a cap of €48,000 per plant), a feed-in tariff is defined at 205€/MWh for a period of 15 years, with an annual cap of €200/kW.

According to Framework 3 for PV systems, two feed-in tariff options for a period of 15 years are offered depending on the level of subsidy:

- With a subsidy of 55% of the total budget (cap of €65,000 per plant), a feed-in tariff is defined at 225€/MWh.
- With no subsidy, a feed-in tariff is defined at 383€/MWh.

The plans for the introduction of a tendering process for the construction of 100MW wind capacity, additional to the 165 MW foreseen from Framework 1 were not approved, as announced in 2010.

3 Details RES-Heating and Cooling Support Policy

The support instruments for RES-heating and cooling are direct subsidies based on Frameworks 2 and 3 described above, and for CHP also feed-in tariffs. Due to the application of the same frameworks, all general conditions are the same as in the case of RES-E (see above). No changes were performed in 2010 on this sector.

The main technologies where the support framework applies are:

- Solar systems for water heating or space heating/cooling.

- b) Heat pumps with ground heat exchanger for space heating/cooling
- c) Use of biomass for heating and cooling
- d) Combined heating (cooling) and power production

The specific subsidies are presented in table 3 below, together with the specific caps applied in each case (different subsidy percentages apply, based on the type of enterprise, large, medium or small).

Table 3: RES-H&C subsidies and caps.

		Subsidy percentage over project budget			
		Framework 2			Framework 3
		Regional	de minimis	Agricultural	
Solar Systems	Hot water	15%: LE 25%: ME 30%: SE max €20,000	30% max €20,000	30% max €20,000	45% max €26,000
	Space Heating/cooling	15%: LE 25%: ME 30%: SE max €85,500	40% max €85,500	30% max €85,500	55% max €120,000
Heat pump geothermal		15%: LE 25%: ME 30%: SE max €850,000	40% max €200,000	35% max €400,000 or €500,000 (based on the location of the enterprise)	55% max €20,000
Biomass (incl. CHP using biomass)		15%: LE 25%: ME 30%: SE max €680,000	40% max €200,000	45% max €85,500 Price: €65.3/MWh (Day) €57.3/MWh (Night)	55% max €19,000

No instruments exist on building obligations requiring the use of renewable energy. The support schemes for RES-E encourage the use of combined heat (cooling) and power based on the Frameworks 2 and 3. The specific subsidies for CHP are presented in table 4.

Table 4: specific subsidies for CHP.

		Subsidy percentage over project budget			
		Framework 2			Framework 3
		Regional	de minimis	Agricultural	
CHP		15%: LE 25%: ME 30%: SE max €171,000	30% max €171,000	30% max €171,000	45% max €85,500 Price: €65.3/MWh (Day) €57.3/MWh (Night)

4 Details RES-Transport Support Policy

The direct subsidies used as main support instruments for RES-transport according to the Frameworks 2 and 3 described above were replaced in 2010 by a new system of incentives for replacement of old vehicles with new, energy efficient ones, which was introduced by the Cyprus department of road transport and has been effective since 11.10.2010⁶⁷.

According to the new support instrument, a total amount of €1800 is provided for the purchase of low emission vehicles (<165g CO₂/km) when replacing a vehicle that is older than 15 years.

Further, subsidies are provided for the construction costs of units for the production of biofuels for transportation according to the Frameworks 2 and 3 described above. In Cyprus, a share of 2.2% of biofuels in the fuel mix is applied. Due to the application of the same frameworks, all general conditions are the same as in the case of RES-E (see above), but no feed-in tariffs apply. Biofuels considered for transportation are bioethanol, biodiesel, biogas, biomethanol, biocrops, biohydrogen etc. The specific subsidies are presented in the table 5 below.

Table 5: specific subsidies for RES-T.

	Framework 2	
	Regional	de minimis
Biofuels for transportation (cost for construction of production plant)	15%: LE 25%: ME 30%: SE max €680,000	40% max €200,000

There are no specific targets per year and fuel technology announced.

5 RES-E Grid Integration

RES-E projects have priority in grid connection and in dispatch. The costs for grid connection are shared equally (50%-50%) between the project developer and the system operator. Based on the current framework, the project is not responsible for system balancing.

6 RES Production, Potential and Market Development

RES-E

In Cyprus, the wind capacity target of 165MW for 2013 has almost been reached (total approved 157.5MW by 2010 and 82MW already in operation). The market reacts positively to the long term target of 300MW by 2020 and a big amount of applications have already been received by the respective authorities. Additionally, a significant development in solar PV and CSP has been observed. The solar PV target set by the

67<http://www.mcw.gov.cy/mcw/rtd/rtd.nsf>All/5C7066392976799AC22577B60029323E?OpenDocument>

NREAP for 2013-2014 is 25MW, which has almost been reached by respective applications (applications received total 22MW, and installed capacity in 2010 is 6.3MW). The respective target for CSP is 25MW for 2013-2014 and again a positive reaction from the market was observed, with approvals reaching a total capacity of 25MW.

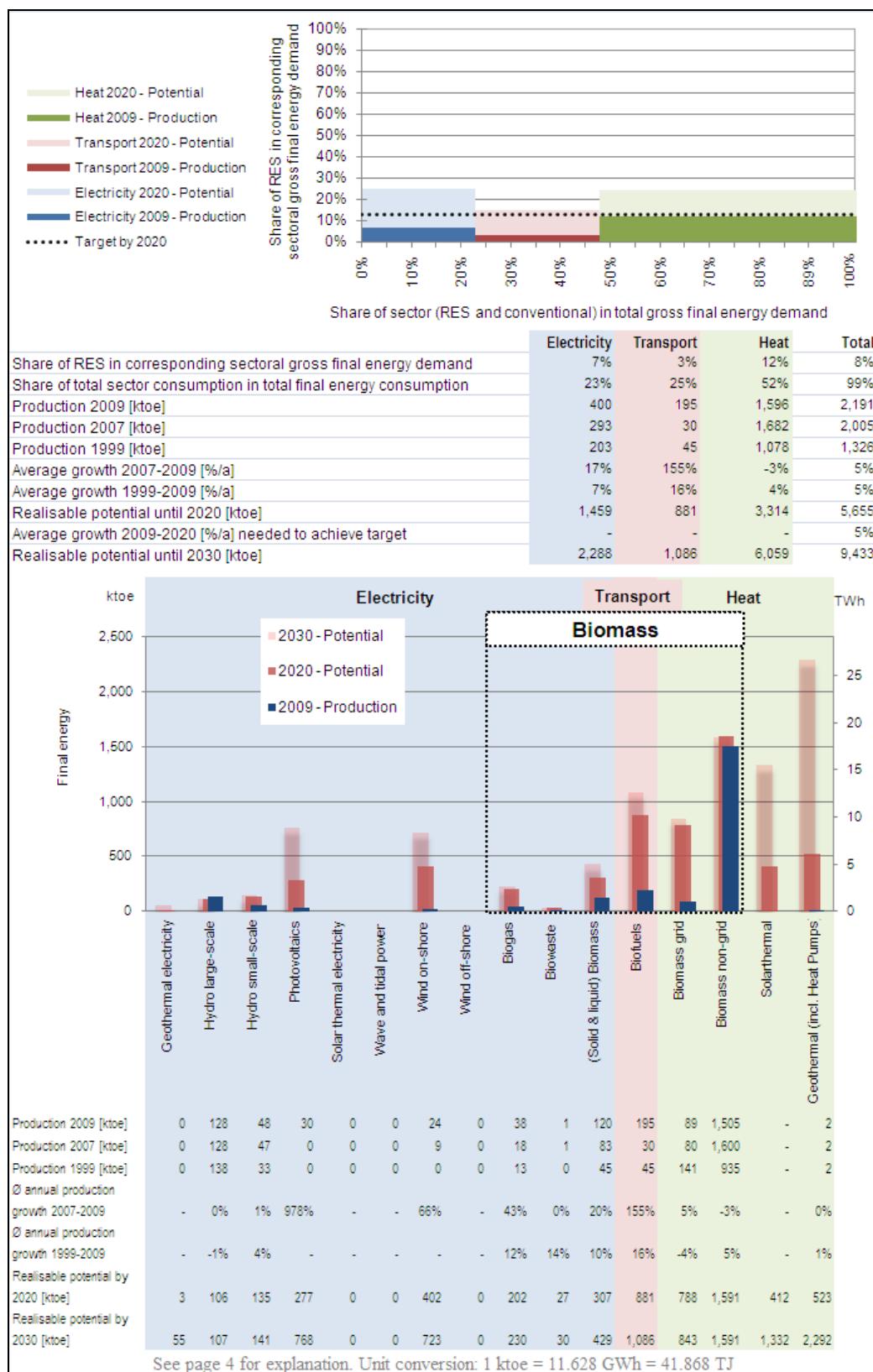
RES-H&C

High response has been observed for heating systems in houses and also in large commercial buildings. In several cases, solar cooling has also been installed, mainly in residential buildings.

RES-T

A good reaction from the market to the replacement of old vehicles with new, energy efficient ones has been observed.

CZECH REPUBLIC - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

There have not been any significant policy changes in the Czech Republic since 2009. However, in 2010 RES-E electricity tariffs have been reduced for some technologies (especially for PV) in comparison with their 2009 level.

Requirements for the share of bio-content in transport fuels have increased in 2010.

1 Summary: RES Support Policy

RES-E

In the Czech Republic the systematic support of RES-E started at the beginning of 2006 based on Act 180/2005. The generation of RES-E is mainly promoted through a price-regulation. System operators may choose between a guaranteed feed-in tariff and a premium paid on top of the competitive electricity price achieved on the market. Feed-in tariff and premium cannot be combined. A change from the premium to the feed-in tariffs and vice versa is possible annually.

Also, funds are available, which can provide investment support to RES-E projects. The aim of support is to increase the use of RES-E and RES-H.

RES-H&C

RES-H in the Czech Republic is supported primarily through investment grants/subsidies. The programmes promote co-generation on biogas, waste and sewage gas; biogas stations, co-generation on solid biomass, cogeneration from geothermal energy, RES-H plants, etc. Also, the support scheme for RES-E encourages the use of combined heat and power.

RES-T

There are two main RES-T support measures: a requirement for a minimum biofuel share and excise tax exemptions. An aid for the cultivation of energy crops of 45 € per hectare is provided.

2 Details RES-Electricity Support Policy

Feed-in tariff / premium

In the Czech Republic, the generation of RES-E is promoted primarily through a price-regulation. It is managed by the Energy Regulatory Office (ERO, the Authority), website: www.eru.cz

This support instrument is regulated by the following legislation: Law on Energy No.458/2000 [1], Act on Promotion of Electricity Generation from RES and Amending Several Acts No. 180/2005 [2], Amendment of Energy Regulatory Office Decree No. 475/2005 introducing several statutory provisions on the promotion of RES No. 364/2007 [3].

The RES-E plant operator may choose between premium payments on top of the market price (feed-in premium) or guaranteed payments (feed-in tariff). Operators of plants that generate RES-E for their own needs only are entitled to the payment of the premium. Feed-in tariff and feed-in premium cannot be combined. Producers annually choose one of the two options to support the production of RES-E. A move from a premium to the feed-in tariffs and vice versa can be done once a year.

The feed-in tariffs/premium that can be obtained for RES-E from power plants put into operation in 2009, 2010 and 2011 are shown in Table 1.

Table 1: Feed-in tariffs/premium level in 2009-2011 [4, 5]

Power plant	Pricing decision of 2009 [4]				Pricing decision of 2010 [5]							
	plants started in 2009				plants started in 2010				plants started in 2011			
	Feed-in		Premium		Feed-in		Premium		Feed-in		Premium	
	CZK/ MWh	€/ MWh	CZK/ MWh	€/ MWh	CZK/ MWh	€/ MWh	CZK/ MWh	€/ MWh	CZK/ MWh	€/ MWh	CZK/ MWh	€/ MWh
Small hydro power plants	2760	104.29	1790	67.64	3060	122.11	2090	83.40	3000	123.84	2030	
Biomass 100%												
category O1 **	4580	173.06	3610	136.41	4580	182.76	3610	144.05	4580	189.06	3610	142.02
category O2 **	3530	133.38	2560	96.73	3530	140.86	2560	102.15	3530	145.72	2560	105.68
category O3 **	2630	99.38	1660	62.72	2630	104.95	1660	66.24	2630	108.57	1660	68.52
Co-firing (biomass and fossil fuels):												
Category S1 **	-	-	1370	51.77	-	-	1370	54.67				
Category S2 **	-	-	700	26.45	-	-	700	27.93				
Category S3 **	-	-	50	1.89	-	-	10	0.40				
Parallel combustion of biomass and fossil fuels:												
Category P1 **	-	-	1640	61.97	-	-	1640	65.50				
Category P2 **	-	-	970	36.65	-	-	970	38.71				
Category P3 **	-	-	320	12.09	-	-	280	11.17				
Biogas plants category AF1	4120	155.68	3150	119.03	4120	164.41	3150	125.70				
Biogas plants category AF2	3550	134.14	2580	70.75	3550	141.66	2580	102.95				
Wind	2390	90.31	1990	75.19	2280	90.98	1880	75.02	2230	92.06	1830	75.54
PV <30kW	13420	507.8	12420	466.13	12500	498.80	11500	458.90	7500	309.60	6500	268.31
30<PV<100	13320	503.31	12320	465.20	12400	494.81	11400	454.91	5900	243.55	4900	202.27
PV >100kW	13320	503.31	12320	465.20	12400	494.81	11400	454.91	5500	227.04	4500	185.76
Geothermal	4500	170.04	3530	133.38	4500	179.57	3530	140.86				
Landfill gas and sewage gas	2470		1500		2520		1550					

*1 € = 26.465 CZK (2009-12-31), 1 € = 25.06 CZK (2010-12-31), 1 € = 24.225 CZK (2011-03-07)

** Biomass categories are defined in the ordinance of the Ministry of Environment No. 482/2005 [12]. Based on the parameters (calorific value, average cost, benefits for sustainable development) the biomass is divided into different categories of support (category 1,2,3). AF1 - biomass from energy crops, AF2 – all other biomass.

Feed-in tariffs are guaranteed for a period of 20 years for all kind of RES-E generation excluding small hydro, where it is 30 years (put into operation after 1 January 2008).

If the plant operator wants to choose promotion through the feed-in tariff, he shall conclude a contract with the grid operator. If the plant operator wants to choose promotion through the premium, he shall prove to the grid operator that he has concluded a contract with an electricity market participant (e.g. a utility). Plant operators that consume the total amount of RES-E they generate are not required to prove the existence of a contract.

When calculating the feed-in tariffs and premiums, the Energy Regulatory Office (ERO) takes into account the different costs of purchase, connection and operation of the specific system types and the development of different systems over time. When calculating the amount of the feed-in premiums, the ERO also considers that the sale of RES-E on the market carries a higher risk.

In principle, the price regulation applies to all technologies (small hydro up to 10 MW) used for the generation of RES-E with one exception: wind-power systems that cover an area of more than one km² and whose total capacity installed amounts to more than 20 MW cannot get the feed-in tariff.

The ERO determines the feed-in tariff for different RES-E technologies for the following calendar year. The support (in case of feed-in tariff/premium) for an existing project can be decreased or increased according to the rules described in the Act on promotion of RES-E [2]. The main rules are: feed-in tariffs for new and existing RES-E generation are adjusted annually according to the inflation from 2% up to 4% (this is not applied to electricity from combined fossil fuel and biomass combustion); the feed-in tariffs for the following year shall not be reduced by more than 5% compared to the tariff in force at the time of the calculation of the new tariff. The regulations do not require the use of certified equipment and/or certified installers. More information about the instrument is available on Energy Regulatory Office (ERO) website in the FAQ section (http://www.eru.cz/dias-read_article.php?articleId=683).

EFEKT 2011 - State program to promote energy saving and use of renewable energy for 2011

The national programme for the promotion of energy-saving measures and the use of RES consists of several sub-programmes, which are implemented by different ministries. The sub-programme run by the Ministry of Industry and Trade is called "EFEKT" [6]. In accordance to this programme, subsidies are provided for example on educational activities, energy consultancy, small-scale investments and pilot projects. The program focuses on the introduction of energy-saving measures in production, transmission, distribution and consumption of energy, on increased use of RES and development of combined heating, cooling and electricity. Every year, the Ministry approves a new programme framework. The deadline for submission of applications for 2011 has expired on 28 February 2011. By this scheme, subsidies are granted on the basis of a selective procedure. Projects are selected by expert advisory committees. Ensuing from the government resolution, No. 81 (January 21, 2004), the programme is being annually evaluated. The evaluation is submitted jointly by the Minister of Industry and Trade and the Minister of the Environment.

According to the last call, projects of CHP units running with landfill gas and gas from biodegradable municipal waste, as well small hydro could receive the subsidy. The total budget is 30 million CZK (1,15 million €) in 2011. The maximum subsidy per project amounts to 3 million CZK (115,38 thousand €) and shall not exceed 40% of eligible costs. Interested parties should apply by writing to the Ministry of Industry and Trade within the respective deadline.

More information about the instrument is available on the website <http://www.mpo-efekt.cz/cz>.

In such a case it is possible for the same project to be supported by more than one support measure. Such projects can later receive the feed-in tariff or premium.



Operational Programme Environment

The Operational Programme Environment allocates investment grants from the Cohesion Fund to projects in the field of renewable energy [7]. Based on the amount of financial resources, the Operational Programme Environment (OPE) is the second largest Czech operational programme. Between 2007 and 2013, this programme will offer almost 5 billion € from the EU's Cohesion Fund and the European Regional Development Fund, and an additional 300 million € from the National Environmental Fund of the Czech Republic and the state budget. The main goal of the Operational Programme is to protect and improve environmental quality throughout the Czech Republic. OPE areas of intervention are divided into 8 priority axes.

A total budget of almost 673 million € is available from the Cohesion Fund in the Operational Programme Environment (OPE) for the Sustainable Use of Energy Sources (priority axis 3). The aim of support is to increase the use of RES-E and RES-H as well as the use of heat from waste sources.

In general, all RES technologies used in the generation of RES-E are eligible. The construction of new facilities and the modernization of existing facilities are supported with the aim to increase the use of RES-E, RES-H and CHP.

The grant application can only be submitted during calls announced for a specific area. The last call to submit applications for grants of RES projects was announced on 11 February 2010.

For heat generation, realization of energy savings, and use of waste heat, grants up to 85% of a project's total cost are eligible. A project's minimum amount of eligible expenses has been set at 0.5 million CZK (19,230 €).

Grants for RES-E generation (PV, wind, small hydro, geothermal and biomass plants) may account for 20% of the total eligible expenses; however, there is a maximum limit of 50 million CZK (1.923 million €). For combined generation of electricity and heat (co-generation using biogas, waste and sludge gas; biogas stations, co-generation using solid biomass, cogeneration from geothermal energy) grants may account for 40% of the total eligible expenses, however, there is a maximum limit per project of 100 million CZK (3.85 million €).

The duty of the Monitoring Committee is to supervise the realization of the Operational Programme Environment, and especially to guarantee an achievement of the programme's goals whilst exploiting public resources most efficiently.

The instrument is managed by the Ministry of Environment (<http://www.mzp.cz>). More information about the Operational Programme Environment is available on www.opzp.cz.

ECO-ENERGY programme

In general, the ECO-ENERGY programme of the Operational Programme Enterprise and Innovations, gives entrepreneurs the opportunity to apply for investment grants or low-interest loans for projects in the field of RES within calls for applications [8]. The following RES related activities are supported:

- construction of facilities for the production and distribution of electricity and thermal energy produced from renewable and secondary energy sources,

- reconstruction of existing production facilities for the use of renewable and secondary energy sources,
- construction of facilities for the production of briquettes and pellets and other RES.

This programme is funded by the ERDF (European Regional Development Fund). In 2010 the third call for proposals was announced. The webpage of the Ministry of Industry and Trade informs that intake of registration application has terminated.

According to the last call of this programme, the projects are promoted through subsidies. The Ministry of Industry and Trade grants subsidies by notice. The notice includes binding conditions for the subsidy granted. A contract needs not be concluded.

The promoted RES-E technologies depend on the conditions laid down by the current call for applications. The framework for the ECO-ENERGY programme is generally eligible for all RES-E technologies. Within the framework of the last call, the supported activities were: a) the use of renewable (water, biomass) and secondary energy sources and b) increasing the efficiency of energy generation, transmission and consumption.

Generally, the minimum amount of the subsidy amounts to 0.5 million CZK (19,230 €), the maximum amount of the subsidy is 100 million CZK (3.85 million €). In the case of RES related activities the amount of subsidies can reach 250 million CZK (10.32 million €). The maximum amount of the subsidy as percentage of the eligible expenses as follows: RES-E (hydro) max 30%, RES-E (biomass, landfill gas) max 30%, RES CHP max 30%, heat pumps and solar thermal collectors max 30%, RES-H (heating plants) max 40%.

The instrument is managed by the Ministry of Industry and Trade. More information about the programme is available on the website www.mpo.cz and www.czechinvest.org

3 Details RES -Heating and Cooling Support Policy

Grants/subsidies

RES-H in the Czech Republic is supported through grants/subsidies that also apply to RES-E and are explained in the previous chapter.

The sub-programme run by the Ministry of Industry and Trade (EFEKT) promotes CHP-H plants run with landfill gas or gas from biodegradable municipal waste.

The Operational Programme Environment supports combined generation of electricity and heat (CHP based on biogas, waste and sewage gas; biogas stations, co-generation on solid biomass, and cogeneration from geothermal energy).

The ECO-ENERGY programme of the Operational Programme Enterprise and Innovations supports co-generation from RES, heat pumps and solar thermal collectors, and other RES-H projects.

Green Savings

The GREEN SAVINGS programme offers a governmental grant for citizens to insulate houses and apartment buildings, to build a passive house and to replace or install facilities that use RES for heating and hot water preparation [9]. The State Environmental Fund provides subsidies for residential buildings. Funds are raised from the sale of emission credits under the Kyoto Protocol on GHG. The overall anticipated allocation of the programme is up to 25 billion CZK (1.03 billion €). The provision of financial resources is set in the Decree of the Ministry of Environment No 9/2009.

Owners of houses, apartment buildings, cooperative apartment owners, municipalities and businesses can apply for the subsidy. The following activities are eligible: replacement or installation of environmentally unfriendly heating for low-emission biomass-fired sources and efficient heat pumps in new buildings, installation of solar-thermal collectors. The subsidy for family houses varies in a range of 50,000-95,000 CZK (2,064-3,922 €), i.e.:

- subsidy for biomass-fired source with manual fuel supply without storage tank and air-to-water heat pump is 50,000 CZK (2,064 €),
- subsidy for solar-thermal collectors, hot water preparation is 55,000 CZK (2,270 €),
- subsidy for soil-to-water, water-to-water heat pump is 75,000 CZK (3,095 €),
- subsidy for biomass-fired source with manual fuel supply with storage tank of required volume and solar-thermal collectors, hot water preparation and pre-heating is 80,000 CZK (3,302 €),
- support for biomass-fired source with automatic fuel supply is 95,000 CZK (3,922 €).

The subsidy for a multiple dwelling houses is the following:

- 15,000 CZK (620 €) for an air-to-water heat pump per dwelling unit;
- 20,000 CZK (825 €) for soil-to-water, water-to-water heat pump per dwelling unit;
- 25,000 CZK (1,031 €) for biomass-fired source, solar-thermal collectors, hot water preparation only per dwelling unit;
- 35,000 CZK (1,445 €) for solar-thermal collectors, hot water preparation and pre-heating per dwelling unit.

The maximum support amount per entity is 100 million CZK (4.13 million €). Funds can be used until 31 December 2012.

In accordance to Axis III of the Rural Development Programme for 2007-2013, support is set for the development of living conditions and diversification of economic activities in rural areas [10]. The measure "Diversification into non-agricultural activities" is directly related to the support of RES. Agricultural entrepreneurs can be the applicants. The measure "Support for business development" also stipulates support for decentralized facilities for processing and use of RES. Applicants are the smallest micro businesses. From February till March 2010 the submission of applications for the measure "Diversification into non-agricultural activities" took place. Rules establishing conditions for grants are described in http://eagri.cz/public/web/file/36735/Pravidla_III_1_1.pdf.

Fiscal measures

Act No 338/1992 on the Property Tax stipulates that property tax consists of a tax on land and a tax on buildings [11]. Land serving solely for the purpose of improving the environment (RES projects meet this criteria) are exempted from the tax on land. Furthermore, the Act stipulates that buildings in which a fossil fuel heating system was replaced by a RES system using solar, wind, geothermal or biomass, for a period of five years from the year the change occurred, are exempted from the tax on buildings.

Act No 586/1992 on Income Tax stipulates that income from the following green installations is exempted from taxes: small hydro PP up to capacity of 1 MW, wind PP, heat pumps, solar installations, biogas and biomass installations, installations generating biologically degradable substances [12].

4 Details RES -Transport support policy

Quota obligation

Currently bioethanol is used as a low-percentage additive to motor petrol or in the form of high-percentage bioethanol fuel blends. Any person bringing motor-vehicle petrol or diesel fuels into free tax circulations in the Czech Republic must ensure that they contain at least a minimum share of biofuels. In accordance to the Act on Air Protection No. 86/2002 [13] and its amendments No 172/2010 [14], the following minimum shares of biofuels have been set:

- as of 1 January 2008, 2% of the total amount of motor vehicle petrol and diesel fuel;
- as of 1 January 2009, 3.5% of the total amount of motor vehicle petrol fuel and 4.5% of the total amount of motor vehicle diesel fuel;
- as of 1 June 2010, 4.1% of the total amount of motor vehicle petrol fuel (a technical standard sets the maximum limit at 5.0%) and 6.0% of the total amount of motor vehicle diesel fuel (a technical standard sets that a maximum limit is 7.0%).

The latest amendment of the Act on Air Protection No 172/2010 [14] stipulates that requirements for the share of biofuels will be valid from 1 June 2010 till 31 December 2010. For the year 2011 they are not set yet.

Financial support

Since 2008, an amendment to the Act on Excise Tax No.37/2008 (amending Act No. 353/2003) exempts pure biofuels from any excise tax [15]. For fuels with a high share of biofuel, the biofuel component is exempted from excise tax, as with the rapeseed oil methyl ester (RME) component of SMN 30⁶⁸. Thus the excise duty on diesel containing at least 31% biodiesel from RME is 6.866 CZK per litre (0.26 € per litre) of blended fuel. The excise duty on common diesel (diesel containing max 5 % rapeseed methyl ester) is 9.95 CZK per litre (0.38 € per litre), thus resulting in a rebate of CZK 3.084 per litre (0.12 € per litre).

⁶⁸ blended diesel fuel – engine diesel fuel that contains over 30% of vegetable oil methyl ester (VOME) volume.

Aid is provided for the cultivation of energy crops at 45 € per hectare for any crop to be used for energy purposes. The conditions are governed by Governmental Order No 80/2007 laying down certain conditions for the provision of a payment for the cultivation of energy crops [16]. An uninterrupted plot of arable land with an area of at least one hectare must be used for the cultivation of energy crops. Energy crops must be grown on the land as the main crop in the corresponding year.

There is no specific support for electric vehicles that use renewable electricity.

5 RES -E Grid Integration

All plants are entitled to connection to the grid according to the principle of non-discrimination as stipulated by the general provisions of Law on Energy [1]. RES-E has preference in grid connection [1, 2]. However, wind power plants that cover an area of at least one km² and whose total capacity installed amounts to more than 20 MW are not eligible to this preferential connection. In case of proven capacity shortage, the grid operator is exempt from obligation to connect a system that generates RES-E [2]. In order to be connected, the producer of RES-E shall apply for connection and comply with the conditions for the connection and transmission of electricity laid down in Law on Energy [1].

The cost of the connection of a system to the grid is borne by the plant operator.

RES-E is given priority in transmission [1]. If the producer is interested in selling electricity, the transmission system operator as well as distribution system operators are obliged to purchase RES-E and use it preferentially to cover the losses in the transmission system.

The plant operator is contractually entitled against the grid operator to an expansion of the grid if the expansion is necessary to satisfy the connection agreement. The grid operator is obliged to expand the grid without discriminating against certain plant operators. The cost of an expansion of low-voltage lines is borne by the distribution grid operator unless the lines are more than 50m long and the expansion aims at supplying electricity to buildings other than private households. In all other cases, the cost of a grid (transmission and distribution) expansion is borne by the person that derives a benefit from the expansion. Thus, the plant operator generally bears the cost.

Balancing responsibility for RES-E generation is situated at the regional network operators and costs resulting from settlement of balancing energy are borne by customers.

6 RES Production, Potential and Market Development

RES-E

Despite the existing support schemes, the development of RES-E is still only moderate and power generation from small and large hydro power plants still play the dominant role. Besides hydro, only biomass already contributes significantly to power generation - about 28% of RES-E in the Czech Republic. However, the PV applications are currently facing a real boom in the Czech Republic (from a few MW in 2007 to 80 MW in mid

2009). The boom has affected both small size installations on roofs and large scale ground installations. More than 1300 smaller projects with an installed capacity under 30 kW currently exist, but big projects of "ground" PV applications (with installed capacity from several MW up to 30-40 MW) play a dominant role in total figures. It is expected that total installed capacity at the end of the year 2009 will probably reach 200 MW (some estimations are even higher) [13].

Biogas installations (biogas stations in agriculture and sewage plants) also significantly increased their installed capacity. The development of biogas stations, particularly in the agricultural sector, is the result of (investment) support of biogas stations from EU structural funds (up to 30% of total investment costs). The construction of approximately 120 new biogas stations in the period 2009-2012 with total power generation 470 GWh is expected [13].

RES-T

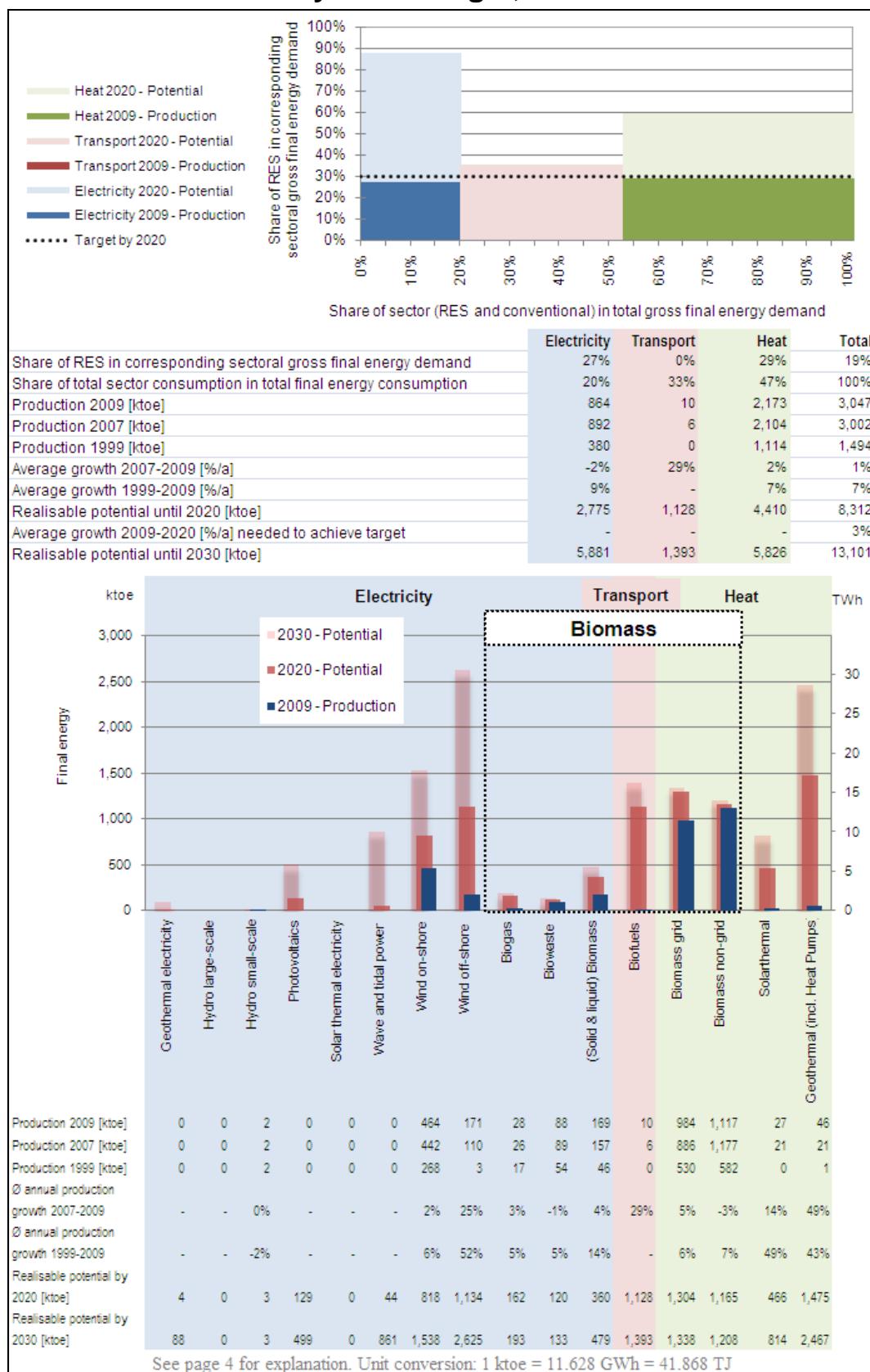
Biofuel production in the Czech Republic has been mainly biodiesel, largely from rape seed oil. In 2007 biodiesel consumption was 30 ktoe.

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DENMARK - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

There were no substantial changes in Denmark's RES policy since 2009. The scheme was amended by the Law on the Promotion of Renewable Energy which came into force in January 2009. The support scheme is based on broad energy policy agreements and can be adjusted in accordance with new agreements.

Since January 2010, Denmark obliges oil companies to ensure that in 2012 at least 5.75 % of annual sales of fuel for land transport consist of biofuels.

1 Summary: RES Support Policy

RES-E

RES-E support instruments in Denmark were amended in 2008, but the support principles remained the same as previously. Denmark promotes RES-E through a price regulation. Producers receive a variable premium on top of the market price. The sum of the premium and the market price shall not exceed a certain statutory maximum, which depends on the date of grid connection of the system and the source of energy used. In certain cases, plant operators are granted a guaranteed bonus and are thus not subject to a statutory maximum.

Transmission grid operator Energinet.dk pays an additional subsidy to small systems for the generation of electricity, even small pilot projects are eligible.

The Danish Commission on Climate Change presented a report on the future of the Danish energy system. Wind power and green transport technologies are among the main areas of interest in the report. The commission recommends offshore wind turbines as the primary source of energy in Denmark. Biomass should also play an important role in the coming energy system [6]. After the Climate Commission's report it is the Danish government's intention to present a proposal that could form the basis for discussions for a new energy political agreement for further initiatives for the promotion of renewable energy and energy savings.

RES-H&C

The generation of RES-H is supported by tax exemptions. Biomass, being CO₂ neutral, is exempt from the CO₂ tax. Solar heating plants are exempt from both energy and CO₂ taxes.

RES-T

Since January 2010 Denmark obliges oil companies to ensure that in 2012 at least 5.75 percent of annual sales of fuel for land transport consist of biofuels. Biofuels have been exempt from the CO₂ tax imposed on ordinary petrol and diesel for transport since January 2005. This is currently the main supporting measure for biofuels. The government is currently preparing a proposal for the restructuring of vehicle taxation so that it is transferred from ownership of a vehicle to its use. The proposal will make it more attractive to buy an energy-economical vehicle, irrespective of technology. If such a restructuring is approved, it could probably be implemented after 2017.

2 Details RES-Electricity Support Policy

RES-E support instruments in Denmark were amended in 2008, but the support principles remained the same as previously. There is no information on important policy changes foreseen for Denmark in the near future.

Feed-in premium

In Denmark the RES-E production is supported through price premiums that are paid on top of the market price but are mostly capped at a maximum amount of market price plus premium, and tenders for offshore wind power. The instruments are prepared and managed by the Danish Energy Agency (www.ens.dk).

Energinet.dk supervises all important procedural steps related to the promotion of RES-E. Furthermore, renewable energy is subject to the general statutory provisions related to the supervision of the electricity market. The electricity market is supervised by an independent commission (Energitilsynet - Danish Energy Regulatory Authority), which was established by the Ministry of Environment and Energy. The instruments are revised from time to time, according to the situation in the market. Historically the level of support has changed numerous times, but it is a general rule that the support scheme which was in place when a production unit was connected to the grid, applies for the lifetime of the production unit. As a result there is a high level of certainty about future support at the time of investment.

Support instruments are regulated by Law No. 1392/2008 on the Promotion of Renewable Energy [1], by the Act on Electricity Supply [2] and by the Act on Transmission Grid Operator Energinet.dk [3].

Instruments are eligible for plants of different sizes, except hydropower stations whose capacity must not exceed 10 MW. Small solar PV units in private installations (<6 kW) are not eligible for feed-in tariff/premium. Geothermal power generation is not promoted. There is no cap on the annually available budget or volume of new installations.

Some projects can be supported by more than one support measure. For example, in combined heat and power plants, the heat produced using biomass is exempt from energy taxes, and electricity receives feed-in tariff/premium. Wind power plants can receive a premium plus compensation for balancing costs.

RES-E producers receive a variable premium on top of the wholesale electricity price. The sum of the premium and the market price shall not exceed a certain statutory maximum, which depends on the date of connection of the system and the source of energy used. In certain cases, system operators are granted a guaranteed premium and are thus not subject to a statutory maximum. The persons entitled to the payment of a premium are owners of systems for the generation of electricity from renewable sources.

Systems commissioned since 2009 are eligible for the following payments [1, 4]:

New wind turbines onshore:

Guaranteed price premium of 25 øre/kWh (33.5 €/MWh) for 22,000 full load hours. Additionally, 2.3 øre/kWh (3.1 €/MWh) is received during the entire lifetime of the turbine to compensate for the cost of balancing and such.

Systems financed by utility companies: maximum subsidy (premium plus market price) of 33 øre/kWh (44 €/MWh), applicable for 10 years from the date of connection of the system, plus guaranteed bonus (unlimited term) of 10 øre/kWh (13.4 €/MWh).

New wind turbines offshore

New wind turbines on-shore receive a premium which in combination with the market price may not exceed (depending on location) 51.8 oder 62.9 øre /kWh for up to 10 TWh within 20 years of grid connection.

Systems financed by utility companies: maximum subsidy (bonus plus market price) of 35.3 øre/kWh (47 €/MWh), applicable to 42,000 full load hours, plus guaranteed bonus (unlimited term) of 10 øre/kWh (13.4 €/MWh). Additionally, 2.3 øre/kWh (3.1 €/MWh) is received during the entire lifetime of the turbine to compensate for the cost of balancing and such.

Household wind turbines:

Private wind turbines below 25 kW which are connected for consumption by the owner receive a premium which in combination with the market price may not exceed 60 øre/kWh (80.6 €/MWh).

Re-powering:

For wind turbines connected to a grid on 21 February 2008 or later, the premium (on top of market price) is 8 øre/kWh (10.7 €/MWh) or maximum subsidy (premium plus market price) of up to 38 øre/kWh (50.8 €/MWh) for electricity production corresponding to 12,000 peak-load hours for double the amount of the installed output of the dismantled wind turbine.

Biogas:

New units producing electricity only from biologically or thermally gasified biomass receive a subsidy, which in combination with the market price amounts to 74.5 øre/kWh (100 €/MWh). If the biogas is mixed with other fuels, the part of the electricity produced from biogas receives a price premium of 40.5 øre/kWh (54.4 €/MWh). The heat produced using biomass at CHP is exempt from energy taxes.

Biomass:

New units producing electricity by burning biomass will receive a guaranteed premium of 15 øre/kWh (20.2 €/MWh). The heat produced using biomass at CHP is exempt from energy taxes.

Wave power, solar PV, fuel cells running on renewable fuels etc.:

These technologies receive a price premium which, combined with the market price, makes 60 øre/kWh (80.5 €/MWh) for 10 years after grid connection and 40 øre/kWh (53.8 €/MWh) for the following 10 years.

Small solar PV units in private installations:

There is no feed-in tariff or price premium for solar PV units below 6 kW, which are installed in private homes. However, these units are exempt from energy taxes, and can (in popular terms) let the electricity meter run in reverse.

The tariff/premium depends on the system installation date. The Law on the Promotion of Renewable Energy stipulates several periods and deadlines, which are applied according to the technology used and the date of commissioning of the system in question. The period of payment is usually 10 years. The maximum period of payment is 20 years. It is set the number of full load hours for wind power plants, after that period the operators will not get a premium price for power. Producers cannot choose between a feed-in premium and a fixed feed-in tariff.

Table 1. Feed-in tariff/premium for RES-E in Denmark

Power plant	Level of support øre/kWh (€/MWh)			Duration
	Max amount of premium + market price Feed-in tariff	Fixed premium	Balancing	
New wind (onshore)	-	25 (33.5)	2.3 (3.1)	22,000 full load hours
New wind (offshore)	51.8-62.9 (69-83.9)	-	1.3 (3.1)	10 TWh in 20 years
Household wind turbines - below 25 kW	60 (80.6)	-	-	
Wind parks at sea (tender):				
Most recent: Anholt	105.1 (141)			20 TWh
RES-E from biomass		15 (20.2)		10 years
Biogas	74.5 (100)			
Biogas mix with other fuels		40.5 (54.4)		
Wave power. solar PV. other RES	60/40 (80.5/53.8)			0-10/11-20 years

Source: <https://www.retsinformation.dk/Forms/R0710.aspx?id=122961> and <http://www.ens.dk/en-US/supply/Renewable-energy/WindPower/Facts-about-Wind-Power/Subsidies-for-wind-wer/Sider/Forside.aspx>

Subsidies for RES technologies

Energinet.dk offers financial support to external energy research through the ForskEL and ForskVE-programmes, both of which are financed through a public service obligation (PSO) paid for by all electricity consumers of around 0.05 øre/kWh (0.07 €/MWh) [5]. The purpose of both programmes is to promote the development of environmentally friendly power generation technologies to facilitate the transfer to a society based on renewables.

Transmission grid operator Energinet.dk pays an additional subsidy to small systems for the generation of electricity (under ForskVE programme). Even small pilot projects are eligible. More information about this instrument is available on www.Energinet.dk. It supports projects with the purpose of spreading small renewable technologies such as PV, wave-energy and biogas. Energinet.dk has its own budget for the ForskVE programme. This budget is 25 million DKK (3.4 million €) per year and applies to the period of 2008-2011.

The ForskEL programme in 2011 will focus on the following areas: future energy systems with smart grids; tomorrow's eco-friendly electricity generation; environmental improvements and optimisation of existing electricity and CHP. The annual financial budget is 130 million DKK (17.4 million €).

Loan guarantees for local initiatives involving the erection of wind-energy systems

Energinet.dk provides loan guarantees for feasibility studies of local initiative groups that want to investigate whether the erection of one or more wind energy systems is feasible. Such organisations and groups must have 10 members at least. The majority of the members shall be residents in the municipality in which the systems will be erected or shall live within 4.5 kilometres of the building site.

Energinet.dk has provided a budget of 10 million DKK (1.34 million €) for guarantees. Each guarantee will cover most of the loan in question. The maximum guarantee is 500,000 DKK (67,193 €) per project. The loan guarantee is provided on the basis of an application form, which establishes a contract between Energinet.dk and the group in question.

Tendering

Tenders are organized only for offshore wind power parks. The conditions for offshore farms are laid down in the Danish Electricity Supply Act. The Danish Energy Agency is the planning authority for electricity generating installations at sea. Thus, investors need to receive licences from the Danish Energy Agency when an offshore wind power project is to be established – in that way the Energy Agency serves as a “One-stop-shop” for the project developer in relationship to the many, often opposing, interests connected to the establishment of offshore wind power projects. According to the provisions of the Electricity Act all Danish offshore wind projects must get permission either through a call for tenders or the open-door procedure. In an open-door procedure the applicant takes the initiative to establish the wind installation by applying for a licence to carry out preliminary studies, establish installations and produce electricity. The investor of the wind installation pays the grid connection from the installation to the nearest point on shore.

In a call for tender the Danish State takes the initiative to the establishment of a wind installation at a specific location in the Danish waters. Interested parties from all over the world can then apply to develop the project.

The price per kWh has so far been given as a fixed settling price (market price + variable premium) by the State in the call for tenders. That means that the investor is ensured a stable price for the electricity produced, and will receive a premium from the State if the market price is lower than the fixed settling price.

The last tender was for an offshore wind farm of 400 MW. In June 2010, DONG Energy won the tender for Anholt Offshore wind farm, and has been awarded the concession for building and operating the wind farm, which includes permission for further preliminary investigations and permission to establish the wind farm. DONG Energy will get a feed-in tariff of 105.1 øre/kWh (141 €/MWh) for 20 TWh.

Net-metering

The Regulation on Net-metering for the Producers of Electricity for Own Needs authorises the exemption of certain system operators from Public Service Obligation (PSO). The Public Service Obligation is a charge levied to support renewable energy. RES-E producers using all or part of the electricity produced for their own needs are exempt from paying PSO on this electricity. All technologies except for geothermal

energy are eligible for net-metering. Operators of generators must apply to Energinet.dk for net-metering, which is calculated on an hourly basis.

3 Details RES-Heating and Cooling Support Policy

Tax exemptions

The generation of RES-H is supported through tax exemptions. In CHP plants, the heat produced from biomass and biogas is exempt from energy taxes. Biomass in general is non-taxable as well as being CO₂ neutral, it is exempt from CO₂ duty. Solar heating plants are exempt from both energy and CO₂ taxes. The regulations are intended to ensure that a large part of district heat generation is via co-generation.

Subsidies

Subsidies can be given for purchasing and installing approved heating systems to replace scrapped oil-fired boilers. The requirements for a subsidy are that the oil-fired boiler is replaced either by a heat pump (geothermal or air to water), solar heating in combination with, for example, a new oil/natural gas/wood pellet boiler or a connection to district heating. In designated district heating areas, the scheme only gives subsidy for district heating. A subsidy is given for single unit houses: 20,000 DKK (2,681.6 €) for the establishment of geothermal heating; 15,000 DKK (2,011.2 €) for the establishment of liquid-water heat pumps and air-water heat pumps; 10,000 DKK (1,341.8 €) for the establishment of district heating units and 25 % of investment costs for solar installations. In total 400 million DKK (53.6 million €) has been earmarked in budget for subsidies. More information is available at www.skrotditoliefyr.dk

Building obligations

The obligations to use RES in new buildings are applied not on the building level, but on the energy system level. Municipalities are obliged to set up heat plans based on feasibility studies. The heat supply system for building is chosen according to the heat plan of the area. The rules concerning the feasibility study of alternative/RES systems are determined by the Act on Heat Supply. The objective of this Act is to promote the most socio-economic and environmentally friendly utilization of energy for heating buildings, supplying them with hot water and reducing the dependency of the energy system on oil. In certain areas there is an obligation for buildings to connect to a district heating system. Only new low energy buildings are dispensed from this obligation.

4 Details RES-Transport Support Policy

In an effort to reduce Denmark's dependency on fossil fuels and to reduce energy consumption, the government has decided to increase the share of EU-certified biofuels consumption in the transport sector to 10 % in 2020, with an initial 5.75 % target for 2012.

Tax exemptions

Biofuels have been exempt from the CO₂ tax imposed on ordinary petrol and diesel for transport since January 2005. Electric cars are exempt from both vehicle tax and fuel

consumption charges up to 2016. After this, electric vehicles will be taxed favourably in relation to their environmental and climatic advantages. This is currently the main supporting measure for RES-T.

Financial support

From 2007-2010, as a part of the efforts to achieve the future targets for the use of renewable energy, the Energy Technology Development and Demonstration Programme (ETDDP) has contributed a total of 200 million DKK (26.8 million €) for the development and demonstration of second generation biofuels. A research scheme for electric vehicles has been set up with a framework of 53 million DKK (7.1 million €) for the period 2008-2012. 180 million DKK (24.1 million €) has been earmarked for research and demonstration projects for energy efficient transport solutions, including electric vehicles and second generation biofuels, as part of the "Green transport policy" transport agreement.

5 RES-E Grid Integration

Plants shall be connected to the electricity grid in accordance with the principle of non-discrimination. Systems for RES-E generation are not given priority.

Priority dispatch is given to RES-E (and CHP) over fossil fuel generation when grid capacity is insufficient and the grid is not in danger. Regarding use of the grid, the priority shall be given for RES-E.

According to the Act on Electricity Supply, the grid operator is statutorily obliged to expand the grids in order to guarantee the efficient transmission of electricity. Whenever possible, the national target of increasing the competitiveness and use of RES is given special attention. The connection policy is shallow with well established and transparent rules for calculating costs. RES projects only pay the cost that would have been incurred in case of being connected to the (local/nearest) grid irrespective of whether the grid company selects another connection point. The costs for grid reinforcement are met by the DSO and TSO. In cases where the RES project wishes to connect at a higher voltage level (than 10-20kV), the additional connection costs have to be paid by the project, but the reinforcement costs do not.

In principle, producers themselves hold balance responsibility for the electricity produced by their own plants and are required to hand over the balance responsibility to a balance responsible party (BRP) if they do not wish to handle the responsibility themselves. A BRP is a player that has entered into an agreement on balance responsibility with Energinet.dk and that has thus been approved by Energinet.dk as the holder of separate balance responsibility for consumption, production or electricity trade. In practice, small-scale producers usually assign this responsibility to their "supplier" (the buyer of their production). In the case of electricity produced under a purchase obligation, Energinet.dk always acts as "supplier" as well as BRP.

Prior to each 24-hour period of operation, the player shall submit a binding notification to Energinet.dk. Parties with balance responsibility for production shall also submit power schedules to Energinet.dk. The power schedules shall be updated on a regular basis before or during the 24-hour period of operation. Adjustments to notifications must be

submitted to and received by Energinet.dk not later than 45 minutes before the delivery hour.

The balancing market is divided into a regulating power market and a balancing power market. All consumption and production is measured in the grid and the difference between planned and measured generation and production is settled according to the prices established in the real time balancing. New wind turbines (onshore/offshore) receive 2.3 øre/kWh (3.1 €/MWh) in the entire lifetime of the turbine to compensate for the cost of balancing etc.

6 RES Production, Potential and Market Development

RES-E

The contribution of RES to the overall electricity consumption in Denmark was 8.7% in 1997 and 28.3% in 2007. The highest growth was achieved by wind power. About 7,173 GWh of electricity was produced from wind in 2007, of this 1,279 GWh by offshore wind plants.

The Danish government has a goal that, in 2025, half of the Danish electricity consumption must be covered by RES (particularly from wind power).

In the summer of 2008 the level of support was increased for electricity produced from biomass, biogas and wind turbines. The support level for production from solar PV, wave power, fuel cells running on renewable fuels etc. remains unchanged, but a special fund of 25 million DKK per year in four years has been introduced to support projects which promote these technologies. It is difficult to evaluate if the increased support level will influence the RES-E development significantly because of the short period in operation.

RES-H&C

In Denmark most urban areas, where most large buildings are being built, are provided with district heating systems. District heating in Denmark is now based on more than 40% biomass and other RES and more than 80% CHP, because supply of electricity and district heating and incineration of waste is highly coordinated.

Stricter demands for energy performance for buildings have made RES-H systems more competitive in relation to increased heat isolation, and because RES systems have been used to a large extend in a number of low energy buildings. Low energy buildings are not obliged to be connected to an existing district heating system or gas pipeline. Solar energy systems and heat pumps have got a larger market share in recent years.

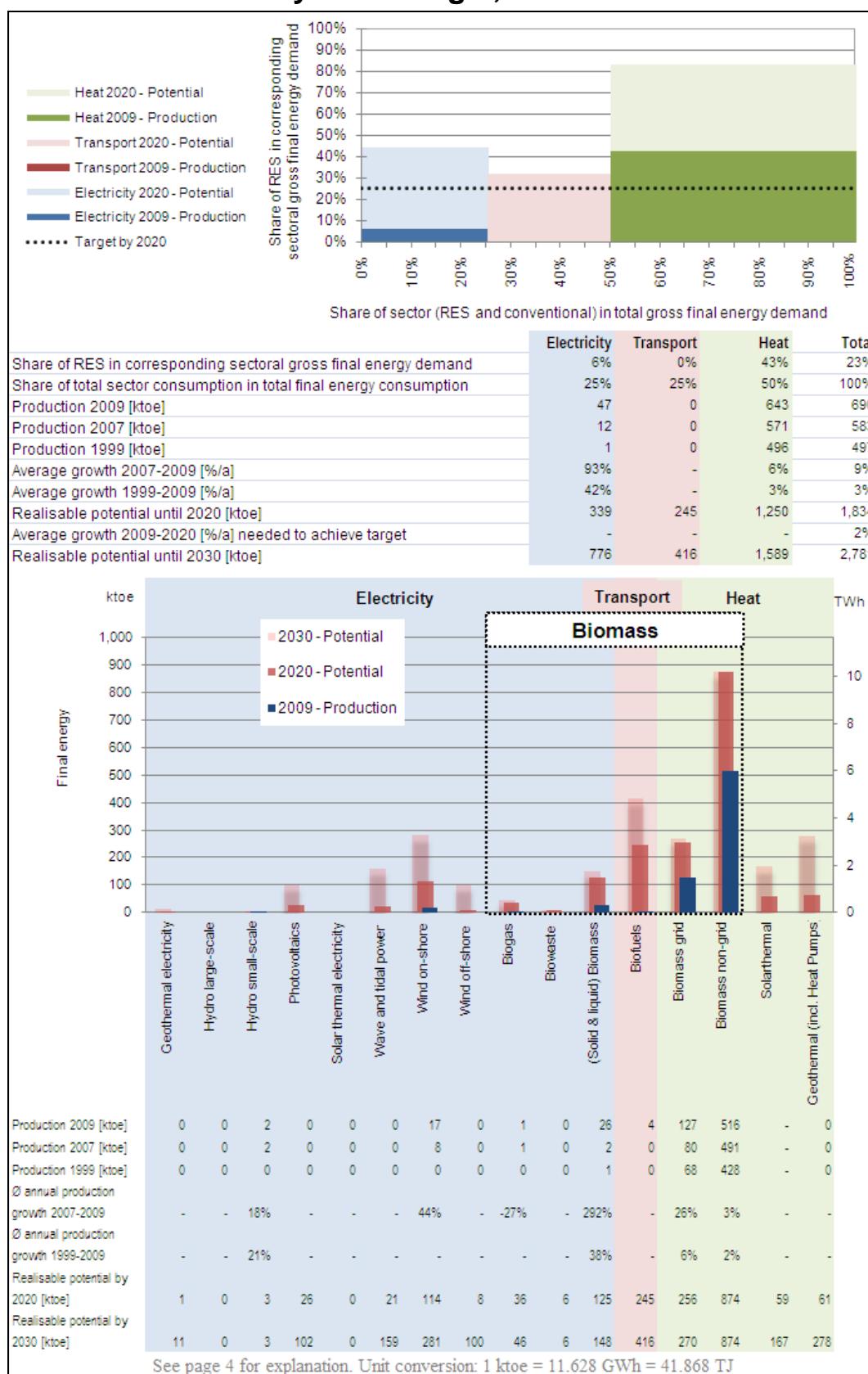
RES-T

In 2007 bioethanol consumption in Denmark was 6 ktoe. Denmark considers the use of biomass for combined heat and power production to be more cost-effective compared to the production of biofuels (first generation), and therefore does not push first-generation biofuels intensely. Attention is paid to develop second-generation bioethanol. Funds are foreseen for research in this field and for a demonstration plant.

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ESTONIA - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

The main changes in the RES support policy are related to the feed-in tariff for RES-E. The amendment of the Electricity Market Act from 27 February 2010 abolished the purchase obligation, so that only a premium of 53.7 €/MWh is available for electricity generated from RES. Estonia's government wants to continue this process and to revise the current subsidies for renewable energy producers, in order to cut costs for consumers. The Ministry of Economic Affairs and Communications is preparing a bill on amendments; the subsidies may differ across energy sources. Proposals will be based on a study by the country's Competition Board. According to the Ministry of Economic Affairs and Communications the main goal of the foreseen reduction is to limit investments in renewable energy, which may be the result of too high profitability and too high support granted by current law.

1 Summary: RES Support Policy

RES-E

The key support instrument for RES-E production is feed-in premium. A feed-in tariff for RES-E was available since 2005. Estonia's parliament in 2007 raised the feed-in tariff for renewable energy producers by 42% to 73.5 EUR/MWh for up to 12 years. In parallel, a feed-in premium was introduced in 2007 and producers could freely choose between a feed-in premium and a feed-in tariff. However, in 2010 the level of support for electricity and heat cogeneration from RES was reduced. Now only a premium is available for electricity generated from RES. The main reason for this change was that the cost of renewable energy for consumers was too high. According to the Ministry of Economic Affairs and Communications the unreasonable high level of feed-in tariff (2007) was illustrated by the fact that a high number of applications from wind park developers to grid operator ELERING was submitted. About 4000 MW of wind power plant were proposed to join Estonia's energy system, while Estonia's peak consumption is only about 1500 MW.

RES-H&C

Currently there is no direct support scheme for RES-H in Estonia. The feed-in premium is applied for biomass if electricity is produced in an efficient cogeneration regime.

RES-T

Since January 2005, biofuels, used as motor or heating fuel, are exempt from excise tax, from the issuing of a permit until the expiration of the permit (27 July 2011). A biofuel permit gives the right to produce biofuel, import it into Estonia and release it for consumption free of excise duty. If biofuel has been added to motor fuel or heating fuel, the proportion of biofuel contained in the motor fuel or heating fuel is exempted from excise taxes. There are no plans to continue the exemption of biofuels from fuel excise duty after the expiry of a valid state aid permit (in July 2011).

2 Details RES-Electricity Support Policy

Feed-in premium

The main support instrument for RES-E production is a feed-in premium. This instrument is managed by the Ministry of Economic Affairs and Communications (www.mkm.ee).

This support instruments was revised in 2010 and is regulated by the Electricity Market Act. The text of this act can be found in the legal text database [1].

The support for generating electricity from RES is paid by the transmission network operator (ELERING).

All RES-E technologies are eligible. Once the amount of wind energy produced in a single calendar year reaches 600 GWh, the feed-in premium will no longer be available. Apart from wind, there is no other cap on the total volume of RES-E.

Producers receive a support of 53.7 EUR/MWh if the electricity is generated from non-biomass-RES or biomass in a cogeneration scheme. If electricity is generated from biomass in a condensing regime, it is not subject to the support. Producer receives support of 32 EUR/MWh if the electricity is generated in an efficient cogeneration scheme from waste or in an efficient cogeneration scheme with a generating installation with a capacity up to 10 MW. The payment period of instruments is limited to a maximum of 12 years, beginning at the date a power plant is commissioned. Plants commissioned prior to 1st January 2002 cease to be eligible on 31st December 2012. The feed-in premium is constant for the whole period.

Based on an application presented by the producer the Competition Authority may approve a rate different from the support rate if the electricity has been generated in efficient cogeneration scheme from a RES or from peat.

Green Investment Scheme

The Green Investment Scheme (GIS) is a financing mechanism that uses budget derived from the trading of the country's CO₂ quotas under the Kyoto Protocol. GIS requires the revenue from sales of emission credits to be reinvested in environmentally-friendly projects that help to lower CO₂ emission. The following projects are supported by GIS: investments for the application of wind energy in electricity generation and extend use of RES for the generation of energy and reconstruction of district heating networks [2].

At the end of 2010, the Ministry of Economic Affairs and Communications allocated close to 22.4 million € under this measure for the construction of new wind farms. Wind energy producers that receive the investment support are not eligible for the feed-in premium payable under the Electrical Markets Act. The GIS will allow installing about 27 MW of wind turbines.

3 Details RES-Heating and Cooling Support Policy

There were a few measures which have supported RES-H production, for example the environmental program, environmental measures financed from the European Regional

Development Fund (ERDF) and the European Social Fund (ESF), loans. However, currently these measures do not foresee financing for RES-H projects.

The Environmental Investment Centre (EIC) organizes financing of various environmental projects and monitors purposeful use of the money. By these schemes, capital grants, soft loans and co-financing grants are available. Policy target groups are municipalities and private companies, scientific research and education institutions. The EIC arranges calls for applications three times a year.

Broader use of RES for energy production (ERDF and ESF in the period of 2007-2013)

An application round of the measure was held in 2009. In the framework of that round, grants were awarded for the reconstruction of boiler houses and district heating networks and the construction of combined generation plants. The budget for the application round was 150 million kroons (9.6 million €) and 17 projects received financing from it. No more application rounds are planned from this ERDF measure.

Loans

The EIC grants special purpose loans from its own funds [5]. The loan is initially intended for environmental investments and for the development of projects supporting sustainability and restoration of the environment. Among other things, EIC may organize the mediation of loans, subsidies or guarantees without being their issuer. The amount of a loan granted by the EIC is between 30,000 and 1,900,000 €. The amount of the loan may not exceed 75 % of the total project value. The EIC grants loans for a period of 15 years and for 20 years as an exception.

The environmental programme (no RES relevance at present)

The environmental programme is managed by the Ministry of Environment [4]. The environmental program redistributes state budget funds received from environmental fees. The environmental fees are paid by the polluters and users of natural resources (for example, the biggest of which is the oil shale energy sector). Discharges of organic matter, phosphorous, nitrogen, suspended solids, sulphates and other pollutants along with wastewaters where pH value is greater than 9 or less than 6, are also subject to the charge. Currently the environmental programme does not finance renewable energy projects.

Building obligations

In December 2007, the Government approved the regulation on the minimum energy performance requirements of buildings [6]. For new buildings over 1000 m² alternative heating systems should be considered.

Minimum energy performance requirements for existing (larger than 1000 m²) buildings apply when the building undergoes major renovation. Major renovation and the principles, (how the renovation can be categorized as a major renovation), are defined in the Building Act.

There is no requirement on the share of final energy demand, which needs to be produced from RES.

CHP support

According to the Electricity Market Act [1] a support scheme which encourages the use of combined heat and power (CHP) is available. A feed-in premium of 53.7 €/MWh (32 €/MWh) is applied if electricity is produced in an efficient cogeneration regime using biomass (waste, peat or oil-shale processing retort gas) as a source of energy, with a capacity not exceeding 10 MW.

4 Details RES-Transport Support Policy

Tax exemption

Since January 2005, biofuels used as motor or heating fuels are exempt from excise duties after issue of permit by the European Commission until the expiry of the permit, i.e. 27 July 2011. A biofuel permit is issued by the Tax and Customs Board with a validity of six years. A biofuel permit gives the right to produce biofuel, import it into Estonia and release it for consumption, free of excise duty. If biofuel has been added to motor fuel or heating fuel, the portion of biofuel contained in the motor fuel or heating fuel is exempted from excise taxes.

There are no plans to continue the exemption of biofuels from fuel excise duty after the expiry of a valid state aid permit (in July 2011).

There is no specific target per year or technology. The main target is to assure that 10% of transport fuels are produced on basis of RES in 2020.

5 RES-E Grid Integration

According to the Electricity Market Act [1] and Grid Code [7], the RES-E projects do not have priority in grid connection. A network operator shall observe the principle of equal treatment of market participants when providing network services. RES-E projects do not have priority in case of grid congestions.

Estonia applies “deep” connection charging - the costs of connection to the grid are borne by the plant operators. The connection charge includes the costs required for the connection, including the costs of the construction of new electrical installations and the reinforcement of existing grids.

6 RES Production, Potential and Market Development

RES-E

Although the proportion of wind and hydroenergy is still relatively small in gross electricity generation (less than 3% of electricity output), a significant development took place in RES-E in 2009. Due to the new installed wind turbines, the wind energy production increased by about a half (47%) compared to year 2008, the production of hydroelectricity increased over 14%. Currently wind farms have a capacity of 150 MW in Estonia. Also it should be mentioned that the total production of electricity in Estonia decreased nearly 17% in 2009 compared to 2008.

Current barriers to RES-E in Estonia are the integration of wind electricity into the electricity system, where ambiguous and unpredictable technical conditions for connection to the network, non-diversified tariffs for different sources, poor regulation in district heating market exist and biomass is exported to countries with higher energy prices.

RES-H

The feed-in tariff adopted in 2007 gave incentives to invest in the combined heat and power (CHP) plants. In 2009 the generation by CHP increased due to the application of new power plants consuming local fuel (biomass). The share of CHP in total electricity generation increased from 8.6% in 2008 to 9.2% in 2009. The share of CHP in total heat generation increased from 27% in 2008 to 35% in 2009.

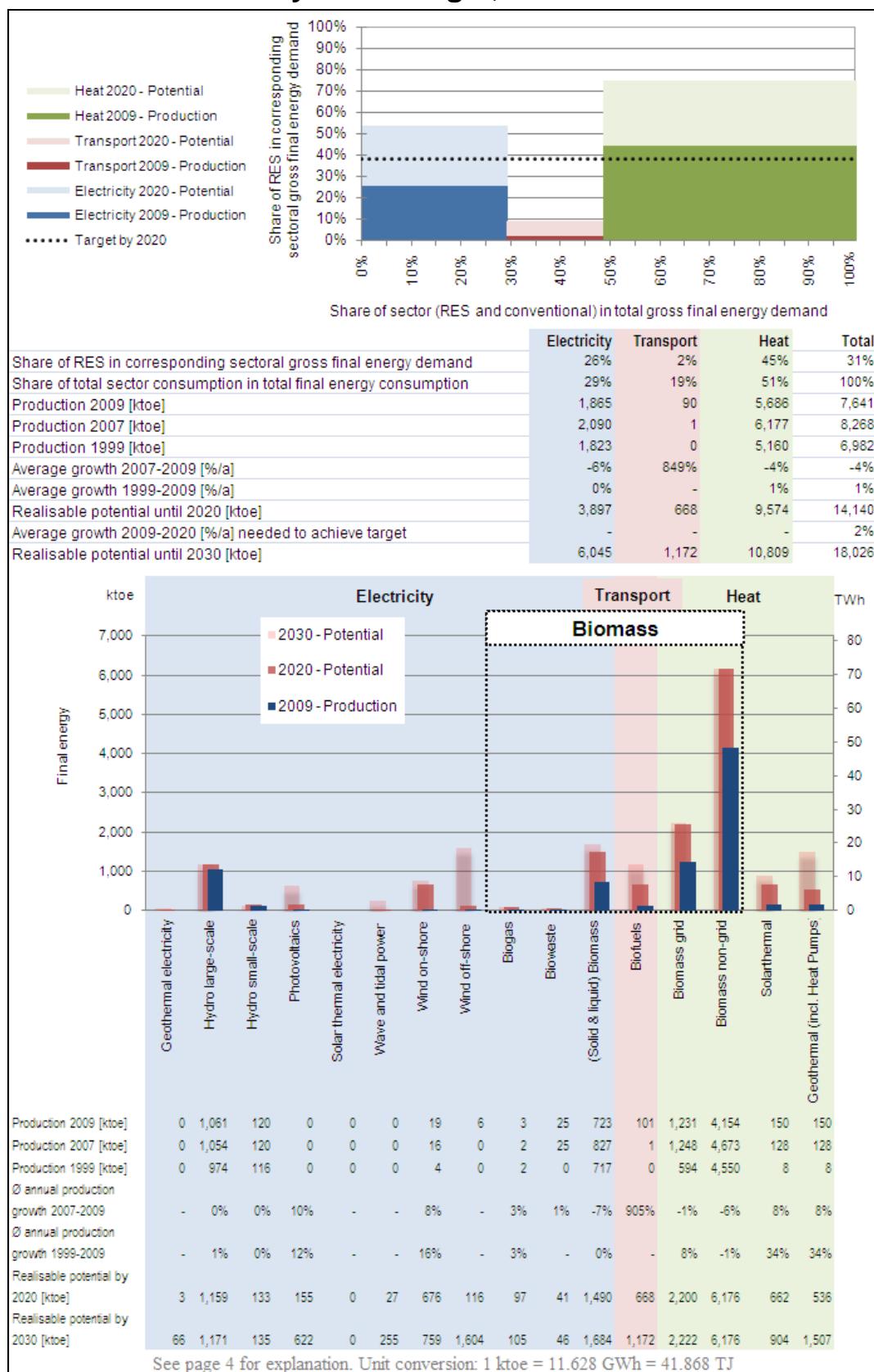
RES-T

In summary, biofuel production and use in Estonia is hampered by the lack of stable demand, high cost of biofuel raw materials, competition from the food industry for the raw material (rape), the additional investment required of fuel retailers to sell biofuel, and a lack of information on the effectiveness and impact of biofuel use. There are no plans to continue the exemption of biofuels from fuel excise duty after the expiry of a valid state aid permit (in July 2011).

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FINLAND - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

A new RES-E support scheme in Finland entered into force 1 January 2011. The main support instrument for RES-E is a feed-in premium. The calculation of the feed-in premium is based on the target price and market price difference in the case of wind, wood fuel and biogas. The level of the feed-in premium for wood chips power plants is based on the cost of emission permits. Support of hydro power plants is based on the fixed subsidy as in the previous promotion scheme.

According to the new Law on support of RES-E production adopted in December 2010, an additional heat premium to the existing electricity feed-in premium for CHP using wood fuel and biogas is foreseen.

1 Summary: RES Support Policy

RES-E

The new Law on support of RES-E production entered into force in January 2011. The main support instrument for RES-E is now a feed-in premium. The calculation of feed-in premium is based on the target price and market price difference in the case of wind, wood fuel and biogas. The level of the feed-in premium for wood chips power plants is based on the cost of emission permits. Support of hydro power plants is based on the fixed subsidy as in the previous promotion scheme. This support instrument for RES-E is applicable at national level.

All RES-E technologies are also eligible for an investment grant from the state.

RES-H&C

In the new Law on support of RES-E production, an additional premium for CHP using wood fuel and biogas is foreseen. In addition, investment subsidies and tax reliefs are available. State grants are available for RES-H investment and research projects. The maximum available investment subsidy is 30%. Finnish households can benefit from Energy Grants for Residential Buildings. The maximum amount of this subsidy is 25% of eligible costs. Taxes on heat are based on the net carbon emissions from input fuels and are zero for RES.

RES-T

A quota obligation (a minimum percentage of biofuels to be supplied for consumption) for the distributors of transport fuels was set for the years 2008-2010. There are no new quotas for 2011 set, yet.

A few financial measures for RES-T production are available: vehicle tax exemption according to the Law on Vehicle Tax and grants for R&D and pilot projects under the technology programme "BioRefine - New Biomass products".

2 Details RES-Electricity Support Policy

Feed-in premium

In order to promote RES-E, a market-based feed-in premium scheme was introduced in 2011. This scheme is based on the Law on support of RES-E production No. 30.12.2010/1396, No. 30.12.2010/1397 [1,2]. The feed-in premium will be equivalent to the difference between the target price and the market price of electricity. In this legislation, support is available for:

- Wood chips power plants (from 100 kW capacity)
- Wind power plants (from 500 kW capacity of single unit, but not more than 2500 MW in total)
- Biogas power plants (from 100 kW capacity with an efficiency of at least 50%)
- Wood fuels (up to 50 generators with total installed capacity 150 MW. Single unit capacity varying from 100 kW to 8 MW, efficiency higher than 50%)

Power plants eligible for feed-in premium should be new (constructed only from new elements) and may not have received any state aid in the past. In order to receive the feed-in premium all generators should be approved by the Energy Market Regulation Authority (www.energiamarkkinavirasto.fi).

The target price for electricity production as part of the feed-in premium scheme for wind power, biogas and wood fuel power plants is 83.50 €/MWh. The feed-in premium is calculated based on the three months average market price:

Feed in premium = target price – market price.

If the average market price of electricity during the three months is less than 30 €/MWh, the feed-in premium will be equal to the target price minus 30 €/MWh.

The feed-in premium for electricity produced using wood chips is based on the emission permits price. The scale used to determine the support would be such that when the cost of an emission permit was 10 €/t CO₂, the support would be 18 €/MWh, and when the cost of an emission permit was 23 €/t CO₂, the support would be 0 €/MWh.

Wind power plants which are not covered by the feed-in premium scheme will continue to receive a fixed subsidy of 6.9 €/MWh. This fixed subsidy is a guaranteed payment similar to a feed-in tariff and is paid per kilowatt hour of electricity fed into the grid.

Electricity generated from hydro and biogas power plants which are not covered by the feed-in tariff scheme will continue to benefit from a fixed subsidy of 4.2 €/MWh.

State grant for investments

According to the Regulation No. 1313/2007 on General Rules for the Allocation of Subsidies for Energy (Valtioneuvoston asetus energiatuen myöntämisen yleisistä ehdosta) grants are available for investment and research projects that involve the use of RES or the application of RES technologies [3]. This Regulation became applicable on 1 January 2008 and is valid until 31 December 2012.

All RES-E technologies are eligible for grants and there are no restrictions on sizes of plants. Among other costs, the preparation and planning costs and the cost of materials are eligible for subsidies. Only companies, municipalities and communities can apply for grants.

Up to 40% of investment costs may be subsidised. The maximum subsidies amount to: 40% for investment projects in the fields of wind energy or PV; 40% for investment projects that employ new technologies for the generation or use of RES; 30% for investment projects that employ traditional technologies for the generation and use of RES. The maximum amount of the subsidy is 250,000 €, but it can be extended by the Ministry of Employment and Economy. An annual budget for this measure is not strictly set. The company or other legal entity receiving the subsidy shall bear at least 25% of the total project costs.

The regulation does not make support conditional to the use of certified equipment and/or certified installers.

The instrument is managed by the Ministry of Employment and the Economy: (<http://www.tem.fi>).

3 Details RES-Heating and Cooling Support Policy

According to the new Law on support of RES-E production an additional heat premium for CHP using wood fuel and biogas is available. The generation of RES-H is also supported by investment subsidies and tax reliefs.

Premium for CHP

Based on the Law on support of RES-E production (30.12.2010/1396, 30.12.2010/1397) article 26, heat produced in wood fuel or biogas CHP is supported by additional premium to the existing electricity feed-in premium. The premium amounts to:

- 20 €/MWh of electricity in the case of wood CHP;
- 50 €/MWh of electricity in the case of biogas CHP.

The maximum feed-in premium is limited per plant and should not exceed 750,000 € per annum.

State grants for investments

Under Regulation No. 1313/2007 on General Rules for the Allocation of Subsidies for Energy, state grants are available for RES-H investment. Investment support in Finland is granted to biomass using plants, for both heat production and CHP. The maximum available investment subsidy is 30%, contingent on the type of project. All conditions of grants for RES-H projects are the same as for RES-E projects (see previous chapter).

The instrument is managed by the Ministry of Employment and the Economy: (<http://www.tem.fi>).

Energy Grants for Residential Buildings

Energy Grants for Residential Buildings are regulated by the Law on Energy Grants for Residential Buildings adopted on 19 December 2008 [8]. So called Energy Grants for Residential Buildings are not strictly allocated for heating and cooling, but one of the determined areas is heating systems and RES. The main beneficiaries of this instrument are households.

The implementation of this instrument started in 2003 and the last revision was made in 2009. This instrument is not periodically revised.

There is a cap on the annually available budget: 14 million € in 2008, 22 million € in 2009 and 37 million € in 2010. The maximum amount of the subsidy is 25% of eligible costs. Such eligible costs might include material and equipment costs but not the cost of work.

The instrument is managed by Ministry of the Environment and the Housing Finance and Development Centre of Finland. More information is available at: www.ara.fi/default.asp?node=692&lan=en#a5.

Tax exemptions

Taxes on heat are based on the net carbon emissions from input fuels, and are zero for RES.

4 Details RES-Transport Support Policy

Quota obligation

The law on the promotion of biofuels in transport adopted on 13 April 2007 placed a quota obligation on biofuel consumption [4]. A quota obligation (a minimum percentage of biofuels to be supplied for consumption) for the distributors of transport fuels was set for the years 2008-2010. The minimum percentage increased annually: 2% in 2008, 4% in 2009 and 5.75% in 2010. If the distributors failed to fulfil this obligation, the customs authorities imposed a penalty fee. There are no new quotas for 2011 set.

Tax exemptions

The Law on Vehicle Tax (Ajoneuvoverolaki) provides tax exemption for vehicles using biofuel [5]. This tax exemption entered into force in 2004. Beneficiaries of vehicle tax exemption are owners of all private and some commercial (except military, rescue, etc.) vehicles. There is no differentiation based on fuel type or technology. This instrument is managed by the Vehicle Administration: (http://www.ake.fi/AKE_EN/).

There is no specific support for electric vehicles that use RES-E.

5 RES-E Grid Integration

The Electricity Market Act provides guaranteed access to the grid for all electricity users and electricity-producing plants, including RES-E generators [7]. The grid operator is obligated to grant connection for RES-E generators to the grid according to non-

discriminatory criteria. RES-E projects do not have priority in grid connection in case of grid congestions.

According to the Electricity Market Act, the grid operator shall expand his grid according to the needs of his customers. The cost of a grid expansion is borne either by the grid operator or by the system operator. The grid operator shall bear the cost of an expansion of his grid if it is carried out to satisfy the needs of more than one grid user. The grid operator shall also bear the cost if the capacity of the systems to be connected does not exceed 2 MW. The grid operator is obliged to expand his grid without discriminating against certain customers. The system operator shall pay to the grid operator a reasonable cost for the connection of his system to the grid. He may request, from the grid operator, a detailed list of the cost incurred by the connection of his system to the grid ("deep" connection charging).

According to the Electricity Market Act, the terms of acquisition for electricity necessary for maintaining national balance responsibility and the terms of trade for balancing electricity, shall be equitable and non-discriminatory to all electricity market participants and they shall not contain any conditions or limitations that would be unfounded or that would obviously restrict competition within electricity trade. However, these terms shall take account of the conditions necessitated by the reliability and efficiency of the electricity system. The pricing of balancing electricity shall be reasonable.

An electricity market participant shall be responsible for ensuring that the electricity generation and electricity acquisition contracts of the said participant cover the participant's electricity use and supply during each hour (balancing responsibility).

6 RES production, potential and market development

RES-E

The share of RES-E in the total electricity demand amounted to 25.9% in 2007 compared to 24.7% in 1997.

The RES-E production from biomass showed the strongest growth during 1997-2007 due to a strong expansion of biomass fuelled CHP. In 2007, biomass amounted to about 40% and hydropower about 58% in RES-E production structure. The use of wind power is still not significant.

RES-H&C

The share of RES-H&C in the total heat demand amounted to 41.3% in 2007 compared to 35.3% in 1997.

The growth rate since 2000 is by far lower than the growth rate in the nineties. In 2007 the market was dominated by solid biomass (non-grid) with a share of more than three-quarter followed by solid biomass (grid) with 21%.

RES-T

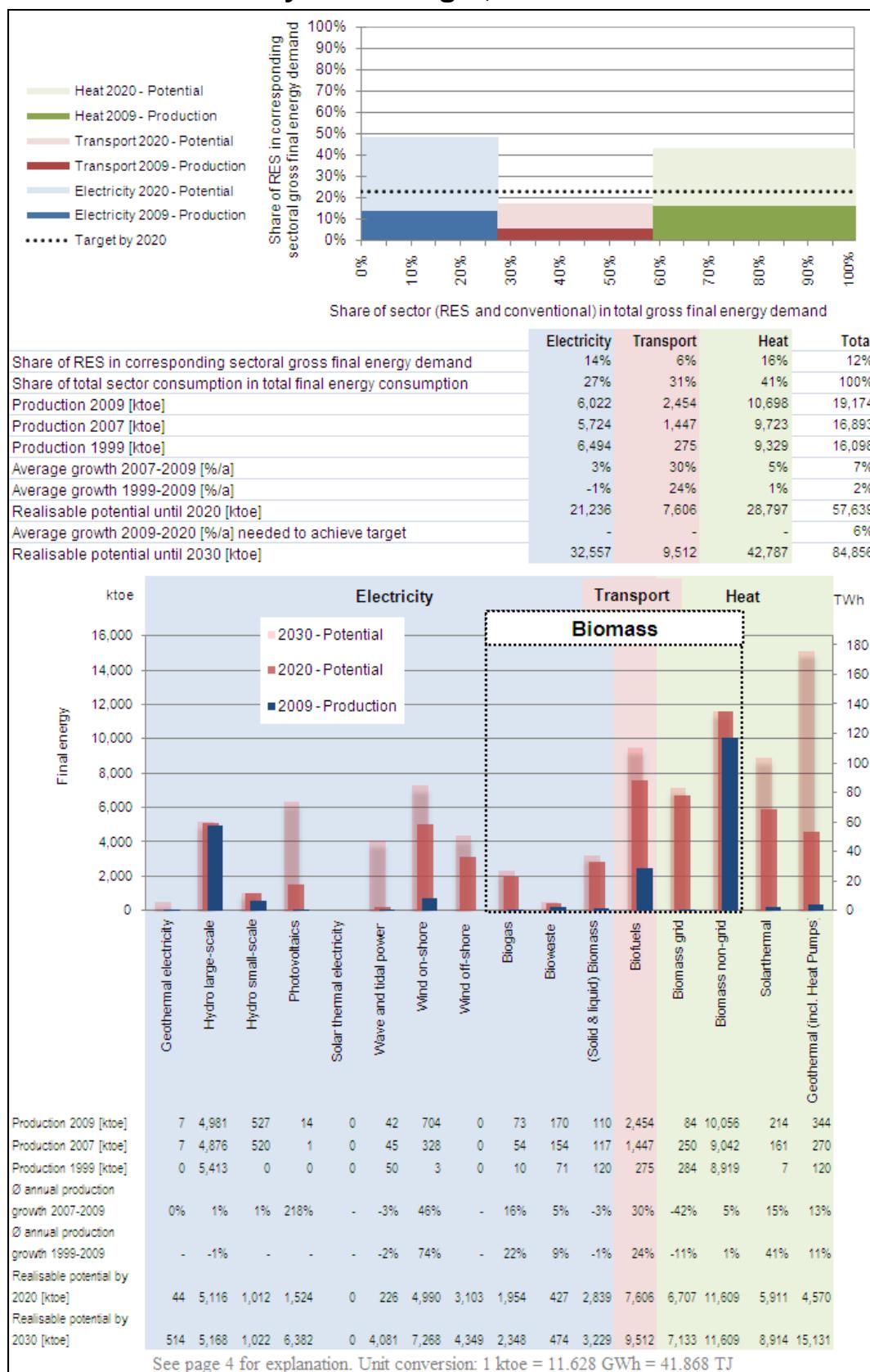
In 2007 bioethanol consumption in Finland was 1 ktoe. However, Finland launched the technology programme "BioRefine - New Biomass products" (2007-2012) with the

specific objective to significantly promote the development of second-generation biofuel production technology.

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FRANCE - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

Several changes have occurred since autumn 2009. This has affected particularly the feed-in tariff for RES-E and the carbon tax that was to be enforced in 2010.

In 2009, France was to implement a carbon tax (the CCE – “Contribution Climat Energie”), which was going to particularly affect private owners, small factories and fuel prices, as a complement to the Emission Trading Scheme which concerns bigger electricity consumers. This tax was eventually rejected by the parliament just before its implementation. It is not expected to be replaced by any particular measures, unless it is picked up at the European level.

A major change occurred in the support mechanism for PV. In 2009 and 2010, the tariff was one of the most attractive ones in Europe which drove the industry up, and enabled France to be well in advance on its 2012 and 2020 PV targets. To control this progression, France has modified its support scheme. Large installations, above 100kWp, are not eligible for the feed-in tariff anymore. For smaller installations, the tariff has been reduced progressively from December 2009, and three categories have been created: integrated PV, partially integrated PV and ground based installations. The tariff has decreased from 550 €/MWh to between 460 €/MWh and 288 €/MWh for integrated and partially integrated installations, and from 300 €/MWh to 120 €/MWh for ground based installations. From now on, the tariff will be revised on a quarterly basis to control the PV projects installation rate.

A second change was that a feed-in tariff has been created for small biomass cogeneration power plants (below 12MW). Call for tenders went on for larger installations, with the latest occurring late 2010.

A third change was that the eligibility criteria for the wind energy feed-in tariff were made stricter. A minimum of 5 wind turbines is now necessary to receive the government support.

Minor changes have occurred in the Bonus/Malus system for RES-T. The CO2/km production thresholds have been reinforced. In other words, to obtain the Bonus, vehicles should be even more environmentally friendly while normal vehicles are more and more subject to the Malus. This tendency is expected to go on in the coming years.

1 Summary: RES Support Policy

RES-E

A fixed feed-in tariff (*tarif d'obligation d'achat*) together with call for tenders are the key instruments for RES-E development at the French national level. The feed-in tariff is guaranteed for 15 to 20 years depending on the RES type. The feed-in tariff is set at a satisfactory level for most RES technologies. Over the last two years (2009-2010), several modifications to the legislation have been made, lowering the feed-in tariff when too attractive and making the conditions of eligibility stricter.

Onshore wind parks need to consist of at least 5 turbines and be located in Wind Energy Development Zones (ZDE) to benefit from the tariff. The designation process of these zones is slow and slows down the whole sector development. For solar PV, installations under 100kWp are eligible for a feed-in tariff. The feed-in tariff depends essentially on the type of installation, with three main distinctions: (a) fully integrated PV installation, (b) partially integrated PV installation, (c) ground-based PV installation. For larger installations, the governments will release regular calls for tenders, whose winners will be awarded a feed-in tariff over a 15 to 20 years period. For biomass in cogeneration, a feed-in tariff supports small installations (under 12MW). Several call for tenders have been released for larger power plants. The latest took place in 2010.

RES-H&C

There are three main instruments supporting the development of RES-H&C at national level. The recently implemented “Fonds Chaleur” is the main instrument for large-scale installations.

National calls for tenders, for large installations in industry or agriculture were and are organized throughout 2009, 2010 and 2011. For other large scale installations that do not fall within this category (large installation for public services or smaller installation for the industry or agriculture), a regional feed-in premium is in place. For small scale installations (owned by local governments and private owners), two main incentives are in place. The “Eco-pret à taux zero”, a zero interest loan, and the “Credit d’Impôt Développement Durable”, a tax deduction support. These instruments have been operating as intended. Regional incentives for small scale projects and private owners are, in certain regions, a substantial supplement to national incentives, and have been developing faster than national policies. They differ greatly from region to region.

RES-T

Two main instruments support the development of RES-T in France.

The first is a system of bonus and malus: “Bonus Ecologique”, “Malus Ecologique” and “Super bonus”. Together they support the replacement of old vehicles by new low CO₂ emission vehicles. A premium for (hybrid) electric vehicles was recently increased. Secondly, biofuels are eligible to receive a tax deduction on the TIPP, a governmental tax on all petrol products including gasoline and diesel. It will be replaced in 2012 by an extra tax on fuel for gasoline or diesel retailers that do not include a minimum share of 7% of biofuels in their mix.

2 Details RES-Electricity Support Policy

In its National Renewable Energy Action Plan, the French government estimates the share of each renewable energy source expected to achieve the French overall sustainable energy target. The figures below are therefore not strict individual targets per energy source, but they all contribute to the binding target of 20% of overall energy consumption coming from renewable by 2020.

	Target 2020
Hydroelectricity	26,800MW
Onshore wind energy	19,000MW
Offshore wind energy	6,000MW
Solar (PV and CSP)	5,400MW
Biomass	3,000MW
Ocean Energy (Wave and tidal)	380MW
Geothermal	80MW

Feed-in tariff

The “Tarif d’obligation d’achat” is a fixed feed-in tariff implemented by the DGEMP (General Directorate for Energy and Raw Materials) and now managed at the national level by the Ministry of Environment. It was first implemented under the Electricity Law 2000, and was reviewed under the finance law in July 2006. It is regularly updated based on inflation, but major change must be agreed upon within finance law. More information is available on the Ministry of Environment’s website http://www.developpement-durable.gouv.fr/energie/renou/f1e_ren.htm

The tariff is guaranteed for 15 years (onshore wind, biogas and geothermal energy) and 20 years (off-shore wind, solar PV and hydro power) and is adjusted according to inflation for new plants and for plants currently in operation.

Table 1: summary of feed-in tariffs and comments⁶⁹.

RES	Valid for	Feed-in tariff	Feed-in tariff exceptions	Comments
Biogas/ Methanisation	15 years	75€/MWh to 90€/MWh	Efficiency bonus from 0€/MWh to 30 €/MWh	Methanisation bonus of 20 €/MWh <i>Last update: July 2006</i>
Biomass cogeneration	20 years	43.4€/MWh	77.1€/MWh, 125.3€/MWh	Bonus depends on fuel type, size of installation and efficiency. <i>Last update: January 2011</i>
Onshore wind	15 years	82 €/MWh for first 10 years	28 €/MWh to 82 €/MWh for following 5 years	Following 5 years subsidy depending on number of FLH ⁷⁰ (3600 to 2400) <i>Last update: November 2008</i>

69 Source: <http://www.developpement-durable.gouv.fr/Les-tarifs-d-achat-de-l-12195.html>

70 FLH: Full Load Hours – representative of wind on site and efficiency of wind farm

Offshore wind	20 years	130 €/MWh for first 10 years	30 €/MWh to 130 €/MWh for following 5 to 10 years	Following 5-10 years subsidy depending on number of FLH (3900 to 2800) <i>Last update: November 2008</i>
Solar PV	20 years	Integrated: 460 to 288.5 €/MWh Ground based: 120 €/MWh	Numerous distinctions, depending on size of installation, level of integration and building	see table in PV section. <i>Last update: March 2011</i>
Hydro power	20 years	60.7 €/MWh	Bonus of 5 €/MWh to 25 €/MWh for small plants	Bonus of 0 €/MWh to 16.8 €/MWh for winter production regularity <i>Last update: March 2007</i>
Geothermal	15 years	120€/MWh for France mainland	100 €/MWh for France overseas territories	0 €/MWh to 30 €/MWh efficiency bonus <i>Last update: July 2006</i>

Wind

The onshore wind energy feed-in tariff is guaranteed for 15 years. The feed-in tariff is set to 82 €/MWh for the first 10 years. For the following five years, the feed-in tariff is set between 28€/MWh (parks operating at an average of 3600 full load hours) and 82 €/MWh (park operating at 2400 full load hours or less).

Guaranteed feed-in tariff are available only for wind parks with a minimum of 5 wind turbines and located within a ZDE (Zone de Développement Eolien,/ Wind Energy Development Zone). The ZDE are selected at a local level (administrative department) based on national and regional guidelines.

The offshore wind energy the tariff is guaranteed for 20 years: The feed-in tariff is set to 130 €/MWh for 10 years, followed by a variable rate during the following 5-10 years ranging from 30 €/MWh (park operating 3900 full load hours or more) to 130 €/MWh (park operating at 2800 full load hours or less). Rates fall by 2% a year for plants built after 1 January 2008, and they are also adjusted to take account of inflation. Annulled in August 2006, the tariff for wind power was reinstated mid-December 2006. The French government has announced in January 2011 that a call tender will be launched in May 2011 for the construction of 3000MW of wind energy offshore, spread over 5 zones which have been already defined (le Tréport, Fécamp, Courseulles-sur-Mer, Saint-Brieuc, Saint-Nazaire). A winning criterion will be the subsidy per MWh asked by the bidders. The fixed feed-in tariff will therefore depend on the tender. The governments however has mentioned that the fixed feed-in tariff would be capped somewhere between 150 and 160 €/MWh.

PV

The support scheme for PV projects was largely modified in December 2010. A clear distinction between projects under 100kWp and projects above 100kWp has been made. The impact is particularly important for large installation above 100kWp.

The government justifies this change by the fact that France is well on track on the development of its solar portfolio, and that the industry has reached a satisfying inertia. The government therefore now aims at stabilizing the yearly installation rate at 500MW (against expected yearly installation rates of 1000MW to 1500MW between 2011 and 2012).

As of January 1, 2011, small projects (below 100kW) have been given a new feed-in tariff. A distinction is made between fully integrated PV projects, partially integrated projects and ground based projects.

For integrated PV projects, the subsidy will depend on the size of the installation and the type of building it is installed on (e.g. residential, health or education building). Full integration of PV panels requires the panels to take a vital role in the structure of the building (e.g. watertightness). A partially integrated installation requires panels to be fixed on an existing building. For these installations tariffs range from 460 €/MWh to 288.5€/MWh. The table below details the different feed-in tariffs.

As of January 1, 2011, larger projects (above 100kWp), or ground based projects will benefit from a reduced feed-in tariff (120€/MWh against a previously existing tariff of 328 €/MWh). This virtually blocks all such projects. However, a higher tariff may be obtained through price based national calls for tenders. The calls for tenders are expected to be announced regularly, and will start from July 2011. An average target of 300MWp of installed capacity per year is announced to be sought. Projects developed outside the call for tenders will not benefit from any governmental support.

The feed tariffs will be reviewed on a quarterly basis depending on the installation rate recorded over the previous months. The revision of the tariff will be performed independently for large projects and for smaller projects (under 100 kWp). PV installations of private owners and on small surfaces are eligible for other supports, namely the “Eco-pret à taux 0” and the “Credit d’impôt développement durable”. These incentives are described later in chapter 4 as they support mainly RES-H installation.

Type of installation	New feed-in tariff as of March 2011 ⁷¹	
Residential building		
Fully Integrated PV	[0-9kWp]	460 €/MWh
	[9-36kWp]	402,5 €/MWh
Partially integrated PV	[0-36 kWp]	303,5 €/MWh
	[36-100 kWp]	288,3 €/MWh
Building of health or education		
Fully Integrated PV	[0-9kWp]	406 €/MWh
	[9-36kWp]	406 €/MWh
Partially integrated PV	[0-36kWp]	303,5 €/MWh
	[36-100kWp]	288,5 €/MWh
Other building		
Fully Integrated PV	[0-9kWp]	352 €/MWh
	[0-36kWp]	303,5 €/MWh
Partially integrated PV	[36-100kWp]	288,5 €/MWh
All other type of PV installation	[0-12 MW]	120 €/MWh

71 Source: <http://www.developpement-durable.gouv.fr/Quel-est-le-nouveau-dispositif-de.html>

Biomass

For biogas and methanisation, the feed-in tariff can range from 75 to 90 €/MWh, with an energy efficiency bonus of 0 to 30 €/MWh and a methanisation bonus of 20 €/MWh.

For biomass, a feed-in tariff has been created, to support cogeneration installations under 12MW which reach a certain level of efficiency and use a certain type of fuel. The tariff has been re-defined (and raised) as of December 2009, and ranges from 125€/MWh with a possible efficiency premium of 50€/MWh (totalling 175€/MWh).

Calls for tenders at the national level are implemented to support the development of biomass power plants. The last three were released in 2003 (315MWe), 2006 (300MWe) and 2009 (250MWe, closing date July 2009). Bidders bid on (amongst other aspects) the requested feed-in tariff. In case of success, the feed-in tariff is guaranteed over the 20 year lifetime of the project. The feed-in tariff obtained during the 2006 call for tender was, on average, 128€/MWh. The feed-in tariff obtained as a result of the 2009 call for tender was on average 45€/MWh. The construction of these projects is expected to be completed by 2012. The call for tenders does not exclude any type of fuel (biogas, biomass).

In July 2010, a fourth call for tender was released for the construction of 200 MWe of biomass. It is worth to mention that one of the eligibility criteria was a feed-in tariff below 115€/MWh. The results are expected in the course of 2011.

Geothermal

For geothermal energy, a feed-in tariff is available. It is set to 120 €/MWh, with an energy efficiency bonus of between 0 and 30€/MWh for mainland France and Corsica and to 100 €/MWh, with an energy efficiency bonus of between 0 and 30 €/MWh for all other French overseas departments (i.e. la Guadeloupe, la Martinique, la Reunion, Mayotte and French Guyana)

Regional Incentives

Large scale RES-E installations are mainly supported at the national level. Regional incentives aim at supporting smaller scale RES-E development for private owners and local communities (mainly integrated PV).

The incentive differs greatly from region to region and can include financing, premiums, pre-feasibility study, feasibility study or fiscal advantages, and can be relatively important for small projects. The incentive can be provided at different administrative levels (region, department, municipality) or by the regional entity of the **Ademe**.

Future Changes

The French government has recently been re-organized, with a new minister for the Ministry of Ecology, sustainable development, transport and accommodation (MEDDTL). This had the consequence of delaying several measures, in particular calls for tenders for offshore wind energy.

The call for tender for offshore wind energy is expected to be released in 2011. However, the call for tender was already announced to be released in Q2 2010, and was

delayed several times. It would not come as a surprise to the industry if the tender was delayed further.

For biomass, the former minister for Environment had announced in January 2010 that the fourth call for tender would aim at 800MW of large biomass projects (over 12 MW). The fourth tender eventually aimed at 200MW. Further tenders in this field can be expected.

The photovoltaic branch might experience the biggest changes, with several calls for tenders, and a feed-in tariff which will evolve on a quarterly basis to follow a desired installation rate.

3 Details RES-Heating and Cooling Support Policy

The expected RES scenario, in order to meet the targets as defined in the NREAP, gives the following share to RES-H&C

	Target 2020
Biomass	16455 ktoe
Renewable Energy heat pumps	1850 ktoe
Solar	627 ktoe
Geothermal	500 ktoe

Feed-in Premium: Le Fonds Chaleur

The “Fonds Chaleur” is a feed-in premium for biomass central heating. It is implemented by the Ademe (French Environment and Energy agency). The instrument consists of either a call for tender or guaranteed feed-in premium, depending on the size of the installation. Calls for tender are regular and the tariff will be reviewed in 2011 at the latest. The budget of the Fond Chaleur is capped at 1000m€ for the period 2009-2011. The cap will be reviewed together with the tariff in 2011, but the Ministry (the MEDDTL (formerly MEEDDM)) already mentioned that a budget cap of 800m€ would be the target in the medium term. More information is available at www.ademe.fr/fondschaleur

The Fond Chaleur offers a feed-in premium to eligible heat production installations such as biomass, geothermal, solar, district heating and heat recovery installations (biogas, waste incineration etc). Installations for industry or agriculture are dealt with differently than installations for public services (hospitals, schools, swimming pools).

National Call for Tenders for Large Installation (over 1000toe/year) for Industry or Agriculture

Large scale biomass heat production plants (annual heat production above 1000toe/year approximately 11,630MWh) for the industry or the agriculture are managed at the national level through calls for tender managed by the BCIA (Biomass and Heat for Industry and Agriculture) at a rate of one call for tender per year (2009-2010-2011).

Regional feed-in Premium:

Smaller projects (installation size between 200toe/year and 1000toe/year) for industry or agriculture, and other projects (installation size above 200toe/year) for public services (e.g. school, hospitals, swimming pools) can benefit from a feed-in premium managed at the regional level by the agencies of the Ademe. Eligible projects include solar thermal energy, geothermal power (direct or using heat pumps), biomass (boiler), recovery of energy (biogas and incineration) and district heating. Conditions to benefit from the incentive are sufficient energetic and environmental performances, and are assessed by Ademe.

The values of the feed-in premium vary according to the size of the installation, as shown in table 2 and 3 below.

Table 2: Regional feed-in premium for public service

Energy production in toe/year (output) (indicative MWh)	Regional subsidy for public service ⁷² (€/toe)
0 to 250 toe (0 to 2 900MWh/year)	1750
250 to 500 toe (2 900 to 5 800 MWh/year)	1250
500 to 1000 toe (5 800 to 11 630 MWh/year)	600
> 1000 toe (11 630MWh/year)	300

For a 1100 toe installation the subsidy will be $1750*250+1250*250+600*500+100*300$.

Table 3: Regional feed-in premium for industry and agriculture

Energy production in toe/year (output) (indicative MWh)	Regional subsidy for industry and agriculture (€/toe)
0 to 250 toe (0 to 2 900MWh/year)	1100 (650 for wood industry)
250 to 500 toe (2 900 to 5 800 MWh/year)	
500 to 1000 toe (5 800 to 11 630 MWh/year)	600
> 1000 toe (11 630MWh/year)	National scale call for tender by the BCIAT

Tax-deduction: Credit d'Impôt Developpement Durable

The “Crédit d’impôt développement durable” is a tax deduction scheme dedicated to sustainable development for private households. It is implemented by the MEDDTL (formerly the MEEDDM (Ministry of Ecology, Energy, Sustainable Development, and of the Sea). The instrument is in action and is revised only upon legislation, but has experienced several amendments during the last 5 years.

Tax deductions can cover from 13% up to 45% of costs of eligible equipment, and can be cumulated with some other state financial support instruments. The tax deduction has a ceiling of € 8,000 for individuals, and € 16,000 for married or registered couples and a supplement of 400 per dependant person is available.

72 E.g. Urban centralized heating, hospitals, schools, swimming pools

The support is conditional to the use of certified equipment. More information is available on the websites:

<http://ecocitoyens.ademe.fr/financer-mon-projet/renovation/credit-dimpot-developpement-durable>, and

<http://ecocitoyens.ademe.fr/financer-mon-projet/construction/credit-dimpot-developpement-durable>

Tax deductions are available for equipment enabling energy saving for private dwellings or collective dwellings. Depending on the system, conditions differ with the age of the house (under construction, constructed after 1977, constructed before 1977). The equipment eligible for tax deduction and the levels of tax deduction are listed in article 90 of the finance law 2005 and were reviewed twice in the article 83 of the finance law 2006 and in article 109 of the finance law 2009.

As a general rule, equipment is eligible for tax deduction if purchased and installed at the principal dwelling. Installation costs are not included in the eligible cost except for installation of insulating material (windows excluded).

This measure is complemented by a reduced level of VAT to 5.5% on material and installation costs. This extra incentive does not cover solar panels for installation bigger than 3kW

A comprehensive list of equipment eligible for the tax deduction is available here:
<http://ecocitoyens.ademe.fr/financer-mon-projet/renovation/credit-dimpot-developpement-durable>

Zero Interest Rate Loan: L'ECO PRET A TAUX ZERO

The Eco-prêt à taux zero is a zero interest loan implemented by the MEDDTL (Ministry of Ecology, Sustainable Development, transport and housing). The instrument has been in place since April 2009 and no periodical revision is planned so far. The budget of this incentive is not capped. More information is available on the website
<http://ecocitoyens.ademe.fr/financer-mon-projet/renovation/eco-pret-a-taux-zero>.

The Eco-prêt à taux zero is available to all land owners for the financing of energy saving construction works in their principal dwelling or in a dwelling of theirs under lease. The zero interest loan is available if:

- The land owner conducts several insulation improvements including at least two elements from the following: efficient insulation in the roofing, efficient insulation in outside walls, efficient insulation in outside windows, replacement of water heating system or heating system, installation of a RES heating system, installation of a RES water heating system
- The land owner improves the global house energy efficiency:
- For a house consuming more than 180 kWhEP/m²/yr, consumption must go below the threshold of 150 WhEP/m²/an.⁷³

73 Does not apply to dwelling built before 1948, January 1

- For houses consuming less than 150 WhEP/m²/yr, consumption must go below the threshold of 80 kWhEP/m²/yr. 73,74

The expenditures covered by the loan include hardware, installation, induced works (e.g. electricity, ventilation), design and possible insurance costs. The loan is capped at 20000€ or 30.000€, depending on the type of work undertaken and the pay-back time is 10 years⁷⁵.

The loan can be cumulated with other incentives from the “collectivite territoriales” (local governments). If obtained during 2009 or 2010, the Eco-prêt can be cumulated with the “Credit d’impôt development durable” depending on the revenue of the family

Regional Incentives

A number of regional incentives exist for small scale projects. They differ greatly from region to region and can include support in technical feasibility studies, premiums, or fiscal advantages, and can be relatively important for the project. Most of the incentives (e.g. including financing, pre-feasibility study, feasibility study) for larger projects are managed by the regional entities of the Ademe, and are attributed on an individual basis upon request.

Regional incentives can be implemented by the Ademe, the regional administration, the “departementale” administration or even at the level of a municipality, but are normally listed by the regional offices of the Ademe.

More information on regional incentives can be found on the following page:

<http://ecocitoyens.ademe.fr/financer-mon-projet/construction/aides-des-collectivites-territoriales>, and on

<http://www2.ademe.fr/servlet/KBaseShow?sort=-1&cid=96&m=3&catid=12430> (link to the Ademe regional sites)

4 Details RES-Transport Support Policy

The expected RES scenario, in order to meet the targets as defined in the NREAP, gives the following share to RES in transportation:

	Target 2020
Bioethanol	650 ktoe
Biodiesel	2850 ktoe
Electricity	402 ktoe
Other (Biogas, Vegetable oil)	160 ktoe

74 Values are corrected depending on climatic conditions and altitude on site

75 Pay-back time can exceptionally be increased to 15 years to reduce the reimbursement burden

TIPP (Taxe Interieure sur les Produits Petroliers – National Tax on Petrol Products) deduction

The TIPP deduction is a tax deduction to support the incorporation of biofuels into conventional fuel (diesel or gasoline). The incentive is implemented by the DGEC (Direction Générale de l'Energie et du Climat) and the IFP (Institut Français du Pétrole). The instrument is in action and is revised every year (tuned down). The tax deduction is only available for state certified production centres having a licence "agrément". More information is available on the website http://www.developpement-durable.gouv.fr/cqi-bin/industrie/frame23e.pl?bandeau=/energie/renou/biomasse/be_biom.htm&gauche=/energie/renou/biomasse/me_biom.htm&droite=/energie/renou/biomasse/biocarburants.htm

The TIPP is a national tax on petrol products. Gasoline and diesel are taxed by the state (respectively 60.69€/100l and 42.84€/100l in 2009). Biofuels mixed with conventional fuels have been eligible for a deduction on the TIPP since 2003. The condition is that the biofuels are produced at a site certified by the state. This tax deduction is decreasing step by step and should be totally cancelled by 2012.

Table 4: TIPP deduction per annum and fuel type.

Fuel type	TIPP deduction (2008)	TIPP deduction (2009)	TIPP deduction (2010)	TIPP deduction (2011)	TIPP deduction (2012)
Biodiesel	22€/100l	15€/100l	11€/100l	8€/100l	0€/100l
Bioethanol	27€/100l	21€/100l	18€/100l	14€/100l	0€/100l

An extra tax, the TGAP, applies from 2005 to fuel sold that does not include a minimum share of biofuels. The threshold defined in the article 32 of the finance lax 2005 is shown in table 5 below.

Table 5: minimum share of biofuels in fuel 2005-2010.⁷⁶

	2005	2006	2007	2008	2009	2010
Minimum share of biofuels in fuel (%PCI) ⁷⁷	1.2%	1.75%	3.5%	5.75%	6.25%	7%

Bonus Ecologique, Malus Ecologique and Super Bonus

The "Bonus Ecologique" and the "Malus Ecologique" constitute a financial premium or malus to support the investment in sustainable transport. The "Super bonus" has replaced the "super prime" which was in action in 2009 and 2010. The "super bonus" is a scrap premium. It is therefore not necessarily a direct support for low emission transportation, but prompts vehicle owners to acquire new (and indirectly greener) vehicles.

76 Source: <http://www.developpement-durable.gouv.fr/La-fiscalite-des-biocarburants-en.html>

77 PCI stands for "Pouvoir Calorifique par litre", heat of combustion per litre

The “Bonus and Malus Ecologique” has been revised during 2010 and 2011, and will be revised once again in 2012. The conditions for the attribution of the Bonus have been made stricter, while the “Malus” has been made harsher. The instrument is currently implemented by the Ministry of Ecology, Energy, Sustainable Development, Transport and Accommodation.⁷⁸

The “Bonus Ecologique” is available for all newly bought vehicles, and ranges from 400€ to 800€ depending on its certified CO₂ emission. On the other hand, a vehicle with high CO₂ emission rate will be penalized by a “Malus Ecologique” ranging from 200€ to 2600€ depending in its CO₂ emission rate. The table below summarizes the instrument.

A special premium of 5000€ is given to electric vehicles and large plug-in hybrid vehicles. Another special premium of 2000€ was implemented for hybrid vehicles with a CO₂ emission rate under 110 gCO₂/km. GPL and city gas fuelled vehicles are not eligible for this second premium anymore. Vehicles powered by E85 (bioethanol) do not receive this special premium, but are not eligible for the investment malus for CO₂ emission rates if they have a consumption below 250 gCO₂/km.

The “Super-Bonus” has replaced the “Super Prime” since January 2011. The consequence is a premium revised down to 300 € (against 500€ at the end of 2010) for any owner scrapping a vehicle older than 15 years.

Table 6: investment premiums for vehicles.

Investment premium 2011	
CO ₂ emission	Investment Premium
Electric Vehicles	5000
Hybrid EV under 110 gCO ₂ /km	2000
60 to 90 gCO ₂ /km	800
91 to 110 gCO ₂ /km	400
111 to 150 gCO ₂ /km	0
Investment malus 2011	
151 to 155 gCO ₂ /km	200
156 to 190 gCO ₂ /km	750
191 to 240 gCO ₂ /km	1600
Above 241 gCO ₂ /km	2600

Table 6: Increasing Malus in 2012 for vehicles.

Investment malus 2011	
141 to 150 gCO ₂ /km	200
150 to 155 gCO ₂ /km	500
156 to 180 gCO ₂ /km	750
181 to 190 gCO ₂ /km	1100
190 to 230 gCO ₂ /km	1600
Above 231 gCO ₂ /km	2600

78 <http://www.developpement-durable.gouv.fr/Evolution-du-bonus-malus.html>

Future Changes

The “Bonus/Malus écologique” will regularly be reviewed, lowering the threshold of CO₂ emission for the Malus, thus encouraging buyers to invest in low consumption vehicles.

5 RES-E Grid Integration

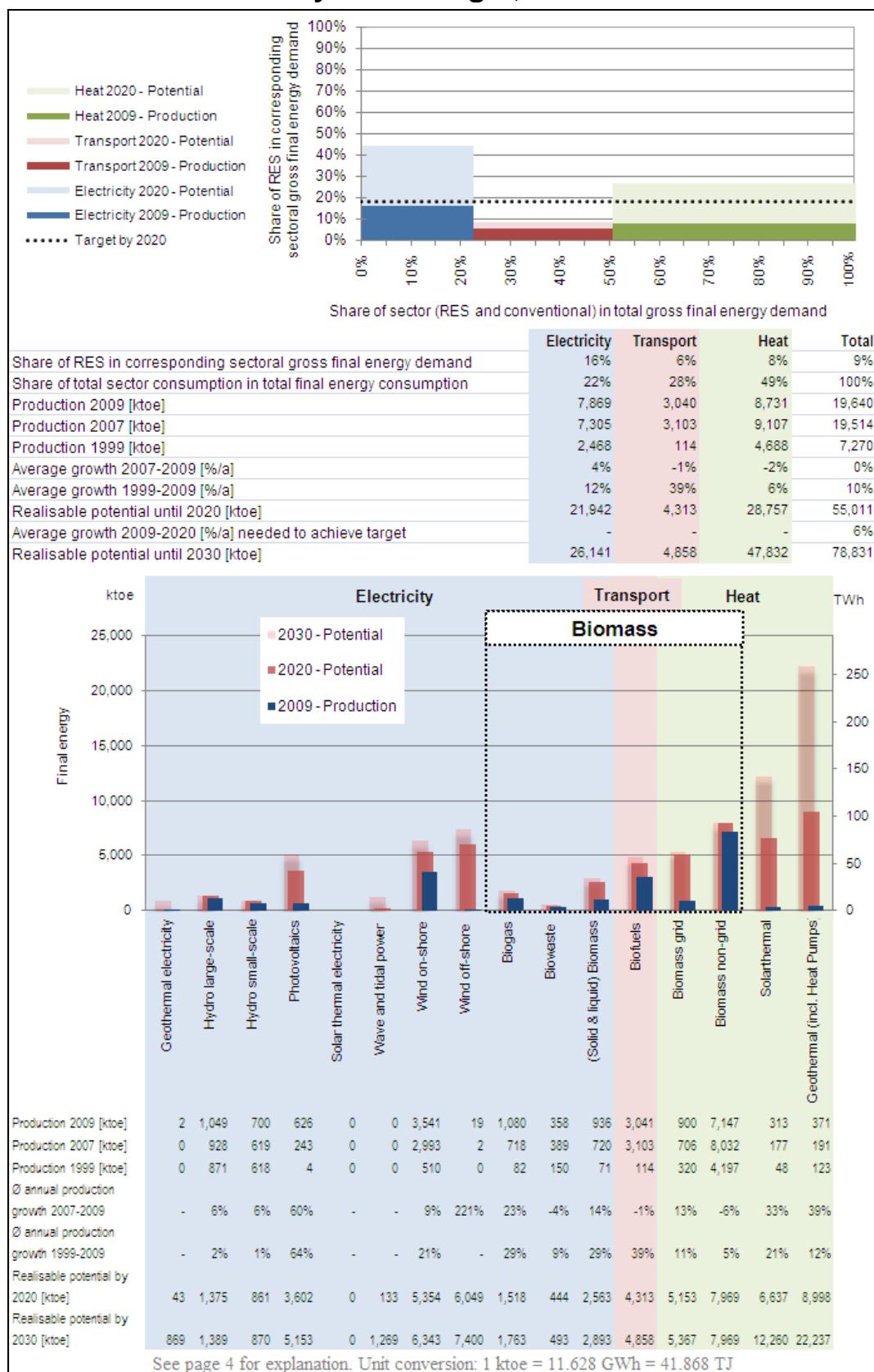
The grid connection of all important RES-E installation is arranged by a contract: “convention de raccordement” between the developer and the DSO (mainly ErDF (sic!)) or in rare cases, the TSO (RTE). The developer connects to the closest point on the network and the grid reinforcement costs are borne by the DSO/TSO.

As a general rule, all electricity is bought by the grid operator (RTE the TSO, or ErDF the main DSO) at the guaranteed feed-in tariff. Thus RES-E installation operators do not have to sell their electricity on the market, and they are not responsible for their electricity production forecast.

Some exceptional cases, force majeure, and other special cases, stipulated in the contract, can require the RES operator to reduce their production, leading to a momentary loss of earning. There is no priority of dispatch.

The request for connection to the TSO/DSO enters a waiting list. There is no priority given to RES-E producers on this waiting list.

GERMANY - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

Significant changes have taken place in all three sectors.

In the electricity sector, as of July 2010, feed-in tariffs for solar PV have been lowered substantially while the incentive for auto-consumption was increased. In addition, the degression rates were increased for 2011 and a flexible “breathing” cap was introduced in order to adapt the degression rates to PV market development. The reduction of tariffs will most probably be further tightened by the implementation of the Europa-anpassungsgesetz Erneuerbare Energien (EAG-EE) which passed the federal council (Bundesrat) in March. As of January 2011 ground mounted installations on agricultural sites are no longer supported.

In the heating and cooling support, the “Guidelines for the support of measures to use renewable energies in the heating market” of February 2010 cancel certain boni (solar collector for water heating only, efficiency bonus for non-residential buildings), while others were reduced (boiler exchange bonus, solar collector for water and space heating, heat pumps). Furthermore additional quality criteria have been added for the innovation and efficiency boni. With the adoption of the EAG-EE, the obligation to use renewable energies will be valid also for public buildings in case of larger refurbishments.

In the transport sector, the new Biofuel Sustainability Ordinance of January 2011 makes support (tax exemption and quota fulfillment) conditional to further quality criteria. Furthermore the 10th BlmSchV allows for an increase in the blending-in of ethanol in gasoline products from 5% to 10% as of December 2010.

1 Summary: RES Support Policy

RES-E

The main support instrument for RES-E is a feed-in tariff scheme. All relevant technologies are eligible, except for co-firing in conventional power plants. The scheme grants fixed feed-in tariffs for a period of 20 years. Tariffs are differentiated by technology and size of installation, and are subject to annual depression for new installations. Additional boni are paid for the compliance with further quality criteria. There is no general cap on the support, as the scheme is not financed by governmental budget, but by allocation to the final consumer.

In addition to the feed-in tariff system, there are further fiscal measures to support RES-E installations which may be combined with the tariff.

RES-H&C

RES-H&C is primarily supported by the RES-H Act. The Act introduces the obligation to use RES-H in new buildings >50m² and includes the Market Incentive Programme (MAP), providing investment subsidies and grants as well as long-term, low-interest loans with a fixed interest rate and redemption-free grace years for RES-H&C installations. The budget for the MAP in 2011 amounts to 350 million €.

RES-T

Biofuels are supported by a quota obligation as well as by a tax exemption. The overall quota is set at 6.25% annually until 2014. Currently there is a discussion about a higher quota obligation. Second generation fuels and Ethanol are exempt from taxes until 2015. The tax reduction for all other biofuels will be gradually (in steps of approx. 6€ct/litre and year) phased out until 2014.

2 Details RES-Electricity Support Policy

Feed-In Scheme

Support for RES-E is provided by a feed-in tariff scheme. Responsibilities are divided between the Federal Ministry of Environment (BMU) and the Federal Grid Agency⁷⁹. Detailed information on the instrument is available at the BMU's homepage dedicated to renewable energies (<http://www.erneuerbare-energien.de/inhalt/3860/>).

The act and the tariffs are reviewed regularly by BMU, in accordance with the Federal Ministry of Food, Agriculture and Consumer Protection⁸⁰, as well as the Federal Ministry of Economics and Technology⁸¹. The last amendments took place in 2004 and 2008. The next evaluation report is scheduled for 31st December 2011, and following evaluations will be carried out at four-year intervals.

The scheme is regulated by the Renewable Energy Sources Act (EEG)⁸² which was enacted on 1.1. 2009. The act aims to increase the share of RES in total energy supply to at least 30% by 2020, however, there is no end-date set for the feed-in scheme.

Tariff levels are differentiated for different technologies and sizes. No support is granted for new hydropower plants > 5 MW_{el}, biogas plants >5 MW_{el} based on sewage and landfill gas as well as biomass installations > 20MW_e and ground mounted solar PV installations on cultivation areas. The scheme is not financed by governmental budget but costs are allocated to the final electricity consumers. There is no cap on the annually available budget or volume of new installations.

Under the feed-in scheme, support is paid for both the physical electricity and the green value together. In order to receive the support, operators have to register their installation with the federal grid regulator. The RES-E Act does not include an obligation to use certified equipment or certified installers.

79 Bundesnetzagentur http://www.bundesnetzagentur.de/cln_1912/EN/Home/home_node.html

80 Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz http://www.bmeli.de/EN/Homepage/homepage_node.html;jsessionid=055CFFD9F0BEDA25966097F8E1A7FB9E.2_cid181

81 Bundesministerium für Wirtschaft und Technologie <http://www.bmwi.de/English/Navigation/root.html>

82 Erneuerbare Energien Gesetz <http://www.umweltministerium.de/files/pdfs/allgemein/application/pdf/res-act.pdf>

Table 1: Overview on tariff ranges granted by feed-in tariff scheme per technology

Tariffs incl. Boni	Support level 2010 (€/MWh)	Support level 2011 (€/MWh)	Degression*
Hydro	34.6 (>50MW)-126.7	34.3-126.7	1% for >5 MW (no degression for smaller installations)
Wind onshore	High tariff: 91.1 Low tariff: 49.7 Repowering bonus and/or system services bonus: 5	High tariff: 90.2 Low tariff: 49.2 + Repowering and/or system services bonus: 5	1%
Wind offshore	35-130 (+20 sprinter bonus)	35-130 (+20 sprinter bonus)	5% (as of 2015, until then no degression)
Biomass solid	77.1-115.5 (max add. boni: 110)	76.3-114.3 (max. add. boni: 110)	1%
Sewage and landfill gas	41-88.7 (max add. boni: 10-20)	40.8-87.4 (max add. boni: 10-20)	1.5%
Solar PV⁸³	<i>Tariff (direct use)</i>	<i>Tariff (direct use)</i>	13% for 2011 “Breathing cap” depending on market growth of preceding year
<30kW	330.3 (227.6)	287.4 (123.6-167.4)	
30kW -100kW	314.2	273.3 (109.5-153.3)	
>100kW	297.3	258.6 (94.8-138.6)	
>1000kW	247.8	215.6	
Ground-mounted installations	242.7-253.8	211.1-220.7	
Geothermal	104-156,8 (max. add. boni: 110)	102,9-156.8 (max add. boni: 110)	1%

*on base tariff and boni

Different additional boni are granted for certain characteristics, such as innovative technology, the fulfilment of sustainability criteria, auto-consumption or high efficiency. New installations are supported at different rates to modernized or retrofitted installations.

Tariffs are guaranteed for a period of 20 years (exception: modernized hydropower plants receive the tariff for 15 years) plus the year of commissioning. Tariffs are reduced by a fixed rate on a yearly basis in order to foster technical development. The pre-defined degression rates are differentiated for technologies. For solar PV a “breathing cap” was introduced, which allows to adapt the degression rate to PV market development in the preceding year. Tariffs for offshore wind energy will only be reduced after 2015.

Important changes occurred in the support conditions for solar PV. In addition to the already fixed degression rate, in 2010, two additional unscheduled one-time degression rates of 13% (July) and 3% (October) were realized. As of 2011 there is no longer any support for installations on cultivation areas. On the other hand, incentives for direct use

⁸³http://www.bundesnetzagentur.de/cae/servlet/contentblob/161374/publicationFile/8919/DegressionsVerguetungssaezte2011_pdf.pdf

(auto-consumption) have been increased. For installations that have been commissioned after July 2010, the remuneration for direct use is granted up to an installed capacity of 500kW. Tariffs are differentiated by the share of direct use and the size of installation. Details can be viewed on the ministrys' homepage.⁸⁴

Tariffs for wind power plants depend on the site quality: The first five years all plants receive the high tariff. Plants at the best sites receive the high tariff for just five years and the low tariff for the remaining 15 years. Plants at poorer quality sites receive the higher tariff for a longer period. How long a plant receives the high tariff depends on the average yield /generation cost of each single plant during the first five years.

Detailed information on tariffs and conditions for payment can be viewed at the German Federal Ministry for the Environment (BMU's) homepage⁸⁵.

The EEG 2009 includes an authorization clause (§ 64 Abs. 1 Nr. 6a) that allows the German Federal Ministry for the Environment to introduce a feed-in premium scheme parallel to the feed-in tariff, without the consent of the Bundesrat, one of the two parliamentary chambers. This clause aims at increasing market integration of electricity from renewable energies. For this purpose, the operator of a renewable power plant may choose between the feed-in tariff scheme or direct marketing in combination with a premium tariff that is being paid on top of the regular electricity market price. Switching between the schemes will be possible on a monthly basis. The exact design of the premium tariff scheme is still in debate.

Further support instruments - KfW

A project can be simultaneously supported by further support instruments. Low interest loans for different technologies are available from state-owned bank KfW⁸⁶. The support from the single KfW programmes can not be cumulated, however a project can profit from the feed-in tariff scheme in combination with low interest loans. Further information on KfW support programmes can be downloaded from the KfW webpage.

3 Details RES-Heating and Cooling Support Policy

RES-H law

The RES-H law (EEWärmeG) enacted in 2009 introduces a legal mandate on building owners to use renewable energies for heating and cooling purposes in new buildings with an effective surface > 50m². The law includes residential as well as commercial buildings.

On a national level, the RES-H law does not include existing buildings (federal states may include existing buildings); buildings with an actual annual period of use below four months are exempted from the obligation. The share of total heating and cooling demand that is to be covered by renewable energies depends on the technology used:

⁸⁴[http://www.bgb1.de/Xaver/start.xav?startbk=Bundesanzeiger_BGBI&bk=Bundesanzeiger_BGBI&start=//*\[@attr_id=%27bgb1110s1170.pdf%27\]](http://www.bgb1.de/Xaver/start.xav?startbk=Bundesanzeiger_BGBI&bk=Bundesanzeiger_BGBI&start=//*[@attr_id=%27bgb1110s1170.pdf%27])

⁸⁵ <http://erneuerbare-energien.de/inhalt/3860/>

⁸⁶ http://www.kfw.de/EN_Home/index.jsp

Table 2: Obligatory RES-H share of total heat demand per technology

Technology	Obligation
Solar collectors	0.04 m ² / m ² total effective area for single/double family houses (0.03 m ² for apartment houses)
Other solar energy	15%
Geothermal, heat pumps, solid and liquid biomass	50%
Biogas	30%

Combinations of RES-H&C sources and technologies may be used for quota fulfilment. Building owners who cannot use renewable energies may comply with the obligation by using other climate protecting measures such as the use of waste heat (50% of heat demand), connection to district heating networks or combined heat and power units (50% of heat demand) or the reduction of primary energy needs by 15% in comparison to the requirements by the Energy Savings Ordinance (EnEV). Compliance is checked by means of certificates, which have to be presented and are checked for integrity by authorities on a random basis. Penalty for non-compliance is a fine of up to 50.000 Euro. The amount is oriented towards commercial buildings. For private buildings, much lower fines are expected.

In September 2010 the government decided to adapt the RES-H(&C) Act to the EU directive 2009/28/EG. According to the current draft version of the amendment, public buildings are intended to have a role model function. According to the law a minimum of 15% of heating and cooling demand in public buildings has to be provided by RES. Alternatively, the municipality can build solar thermal installations on public buildings to provide for the heating and cooling demand for third buildings (0.06 m² collector area/m² roof area)

MAP

The Market Incentive Programme for Renewable Energies on the Heat Market (MAP) is a financial incentive programme that offers investment subsidies and grants as well as long-term, low-interest loans with a fixed interest rate and redemption-free grace years and an additional repayment bonus (financed from federal funds) for RES-H&C producing installations. The supervising authority for the MAP is the Federal Ministry of Environment, in accordance with the Federal Ministry of Finance. Responsibilities of agencies are allocated according to the legislation of the respective federal states. The programme is financed from federal funds. For 2011 a budget of 380 Mio is allocated to the MAP. In May 2010 the programme had to be stopped due to budget restrictions, but was continued in July 2010. The up-to-date availability of funds is stated on the Federal Office of Economics and Export Control's (BAFA) homepage⁸⁷. The MAP is regulated by the RES-H Act. The programme was amended and embedded into the RES-H Act in 2008. There is no end date set for the programme.

With the guideline for the support of measures that increase the use of renewable energies in the heat market of 17th February 2010 the boiler exchange bonus as well as the solar collector bonus for combined water and space heating are reduced (from 750 to 400€) retroactively as of January 2010. For heat pumps the maximum support rates are reduced and the efficiency criterion is increased. Boni for solar collectors for water

87 http://www.bafa.de/bafa/de/energie/erneuerbare_energien/foerderampel.html (German)

heating purposes as well as the former efficiency bonus for non-residential buildings are no longer applicable.

The MAP is divided into two parts:

MAP Part A: Investment Grants and Subsidies

Investment grants and subsidies for new installations or the extension of existing installations are provided through the BAFA for several RES-H&C technologies. Eligible technologies are⁸⁸:

- Solar collector plants up to 40 m² collector surface
- Solar collector plants with more than 40 m² collector surface on single or double-family homes if they are providing a large heat storage volume
- Automatically fed plants for the incineration of solid biomass for heat supply up to 100 kW heat power
- Manually fed plants for the incineration of solid biomass for heat supply between 15 and 50 kW heat power
- Efficient heat pumps
- Specific innovative technologies for heat and cold supply from renewable resources
- large solar collector plants (20 - 40 m² collector surface)
- secondary measures for the reduction of emissions and for the increase of efficiency in plants for the incineration of solid biomass up to 100 kW heat power.

Support is granted to private individuals, self-employed professionals, SMEs, municipalities and nonprofit organizations. Large-scale enterprises only benefit from the support in specific cases (deep geothermal energy, large-scale solar thermal energy, heat distribution networks).⁸⁹

Solar collectors are to be certified according to EN 12975. Solar collectors certified after 2007 are to obtain the additional European Solar Keymark. For biomass, technical provisions according to the Ordinance on Waste Incineration and Co-Incineration (BImSchV) have to be met. Exhaust separators are to be certified by TÜV or a public research institute. Heat pump calculations are to follow DIN Norms.

Applications for support are continuously accepted by BAFA. Financial support is differentiated for different sources and technologies, and consists of a base support and additional boni for, e.g. efficiency, combination of technologies and the exchange of boilers. The base support level for new buildings (building application after 1.1. 2009) is 25% lower than support for existing buildings.

With the new directive of July 2010 there is no longer any support for installations on new buildings as well as for installations for water heating purposes only.

88 http://www.bafa.de/bafa/de/energie/erneuerbare_energien/solarthermie/index.html

89 Quoted from IEE project Support_ERS

Table 3: Support for selected RES-H installations according to the MAP (conditions for 2011)

Example Measures	Base support (existing buildings)	Max. accumulated boni (existing buildings)
Solar collectors (warm water/cooling demand) <40m ²	0 €/m ²	180 €/m ² innovation bonus
Solar collectors (warm water & heating)<40m ²	90 €/m ²	180 €/m ² innovation bonus or one of the following options: 500€ combination bonus, or 0.5* base support efficiency bonus and/or 50€ solar pump bonus
Pellet boilers & stoves (<100kW)	36 €/kW, min. 1000€	500€ innovation bonus per installation or 0.5* base support efficiency bonus or 500€ combination bonus
Efficient Heat Pumps	10-20 €/m ² (sic! not per kW)(max. 1200 -6000 € depending on no. of housing units)	500 € combination bonus,

A detailed overview over the support levels granted by the scheme is available at the BAFA website⁹⁰.

MAP Part B: KfW Renewable Energies Programme

For large plants in which heat is generated by RES, the KfW programme offers long-term, low-interest loans with fixed interest rates, grace years in the start-up phase (up to three years) and repayment subsidies from governmental funds. Up to 100 % of the eligible net investment costs are supported, up to a maximum loan amount of usually 10 mio.€. Small enterprises receive more favourable interest rates. Eligible technologies are solar thermal installations with a collector area > 40 m² in apartment houses or commercially used buildings, biomass-installations with >100 kWh rated heat output, highly efficient biomass-CHP installations <2MW, RES heating networks with > 500 kWh/a*m, as well as large heat storage installations fed with RES-H (>20m³) and biogas lines for untreated biogas. Detailed information can be downloaded from the KfW homepage⁹¹.

The cumulation of public financial support is possible, however, for Part A of the MAP (investment subsidy), the double amount of the support level stated in the programme for a certain technology may not be exceeded. Furthermore, the maximum acceptable support intensity as stated by the EU may not be surpassed. Energy generating plants that receive support under the EEG or the Combined Heat and Power Act (KWKG) cannot be supported by MAP.

90 http://www.bafa.de/bafa/de/energie/erneuerbare_energien/solarthermie/index.html

91 http://www.kfw.de/kfw/en/Domestic_Promotion/Our_offers/Renewable_energy.jsp#KfWRenewableEnergyProgramme-Premium

CHP Support

The EEG encourages the use of CHP in biomass installations. There is a CHP-Bonus for the share of electricity that counts as CHP-electricity of 3 €ct/kWh up to a capacity of 20 MW_{el}. (also for existing plants that have been operated in CHP-mode after 31.12. 2008 for the first time). For all other existing plants, support is increased by 3ct/kWh for capacity < 500 kW. Installations with an installed capacity of >5 MW are obliged to use CHP technology.

Under the RES-H Act, buildings that receive a 50% of their heat demand from CHP installations or local heat grids fed by a considerable share of RES, are exempt from the obligation under the law. The extension of heat grids that (at least) receive parts of their heat from RES-H installations also receive financial support under the MAP (Part B). In case CHP is used the support is increased by additional payments under the CHP-law (in total up to 80€/m up to a max. of 1.500.000€). Indirectly, district heating and cooling is also encouraged by the CHP-bonus provided in the EEG. On a regional level there are further support mechanisms, such as the EFRE programme "Heating and heating networks based on RES" in Baden-Württemberg, which supports installations that feed RES-H into existing or new heating grids (<http://www.uvm.baden-wuerttemberg.de/servlet/is/37809>).

4 Details RES-Transport Support Policy

Quota

Biofuels in Germany are supported via a quota obligation on the fuel suppliers (not just gas stations). The quota regulation is embedded in the BImSchG (Federal Immission Control Act). With the introduction of the Act to Change the Support for Biofuels in June 2009, the overall biofuel quota was lowered from 6.25% to 5.25% retrospectively for 2009 and was increased to 6.25% for 2010, remaining at the same level until 2014 (instead of increasing on an annual basis until reaching to 8% in 2015). The biodiesel specific quota was set at 4.4% until 2014, whereas the ethanol specific quota was reduced from formerly 3.6% to 2.8% (2010-2014). The quota is based on energy content, not on volume. As of 2015, the quota will be based on minimum reductions in greenhouse gas (GHG) emissions. GHG-emission reduction targets (compared to reference diesel or ethanol fuel) will be set at: 2015: 3%, 2017: 4.5%, 2020: 7%. Agencies responsible for the monitoring and control of quota-fulfilment are authorized and supervised by the Federal Ministry of Finance.

All sources covered by the Biomass Ordinance are eligible⁹². Energy products that are only partly made from biomass are counted as biofuels for the share of biofuel contained. As of January 2011 a new Biofuel Sustainability Ordinance⁹³ has been adopted by the government and makes support (Tax exemption and quota fulfilment) conditional to various quality criteria (\$4-8) for which certification has to be obtained. The

⁹²http://www.bmu.de/files/erneuerbare_energien/downloads/application/pdf/biomasseverordnung.pdf

⁹³http://www.bundesfinanzministerium.de/nn_67366/DE/BMF__Startseite/Aktuelles/Aktuellhttp://www.bundesfinanzministerium.de/nn_67366/DE/BMF__Startseite/Aktuelles/Aktuelle__Gesetze/Gesetze__Verordnungen/047__Bio__anl,templateId=raw,property=publicationFile.pdf

Ordinance for the recognition of certification (Biokraft-NachVwV)⁹⁴ adopted on 12. March 2010 further specifies accepted certificates and authorized certification agencies.

With the 10th ordinance on the Implementation of the Federal Immission Control Act (BImSchV), the blending limit for ethanol in gasoline is increased from 5% to 10% as of December 2010. The limit for biodiesel had been increased to 7% as of February 2009 already.

There is no specific support for electric vehicles that use renewable electricity.

Tax Exemption

Conventional biofuels that are not part of a mixture with fossil fuels (biodiesel B100 and crude vegetable oil), benefit from a partial tax exemption under the Energy Tax Act (§ 50). As of August 2006, the tax exemption for biodiesel and crude vegetable oil is gradually phased out until the end of 2012. In 2013, taxes will correspond to those for conventional fuels. With the Amendment of the Support for Biofuels⁹⁵ which was decided by the parliament on 23. April 2009, the tax reduction was phased out slower than originally planned. According to the law, the tax will now be increased in steps of approx. 6c€ per litre and year from 18 c€/litre in⁹⁶ 2009 up to 45 c€/litre in 2013. There is no tax reduction for biofuels used for quota fulfilment.

Second-generation biofuels produced from waste residues, non-food cellulosic material, and lingo-cellulosic material as well as biogas and bioethanol fuel (E85) are tax deductible until 2015.

Tax exemption is granted on request by the production company. Requests are accepted continuously. The coupling of the tax exemption with other direct support measures (national and foreign support) is not possible.

According to §3 of the Fuel Quality Decree⁹⁷, biofuels can enter the market only if their characteristics comply with the respective DIN Norms.

5 RES-E Grid Integration

There is a “shallow” connection charge philosophy in Germany. According to the EEG, grid operators are obliged to feed in RES-E, with priority over conventional generators. It is granted further priority in case of grid congestion (priority in dispatch).

Extension measures in the grid that are necessary for the connection and reception of RES-E are paid by the grid operator. The RES-E investor bears the costs of grid connection to the economically next-best connection point. This includes the costs for the necessary measuring devices.

⁹⁴<http://bundesrecht.juris.de/bundesrecht/biokraft-nachv/gesamt.pdf>

⁹⁵http://www.bmu.de/gesetze_und_verordnungen/gesetzesentwuerfe/parlamentarisches_verfahren/doc/42435.php

⁹⁶www.biomasse-nutzung.de/das-wachstumsbeschleunigungsgesetz-und-die-biokraftstoffbranche/

⁹⁷http://www.gesetze-im-internet.de/bimsv10_2010/index.html

The connection charges are calculated on an individual basis. Generally, they are rather low, due to the “shallow” charging approach. The German law excludes the possibility to levy use-of-system or “entry” charges for electricity generators.

6 RES Production, Potential and Market Development

RES-E

The share of RES-E in Germany in total electricity demand amounts to 16.4% in 2009 (15.1% in 2008). With approx. 38.6 TWh of electricity generated in 2009, wind energy is the largest contributor of RES-E. Biomass is the second-largest RES-E contributor (25.9 TWh in 2009). Solar PV showed very high growth rates and absolute growth in recent years. Hydropower shows a constant contribution, as potential is exploited to a large extent.

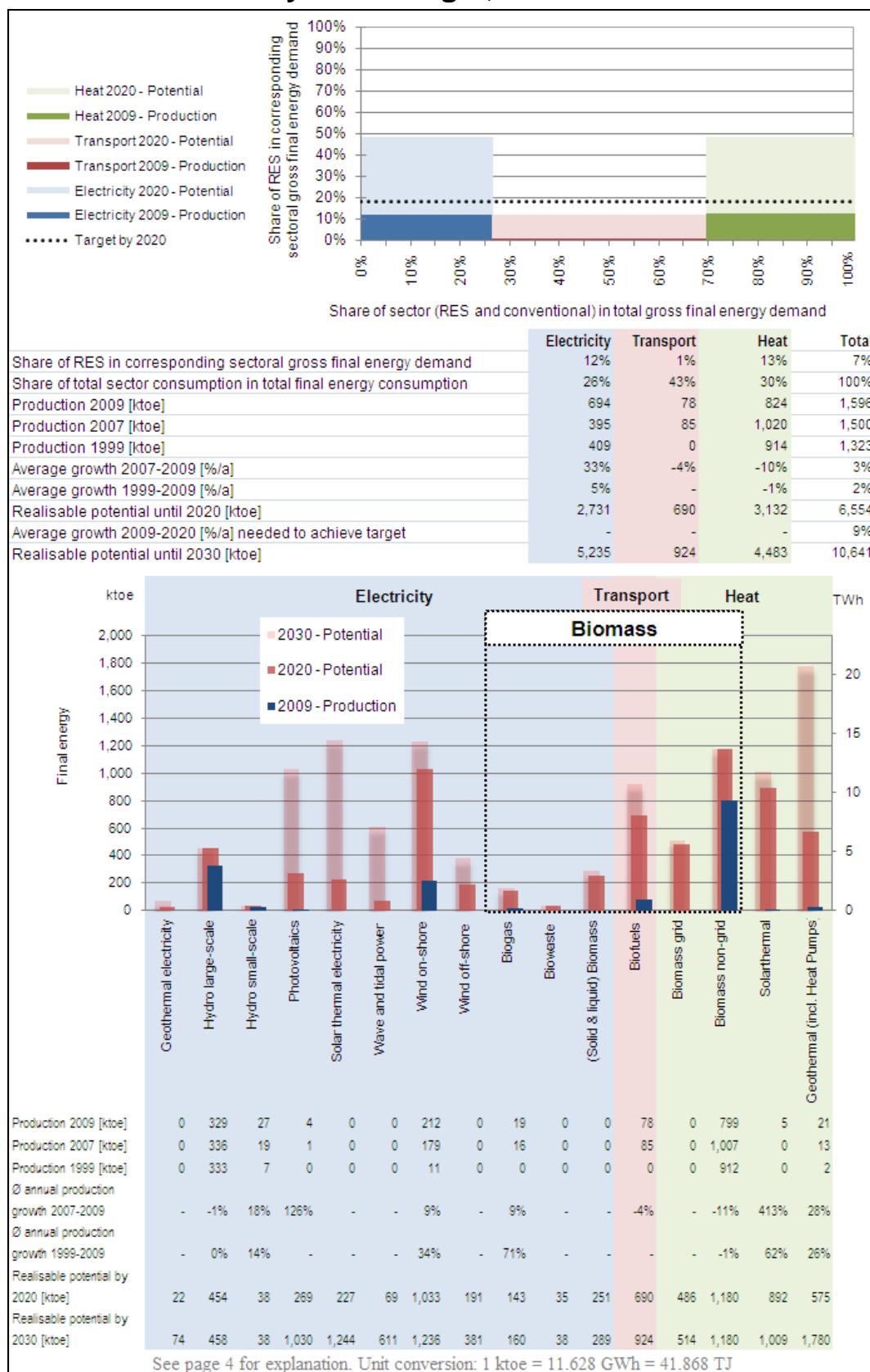
RES-H&C

The share of RES-H in total heat supply amounts to 8.8% in 2009. With approx. 99 TWh, biomass is by far the largest contributor to RES-H, followed by biomass from waste with 10.9 TWh. Geothermal sources contributed 4.9 TWh in 2009 and solar thermal sources 4.7 TWh.

RES-T

The total share of RES-T fuel supply amounts to 5.5% in 2009 (33.8 TWh). Biodiesel holds the major share in total biofuel supply (25.9 TWh). Bioethanol contributes with 6.7 TWh, while vegetable oil contributes with 1.04TWh to RES-T supply.

GREECE - Summary: RES Target, Penetration and Potential



Summary of most important policy changes since last country profile (autumn 2009)

Greek policy toward RES remained stable in the 2009-2010 period. A new law, 3851/2010, introduced some changes in the definition of tariffs and administrative processes, but overall confirmed the prior framework based on feed-in tariffs for RES-E, a building obligation for RES-H and a quota for RES-T. The law, which enacts the 29/2009/EC Directive, puts the national target for RES at 20% instead of 18% as agreed at EU level.

Greece also confirmed, through its "Investment Law" (3908/2011) further subsidies in the form of cash grants, tax exemptions and a leasing subsidy to all RES investments except PV (thus slashing the subsidy also for the plants under 2MW of installed capacity foreseen by law 3752/2009).

Despite generous subsidies, the Greek RES sector encountered several difficulties namely because of a cumbersome regulation that requires several permits from different authorities, making the authorization process painfully slow. Law 3851/2010 tries to overcome these barriers, streamlining the authorization process and concentrating powers on the Regulatory Agency for Energy and on the Ministry of Environment, Energy and Climate change, extending the length of the sale contract from 10 to 20 years.

Still, several barriers are in place: for example demands for subsidies according to law 3908/2011 could be filled only twice a year in April and October for all investments below EUR 50 millions; installation of PV systems >10 kWp is not yet feasible on islands connected to the mainland grid. Another barrier to RES development is the prohibition to exploit "agricultural land of high productivity" (as identified by the Directorate of Agricultural Development and Local Prefectures) for the production of electricity⁹⁸.

98 Art. 9 par. 7 Law 3851/2010

1 Summary: RES Support Policy

RES-E

Greece has three main policy programmes supporting RES-E in place: a feed-in tariff, an investment subsidy and the recently introduced specific scheme for photovoltaic. The actual impact of such measures has been limited, not for the lack of incentives, but for red tape that often negates these benefits, and creates a huge licensing back-log. This is why the Greek Government recently announced a law proposal to overhaul the current system.

RES-H

A building obligation is the main support mechanism for RES-H. Investment subsidies, grants and tax exemptions are also in place.

RES-T

The main instrument is represented by a quota obligation updated every year. To help fulfil the quota, subsidies for investments exist for biofuels.

2 Details RES-Electricity Support Policy

The Greek market started to change after 2001, when Law 2773/99 liberalized the market as required by Directive 96/92/EC. The same act established the Regulatory Authority for Energy (RAE) as a separate and independent authority, supervised by the Minister of Development, and the Hellenic Transmission System Operator (DESMIE), to be supervised by the RAE.

It was only in 2004, however, that new companies joined the market, although their size is less than that of PPC, the former public electricity producer.

Feed-in tariff

The main instrument for the promotion of RES-E in Greece is a feed-in tariff. The mechanism is regulated according to law 3851/2010, which states in article 5:

- “The electrical energy produced by a Producer or Self-Producer through a station used for the production of electrical energy from RES or from CHP or through a Hybrid Station and is absorbed by the system or by the network, is charged, on a monthly basis, according to the following:
 - a. The pricing is done based on the price, in €/MWh, of the electrical energy absorbed by the system or by the network, including the network of non-interconnected islands.
 - b. The pricing of electrical energy in the previous case, with the exception of the electrical energy produced by solar (photovoltaic) stations for which separate prices have been specified by law No 3734/2009 (8A'), as it applies, is carried out on the basis of the following table”

Table 1: feed-in tariffs €/MWh

Source	Inter-connected system	Non Inter-connected Islands
a Wind energy exploited through land facilities with capacity greater than 50 kW	87.5	99.4
b Wind energy exploited through facilities with capacity smaller than or equal to 50 kW	250	
c Solar (Photovoltaic) equipment of up to 10 kW peak in the domestic sector and in small businesses (according to special program for buildings – KYA 12323/ΓΓ 175/4.6.2009, 1079 Β')	550	
d Hydraulic energy exploited through small hydroelectric stations with installed capacity up to (15) MWe	87.85	
e Solar energy exploited by solar thermal power stations	264.85	
e-1 Solar energy exploited by solar thermal power stations with a system of storage, which secures at least 2 hours of operation at the nominal load	284.85	

f	Geothermal energy of low temperature according to paragraph 1 of article 2 of law No 3175/2003 (207)	150
g	Geothermal energy of high temperature according to paragraph 1 of article 2 of law No 3175/2003 (207)	99.45
h	Biomass exploited by stations with installed capacity ≤ 1 MW (excluding the biogenic part of municipal wastes)	200
i	Biomass exploited by stations with installed capacity >1 MW and ≤ 5 MW (excluding the biogenic part of municipal wastes)	175
i-1	Biomass exploited by stations with installed capacity >5 MW (excluding the biogenic part of municipal wastes)	150
i-2	Gases emanating from controlled rubbish burial dumps and from sewage treatment plants and biogases with installed capacity of 2 MW	120
i-3	Gases emanating from controlled rubbish burial dumps and from sewage treatment plants and biogases with installed capacity of >2 MW	99.45
i-4	Biogas emanating from biomass (organic remnants of animal farming and of agricultural processed remnants and refuse with installed capacity of ≤ 3 MW	220
i-5	Biogas emanating from biomass (organic remnants of animal farming and of agricultural processed remnants and refuse) with installed capacity of >3 MW	200
i-6	CHP ⁹⁹	$87.85 * \Sigma p$ $99.45 * \Sigma p$
i-7	Other RES (including stations which exploits the biogenic part of municipal wastes which fulfil the specializations of European legislation as applies	87.85 99.45

These prices, according to art 13, paragraph 6 of law 3468/2006

- “shall be revised annually by a decision of the Minister of Development following an opinion from RAE. That revision is based on the weighted adjustment of the approved bills of the Public Power Corporation (PPC S.A.). By “weighted adjustment” of the bills of PPC S.A., the average of the separate changes per category of pricing is meant, as that average shall be weighted according to the type of electricity consumption during the previous year.
- If according to the relevant laws in force no approval of PPC S.A. bills is required, the prices of the table above shall be adjusted by a decision of the Minister of

99 Σp is a factor dependant on natural gas prices: $\Sigma p = 1 + (\text{MTΦA-26}) / (100 \times \eta_{el})$

MTΦA = the three-monthly median by unit selling price of natural gas for co- production in €/MWh of higher thermal generating power (H.T.G.P.) to the users of Natural Gas in Greece, excluding the electrical production clients. This price is determined with the care of Public Gas Corporation SA (DEPA) who notifies every three months the Hellenic Transmission System Operator SA (DESMIE).

η_{el} = the electrical degree of performance of the C.H.P. clause on natural gas of higher thermal generating power (H.T.G.P.), which is specified at 0.33 for C.H.P. units 1MWe, and at 0.35 for C.H.P. units >1 MWe.

Development at 80 percent of the consumer price index as established by the Bank of Greece. The adjustment shall be done in a unified way and shall be applied to all prices of the table."

Prices are constant for 20 years (instead of 10 years as stated by law 3468/2006) of the sale contract.

The law provides a premium on the recognized energy price to those plants that are built without any other government subsidies: apart from solar and solar-thermal stations the prices of the above table are raised by 20% for cases a, d, f, g, i-7 and 15% for the others.

The authorization procedure is quite complex, in order to run a RES power plant the developer should obtain several permits:

- A licence to produce electricity issued by RAE which in turn submit it to the Ministry of Environment, Energy and Climate Change (MEECG) for the final approval. The licence is granted for 25 years;
- An installation licence (valid two years and can be renewed) in order to build the plant, the licence is instructed by Region Offices and approved by MEEGC. This licence is granted only after the reception of the approval licence and after having submitted a Connection Offer;
- An operating licence (lasts 20 years, 25 for solar thermal);
- A Decision of Approval of Environmental Conditions (A.E.C.) if eligible issued by the competent authority, (this authorization lasts 10 years and could be renewed); The results of this decision must be published on a Public Register, when an exemption applies (geothermal, biomass, biogas, biofuels photovoltaic plants under 0,5 MW and wind plants under 1 MW of power capacity) however, a certificate of exemption must be required;
- A permission for intervention in a forest area;

At the same time he should submit a connection offer which leads to a connection and a sale contract, the sale contract is valid for 20 years (25 for solar thermal) and can be renewed.

Off-shore wind-farms are subject to a special authorization process which requires a further Environment Strategic Assessment in order to evaluate their impact on the sea-life and a licence whose content is defined by a Ministerial Decision of MEECG.

In order to streamline this process law 3851/2010 increased the thresholds (see table 2) under which there is an exemption from the need to obtain a production licence and add that "*The stations producing electrical energy from RES or CHP which are exempt from the obligation to obtain a production license according to article 4, are also exempt from the obligation to obtain an installation license and an operating license.*"

Table 2: thresholds of exemption comparison between law 3468/2006 and law 3851/2010

	2006	2010
Geothermal stations	</= 0,5 MWe	</= 0,5 MWe
Biomass, biogas and biofuel	<100 kW _e	<1MW _e
PV	<=150kWp	<1MWp
Wind	</= 50kW	</= 100kW
C.H.P.	n.a.	<1MWe

Greek law foresees a form of compensation to the inhabitants and local authorities where RES plants are located through a 3% tax levied on “*the pre-VAT sale price of electricity to the Operator of the System or the Network of the islands not connected to the mainland's Interconnected System.*” The collected revenues are distributed as follow:

- 1% to consumers with the aim to credit up to the whole of that amount on their electricity bill;
- 0.3% to a special fund for the implementation of “Regulatory and Environmental Plans”;
- The rest to local authorities.

RES investments (except PV) are eligible for the advantages of the Greek Investment (3908/2011) which covers all private investments implemented in Greece (dealing with all sectors of economic activity with some exceptions). The amount of subsidy varies according to the size of the enterprise and to the prefecture where the investment plan will be implemented. In any case the subsidy cannot exceed 50% of the qualifying cost of the investment. The investment in order to be eligible should satisfy also a minimum value requirement according to the enterprise dimension, and in any case should be less than EUR 200,000.

According to the law there are three kinds of incentives:

- “Tax relief comprising exemption from payment of income tax on pre-tax profits, which result, according to tax law, from all the enterprise’s activities. The amount of tax relief is calculated as a percentage of the value of the subsidized expenditure of the project or the value of the new machinery and other equipment acquired by leasing and constitutes an equivalent untaxed reserve.”
- A grant comprising a free payment by the State of a sum of money to cover part of the subsidized expenditure of the investment plan and calculated as a percentage of that expenditure.
- A leasing subsidy comprising payment by the State of part of the instalments paid under a leasing agreement executed in order to acquire new machinery and other equipment and calculated as a percentage of the purchase price and included in the instalments paid. The leasing subsidy shall be granted for no longer than seven (7) years.”

RES-investments fall in the “regional cohesion” category¹⁰⁰ and are eligible for subsidies capped at 70% for existing enterprises and 80% for new ones compared to the same amount of other investment categories.

Incentives for PV

Solar PV enjoys a specific support programme with particularly favourable conditions. The incentive is again a feed-in tariff differentiated upon the dimension of the plant and its location (mainland and non-interconnected islands) as is shown in table 3.

Table 3: PV tariffs (€/MWh)

Year	Month	Rooftop Systems	Mainland grid		Islands
		<10 kWp	≤ 100 kWp	> 100 kWp	
2009	February	550	450	400	450
	August				
2010	February		441.05	392.04	441.05
	August				
2011	February		419.43	372.83	419.43
	August				
2012	February	522.5	375.53	333.81	375.53
	August				
2013	February	496.38	336.23	298.38	336.23
	August				
2014	February	417.56	316.55	281.38	316.55
	August				

The incentive lasts 25 years for small rooftop systems and 20 years for the bigger ones. During this period the tariffs are readjusted every year by 25% of the consumer price index of the preceding year, as defined by the Bank of Greece.

The 2010 law abolished several barriers pending on PV development:

- Production (electricity generation) license is not needed for systems <1 MWp;
- Rooftop systems of any size do not require environmental permitting any more, while procedures have become easier for ground-mounted systems;
- Residential systems can now be installed in all regions (previous regulations excluded the autonomous island grids);
- Applications previously excluded (such as facades, louvers, warehouses, carports, etc) are now feasible in the residential sector;
- PV systems on historical buildings can now be deployed under a special authorization procedure;

100 Art. 6 Law 3908/2011

- Installation of PV systems on prime agricultural land is now allowed with certain limitations.
- A 150 €/kWp bank guarantee is needed for ground-mounted systems up to 1 MWp before the signing of a grid connection contract.

Solar plants cannot enjoy the capital incentives as other RES sources but are exempted of the payment of the 3% sale tax. The revenue from the sale of energy is also exempted from the income tax.

3 Details RES-Heating and Cooling Support Policies

The Greek policy regarding RES-H adoption relies mainly on a building obligation, law 3851/2010 states that from January 2011 new buildings should cover 60% of their hot water consumption with solar panels. From 2019 (2014 for public buildings) new buildings should cover their whole energy consumption (both electricity and heat) with RES. Such obligation does not apply for existing buildings; the law only fixes minimal requirements for energy efficiency.

The Greek government supports the RES-H&C market also with subsidies to investments. The investment law (3908/2011) foresees capital incentives, as those foreseen for RES-E (see paragraph 2), also for RES-H, even though the high value requirement for investment could limit its impact.

For the production of heating/cooling, law L3522/2006 was passed in 2006 and is still in effect. According to this law small domestic RES systems are eligible for a 20% tax deduction capped at € 700 per system.

4 Details RES-T Support Policy

Quota Obligation, Tax Exemption and Subsidy

After EU Directive 2003/30, the Greek government has issued Law 3423/05 for the introduction of biofuels in the market; the law imposes the use of detaxed biofuels in existing refineries in blends up to 5%.

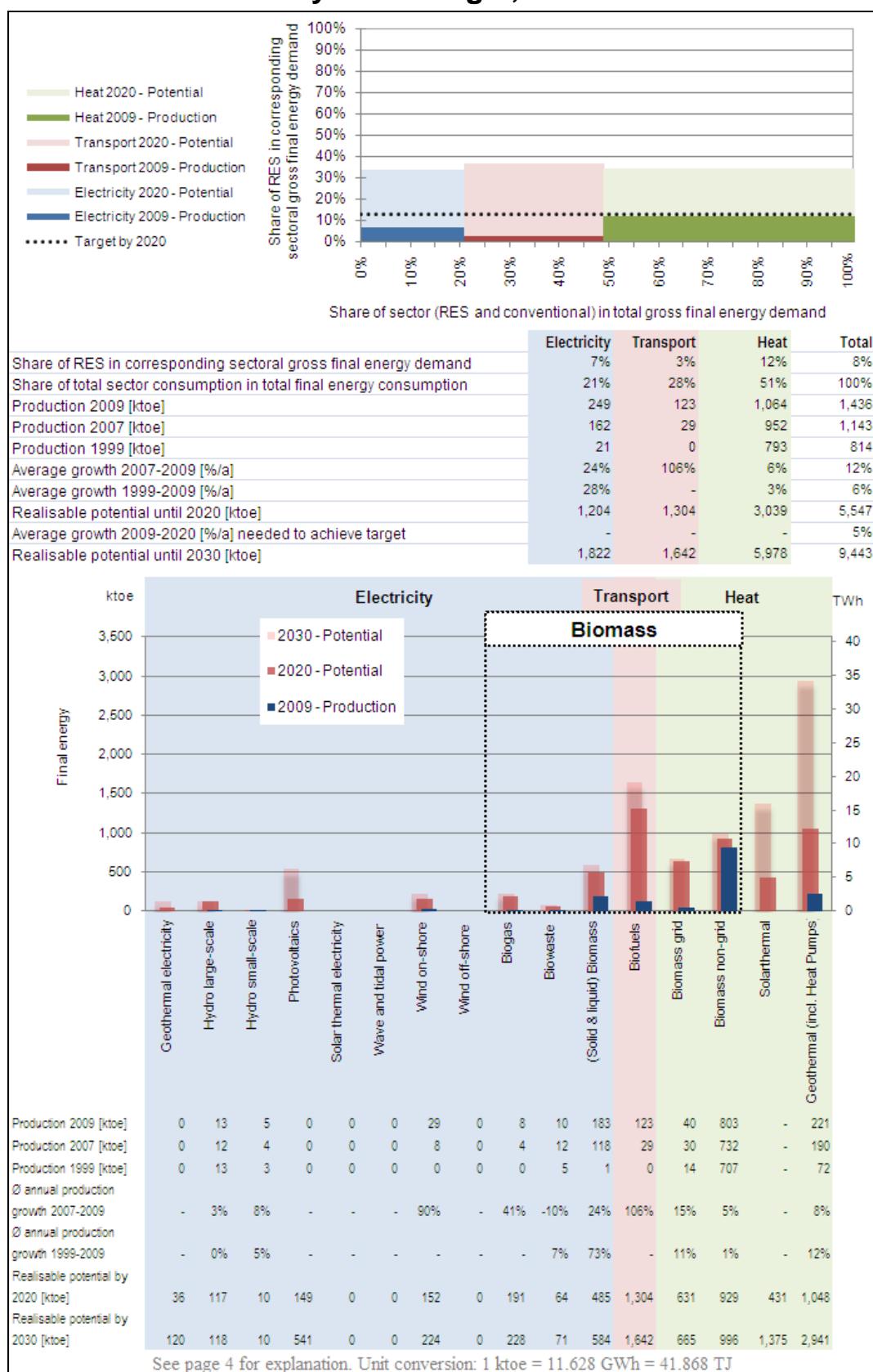
With the adoption of the EU Directive 2009/29/EC the quota that distributing companies have to make available for consumption in order to reach the European target has been updated. According to the provisions of Law L3769/2009 (O.G. 105A/01.07.2009) biofuel quantities are allocated every year, after a relevant call for tenders and an evaluation and allocation procedure, to stakeholders, producers or importers, who are interested in participating in this quota system. Every year the Ministry of Environment, Energy and Climate Change allocates, through a tender, the supply contract for the market. Priority is given to biofuels obtained from Greek energy crops. This mechanism is seen as problematic since the evaluation criteria of the offers are perceived as vague. The tax exemption for biofuels does not exist anymore.

Subsidies defined by the Investment Law for RES-E and RES-H&C apply for biofuels, too (see chapter on RES-E support).

5 RES-E Grid Integration

The plant operator is entitled the preferential connection at the connection point that is most economically and technically suitable; priority for hydro-electric systems is given to systems whose capacity does not exceed 15 MW. The grid operator is obliged to purchase, pay for and transmit all electricity generated by RES systems. The costs for grid connection are the responsibility of the power producer and the date of connection depends on the contractual terms; if a grid expansion is required to fulfil the obligation, the grid operator has to cover related costs.

HUNGARY - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

- The 2010 change in government led to the reviewing of the renewable electricity feed-in tariff scheme, ongoing wind capacity tenders, definitions of biomass and structural granting schemes, which is posing some uncertainties in the regulatory environment.
- Feed-in-tariff (FIT) system is currently under complete revision, with a new one coming into effect probably in January 2012, with the existing FIT to be terminated then.
- Key parameters of the new FIT System
 - Differentiated FIT by technologies
 - Periodical review of support
 - 15-year eligibility period
 - Bonus system (additional bonus for sustainability and renewable heat generation)
 - Brown tariff (for higher than 10 MW former coal based fuelswitched plants)
- The new system will subsidize renewable heat from cogeneration and discontinue support for natural gas based CHP from July 2011. Until then, district heaters have to imply a pricing moratorium with DH prices to be set by government as from April 15, 2011
- New biomass capacity thresholds for FIT eligibility are to be introduced
- Biomass has to meet sustainability criteria to be defined by April 30
- Another recent amendment in the 389/2007 Government Act was the 270/2010 (XII.8) Government Act, which has inserted §7a. This amendment has introduced a monthly penalty of HUF 6 /kWh for +/-5% accumulated deviations in addition to the 15 minute and daily penalties
- There has been a change in accounting period for feed-in payments from 2 weeks to 1 month, which demands more working capital financing from project developers
- The budgets available from EU cofinanced structural funding schemes are only partially utilised for RE projects, due to uncertain regulatory environment and unfavourable financial market conditions. Out of the total 2007-2013 grants of HUF 68.5 bn (EUR 250 m) devoted to RE development only 31,5% have been used till end of 2010 with 3 years remaining
- In case a project receives grant (in form of structural funds or other forms) the feed-in period is shortened.

1 Summary: RES Support Policy

RES-E

The main support instrument at national level is a feed-in tariff, with additional instruments in the form of EU structural funds. Due to the immature state of the RES industry, lower than EU average level of premium prices, and increased costs of financing, the speed of development is falling below the schedule. There has been a differentiation in support scheme by technology and size of power plant, placing more focus on areas in line with the overall national economic strategy and competitive advantages. In light of the decreased disposable incomes of the population, the political environment has been focused on reducing the cost of energy to the public instead of increasing the proportion of renewable energy.

The feed-in-tariff (FIT) system is currently under complete revision, with a new one planned to take over from July 1, 2011 with the existing FIT to be terminated then.

Key parameters of the new FIT System are:

- Differentiated FIT by technologies
- Periodical review of support
- 15-year eligibility period
- Bonus system (additional bonus for sustainability and renewable heat generation)
- Browntariff (for former coal based fuelswitched plants >10MW)

Regional funding is financed by central funds and co-financed by EU structural funds. National policy remains dominant with regional issues mostly limited to the execution. With a new Government taking office in 2010, funding schemes are currently being reviewed and likely to be revised.

RES-H&C

Support for RES-H is limited to investment grants. There has also been a strong market share for natural gas, the price of which is indexed to the oil price with a 9 months delay, which will likely increase in the near future, giving an incentive to switch to other sources.

The government plans to introduce a new takeover regulation for renewable energy used in CHP, decreasing the renewable electricity price and increasing renewable heat prices from the start of the heating season in October 2011, thereby focusing on more efficient heat production (with over 90% net efficiency) rather than inefficient electricity generation (with under 30% net efficiency).

RES-T

Biofuel production is mostly aimed at export markets. Due to the capital intensive nature of production and a lack of or high cost of financing, most of the planned biofuel projects have never reached the completion stage.

2 Details RES-Electricity Support Policy

Feed-in tariff

Hungary has introduced a non-central-budget-based feed-in-tariff scheme which is guaranteed until 2020. According to the regulation the grid operators are statutorily obliged to purchase RES-E and to pay a guaranteed price. A green certificate scheme has also been addressed by the Law 2007. LXXXVI. on electricity, empowering the Government to work out the executive steps. However, no steps towards a green certificate scheme have been taken yet. The Hungarian Energy Office (HEO www.eh.gov.hu) sets the period of payment and the maximum amount of eligible electricity in compliance with the statutory provisions (§ 11 (3) Act Nr. LXXXVI of 2007). HEO issues a formal licence defining the volume of electricity for which it is paid, as well as the duration of the feed-in tariff in the licence based on the project payback period.

The feed-in tariff levels are set annually and are adjusted to the rate of HUF PPI inflation (Annex Nr. 13 Decree Nr. 389/2007). For RE power plants with a license issued after January 2008, the real takeover prices have been made degressive, using a 1% annual reduction for expected efficiency improvement. That means that these power plants receive a feed-in tariff that decreases by 1% per year, on top of the raise by PPI inflation, while tariffs for "older" power plants with a licence issued before January 2008 will change by inflation only.

The tariff levels are currently being reviewed by the Hungarian Parliament with new price levels differentiated by technologies to take effect from July 2011. The final regulation in combination with a renewable heat price regulation is expected to be introduced in 2012.

The scheme is governed by Act Nr. LXXXVI of 2007, and the price is regulated by Government Decree Nr. 389/2007. (XII. 23.) and by Decree Nr. 287/2008. (XI.28.).

The Hungarian Energy Office (HEO) determines the duration of the compulsory procurement based on the pay-back time set in the decree Nr. 389/2007. (XII. 23.) and by Decree Nr. 287/2008. (XI.28.) The annual amount of energy purchased under the compulsory procurement system is determined by the capacity, the utilization and the self-consumption of the power plant. According to the current Feed-in-tariff Act (Act 6. § (10)) the power plants can utilise / sell to the grid the total of the annual volumes of RE electricity approved by HEO at any time over the mandatory takeover period without annual restrictions. That means unutilised annual values can be carried over / banked throughout the mandatory takeover period.

The Office calculates the pay-back time separately by the sources of energy, technologies taking into consideration the site selection, the application of the principle of lowest cost and the use of best available technology of the plants; as well as the set prices written in the decree Nr. 389/2007. (XII. 23.) and Decree Nr. 287/2008. (XI.28.) If support is being provided to an investment according to the new electricity act (LXXXVI of 2007), 11th § Subsection (5), the Office calculates the rate of return based on the amount of support compared to the total cost of the investment.

The maximum preferred size of a plant is 20 MW, above which there is a discount making the construction of the plant economically questionable. The accumulation of structural grant funding and feed-in tariff has been changed; the structural fund

decreases the mandatory premium priced feed-in-period. The new regulation makes support conditional to the use of certified systems in line with standards to be met.

Basically, all technologies used in the generation of renewable-energy-sourced electricity are eligible (§ 1 (1) a), (3) b c) Decree Nr. 389/2007), with separate tariffs applicable for wind energy, awarded through calls for applications (§ 1 (5) Decree Nr. 389/2007). The mandatory feed-in tariffs apply to

- solar energy,
- wind energy,
- hydro energy,
- biomass or bio gas,
- geothermal energy,
- energy produced indirectly or directly from biomass,
- landfill gas,
- gas from sewage treatment facility.

The amount of payment varies according to technology and size, and day periods (solar and wind energy are subject to a single standard tariff). The intraday periods depend on the area concerned and differ for weekdays and weekends/holidays. The mandatory feed-in tariffs are the following based on Government Decree 287/2008.:

Table 1: Feed-in tariffs from April 2010 (until recent 2011 regulations planned to take effect from July 2011)

	Peak period 06 am- 22 pm	Valley period 22 pm-1:30 am	Deep valley period 1:30 am-06 am	
	HUF/kWh	HUF/kWh	HUF/kWh	
Photovoltaics	28,72	28,72	28,72	
Under 20 MW RE plant*	32,10	28,72	11,72	
20-50 MW RE plant**	25,67	22,98	9,37	
20-50 MW wind plant	32,10	28,72	11,72	
5-50 MW hydro	19,96	12,77	12,77	

* excluding solar plants

** excluding wind and solar plants

The period of payment is set by the Energy Office in line with the statutory provisions and shall not exceed the pay-off period of the system (§§ 11 3)-4) Act Nr. LXXXVI of 2007).

Wind RES-E projects are subject to a capacity tender to receive feed-in-tariff based on the Law on Electricity (VET 7. § (2)) applied from January 1, 2008. The first tender was published in 2009 for 410 MW wind capacity (33/2009. (VI. 30.) KHEM Act). However, this tender has been technically suspended by the New Government in 2010, and the continuation is currently under review.

EEOP (Energy and Environmental Operative Program)

The structural fund scheme EEOP provides capital grants for RES projects. See section on RES-H&C for more detail.

Subsidies for energy crops - EAFRD (European Agricultural Fund for Rural Developement)

The measures of the New Hungary National Regional Development Strategic Plan (NARDP) promote the utilization of renewable energy sources in Hungary. The objective of NARDP is to ensure that the countryside, in addition to producing the required basic commodities, can intensively participate in the development of the bioenergy segment. The competitive production of commodities includes the special subsidization of energy crops. NARDP supports the production of renewable energy sources in three strategic categories: liquid biomass (bioethanol and biodiesel), solid biomass (ligneous and non-ligneous energy crops) and biogas. The subsidies are financed by the European Agricultural Fund for Rural Development (EAFRD) that provides funding for the competitive production of biomass and its processing into a primary half finished product and for the producers' own energy supply.

Decree 27/2007. (IV.17.) of the Ministry of Agriculture and Rural Development regulates the detailed criteria of subsidies granted from the European Agricultural Fund for Rural Development for the modernization of animal farms. Under the decree livestock farms eligible for funding aim to manage their manure disposal in biogas plants instead of insulated manure storage tanks, in accordance with the Nitrate Directive. The intensity of the subsidy is 50-60% on average for the power plant. The subsidy can be used for built and in-built technology, energy peripheries and logistics machinery.

Decree 44/2009. (IV. 11.) of the Ministry of Agriculture and Rural Development establishes the criteria for subsidies for the manufacturing of liquid biomass. This decree contains the detailed terms and conditions of subsidies for the setting up of non-food low capacity factories to produce crop-based raw spirits and raw oil from the European Agricultural Fund for Rural Development. The intensity of the non-refundable subsidy is 40-60%.

Decree 78/2007. (VII. 30.) of the Ministry of Agriculture and Rural Development establishes the detailed criteria for the use of renewable energy sources to produce energy for agricultural consumption from the European Agricultural Fund for Rural Development. The objective of the subsidy is to promote the wide-spread use of renewable energy sources in agriculture and reduce crop producers' dependence on fossil fuels. Agricultural applicants can submit tender bids for biomass-fired boilers to use for agricultural purposes. The intensity of the non-refundable subsidy is 35%.

Decree 72/2007. (VII. 27.) of the Ministry of Agriculture and Rural Development regulates the subsidies and detailed criteria for planting ligneous energy crops. Pursuant to the decree the planting and nurturing of ligneous energy crops multiplied by root suckers until their first harvest are deemed an activity eligible for subsidization. The intensity of the non-refundable subsidy is 40-60%. As a consequence it is assumed that the size of Hungarian energy crop plants will grow from 300 hectares in 2006 to 2,700 hectares by 2009. The target for 2013 has been set at 49,000 hectares.

Decree 71/2007. (VII. 27.) of the Ministry of Agriculture and Rural Development regulates the detailed criteria of subsidies granted for planting non-ligneous perennial energy crops from the European Agricultural Fund for Rural Development. Pursuant to the decree the planting of non-ligneous energy crops existing for a minimum of 5 years without re-planting is deemed an activity eligible for subsidization. Currently the planting of energy grass and Chinese reed are subsidized, with the anticipated addition of

Virginia fanpetals (Sida Hermphrodita L. Rusby) in the future. The intensity of the subsidy is 40-60% of the total costs.

3 Details RES-Heating and Cooling Support Policy

EEOP (Energy and Environmental Operative Program)

Based on joint EU and national funding, the structural funds scheme EEOP provides capital grants for enterprises (mainly SME), public administration bodies and institutions, and NGOs.

The Environment and Energy Operational Programme (EEOP) is one of the operational programmes intended to serve the overall objective, horizontal policies and the six thematic and territorial priorities of the New Hungary Development Plan (NHDP) – the National Strategic Reference Framework (NSRF) in EU terminology - applicable to the European Union's budget projection period between 2007 and 2013. So EEOP has been planned in the frame of the New Hungary Development Plan based on the experience of the National Development Plan 2004-2006.

The National Development Agency is the monitoring authority, and the Energy Centre is the implementing body for the energy priority axes. More information is available from

- National Development Agency www.nfu.hu Phone:+36-40-638-638
- Energy Center www.energiakozpont.hu Phone:+36-1-802-4300

The technical implementation of the operations (conditions of support, selection criteria, preferred fields, allocation of funds etc.) are based on the Energy Policy and the related "Strategy for the increasing of renewable energy source utilisation", which are being elaborated simultaneously with the OP. Different measures can not be cumulated in one project, but different project elements can be supported from different support systems. Within the EEOP the applications and granting procedure is continuous, while the applications and granting procedure in the National Energy Saving Plan (NEP) is periodical. Within the EEOP there is a limited amount of subsidy.

In EEOP 4.4.0 and in EEOP 4.2.0/B the subsidy that one single project can receive has a minimum of 1 million HUF (3,600€) and a maximum 1000 million HUF (3.6 million €), in EEOP 5.3.0/B the subsidy is between 1 Million HUF (3,600€) and 500 million HUF (1.8 million €).

The total amount of grant facility for EEOP chapter 4 that focuses on renewables for the 2007-2013 period was HUF 68,5 bn (EUR 250 m) of which only HUF 21.6 bn (31.5%) has been committed till the end of 2010. Meanwhile HUF 28 bn worth of projects are under evaluation, if considered improving utilization to 72%.

Heat and/or electricity production from renewable sources and bio-methane production (EEOP 2009/4.4.0)

The supported activities within the EEOP 2009/4.4.0 are: electricity generation from solar energy, biomass utilization for electricity or combined heat and power, utilization of hydropower, establishment or renovation of hydropower plants below 5MW, production and utilization of biogas, utilization of geothermal energy, utilization of wind energy, and

combining renewable energy sources. The upper limit for projects to be supported is 20 MWe, with the aim of giving preference to small and medium size projects.

The amount of subsidy can be minimum 1 million HUF (3,600 €) and maximum 1000 million HUF (3.6 million €), and the supported rate is minimum 10% and maximum is 70% of eligible costs. Enterprises, public administration and institutions, NGOs and other companies can be the potential beneficiaries. If a wind power station is connected to the national electricity network, only plants up to 50 KW are supported through EEOP 4.4.0

Local heat and cooling supply from renewable sources (The EEOP 4.2.0/B)

The supported activities within the EEOP 4.2.0/B are: development and enlargement of systems generating and using biogas from solid and/or liquid material, landfill gas for heat consumption, geothermal energy utilization, installation of heat pumps, renewable energy utilization for cooling, combining renewable energy sources and establishment of communal district heating systems using renewable energy sources, total or partial replacement to renewable sources.

The amount of subsidy can be minimum 1 million HUF (3,600 €) and maximum 1000 million HUF (3.6 million €), and the supported rate is minimum 10% and maximum is 70% of eligible costs. Enterprises, public administration and institutions, NGOs and other companies could be the potential beneficiaries.

Building energetic developments combined with renewable energy utilization subsidy schemes encourage the use of district heating and cooling using RES (EEOP-5.3-0/B)

The supported activities within the EEOP 5.3.0/B are: Supporting energy conscious architecture, reduction of heat loss during renovation combined with renewable energy (solar panel, biomass, geothermal, heat-pump), modernization of heating, cooling and domestic hot water systems in institutions combined with renewable energy (solar panel, biomass, geothermal, heat-pump), and the modernization of lighting system combined with renewable energy sources (PV for grid or separate). The tender supports small and medium cost projects, providing minimum 10 % and maximum 70% support rate. The total amount of the subsidy is minimum 1 million HUF (3,600 €) and maximum 500 million HUF (1.8 million €).

RES use in agriculture

Decree 78/2007. (VII. 30.) of the Ministry of Agriculture and Rural Development establishes detailed criteria for the use of renewable energy sources to produce energy for agricultural consumption from the European Agricultural Fund for Rural Development. The objective of the subsidy is to promote the wide-spread use of renewable energy sources in agriculture and reduce crop producers' dependence on fossil fuels. Agricultural applicants can submit tender bids for biomass-fired boilers to use for agricultural purposes. The intensity of the non-refundable subsidy is 35%.

Green Investment Scheme

Based on the Kyoto Protocol the state proceeds from the sale of CO₂ emission rights can be used to finance Green Investments. Most of these funding have been used by politically driven block house and family house renovation projects mostly for energy efficiency improvements but also including some renewable energy at limited scales.

Subsidy - Panel Programme for Prefabricated Houses (national fund)

In the Hungarian support system the other major subsidy available for the residential sector is the Panel Programme managed by the Ministry of Local Government and Regional Development. The programme promotes the modernization and renovation of pre-fabricated buildings with the aim of saving energy. From the targeted appropriation of supporting the renovation of residential dwellings and their environment, subsidies can be granted to increase the use of renewable energy sources, to replace traditional energy sources with renewables, to promote energy production, storage, transport and possible feed-back to the network.

The Ministry of Transport, Telecommunication and Energy is the monitoring authority and the Energy Centre is the implementing body. For more information:

- Ministry of Transport, Telecommunication and Energy www.khem.gov.hu
Phone:+36-1-475-3434
- Energy Centre www.energiakozpont.hu Phone: +36-1-802-4300
- NEP (National Energy Saving Plan)

The subsidy entitled NEP-4, announced in the framework of the National Energy Saving Plan, provides non-refundable grants to private individuals, blocks of flats and building societies to increase the use of renewable energy sources. Such grants can cover up to 35% of the costs but cannot exceed the amount of HUF 1,470,000 (€ 5,300). There is a new call for tender in NEP in each year, and it is open till the allocated budget is exploited. Within the NEP 1.5 billion HUF (5.4 million €) budget was available annually in past years. This program is evaluated in every year, and all the experiences are implemented in the next year. The beneficiaries can also get low interest loans from the frame of the National Energy Efficiency Program (NEP). The granting procedure in the case of subsidy through NEP is periodical.

4 Details RES-Transport Support Policy

Tax relief in case of minimum share of biofuels

The compulsory blending standards have been removed. However, gas companies must use more than 4.4% biogenic components in their fuels based on volume to be eligible for the lower excise tax. If they do not meet the 4.4% criteria, the normal excise tax will be imposed. The preferential tax is 32 €/hl lower for diesel oil and 33 €/hl lower for gasoline compared to the normal tax rate.

The difference between the preferential and the normal excise tax level takes 7-10 % off the price of the fuel at current prices. Excise tax on biofuel was lowered in July 2007 and then lowered again from January 2008.

Supporting the establishment of low and medium-capacity bio ethanol factories (EEOP-2009-4.6-0.)

For an introduction of EEOP, see the section on RES-H&C above. The key aim of the scheme is to subsidize projects aimed at establishing high and medium capacity bioethanol factories in the form of non-refundable grants. Implemented projects

contribute to a growing share of biological motor fuels including bioethanol and the spread of renewable energy sources through the energy supply of manufacturing capacities by renewables. Applicants are invited to submit their tender bids in a single-round tender.

Decree 44/2009. (IV. 11.) of the Ministry of Agriculture and Rural Development establishes the criteria for subsidies for the manufacturing of liquid biomass. This decree contains the detailed terms and conditions of subsidies for the setting up of non-food low capacity factories to produce crop-based raw spirits and raw oil from the European Agricultural Fund for Rural Development. The intensity of the non-refundable subsidy is 40-60%.

5 RES-E Grid Integration

Plant operators are contractually entitled to connection to the grid. The grid operator is obligated to enter into a grid connection contract. (§§ 35 (1), 58 (1) and (2) Act Nr. LXXXVI of 2007). The contract shall be in line with the conditions and procedures stipulated by other legal provisions or by the grid operator's terms and conditions, which shall be approved by the Energy Office (§ 58 (1) Act Nr. LXXXVI of 2007).

The grid operators (often in the same ownership as conventional generators – EON, EdF) may refuse to connect a system to the distribution or transmission grid for technical reasons. However, when refusing the connection of a system, they are obliged to specify the conditions under which connection is granted. If technically possible, they shall provide for another connection point (§ 27 (2), (3) Act Nr. LXXXVI of 2007).

In the original law, the grid operator was allowed to refuse to buy energy from RES power plants below 100 kW. This situation has changed: the grid operator cannot refuse to buy energy from power plants below 100 kW anymore. RES-E systems shall be connected to the grid at a priority (§ 35 (3) Act Nr. LXXXVI of 2007). Furthermore, renewable energy systems shall be authorised at a priority by the Energy Office (§ 78 Act Nr. LXXXVI of 2007).

“Shallowish” connection charging applies: only a certain share of grid reinforcement costs has to be carried by the RES-E project. Presently grid operators cover 50% of the connection costs, while the other 50% is borne by the project directly.

6 RES Production, Potential and Market Development

The Hungarian government's strategy on the increased use of renewable energy sources (2007-2020 Energy Policy sets a target of 186.4 PJ from renewable energy by 2020, compared to 55 PJ in 2006. The target is broken down by sector: 79.7 PJ (9470 GWh) in electricity production, 87.1 PJ in heat production and 19.6 PJ from biofuel within fuel consumption.

RES-E

In the first half of the decade, the electricity production from biomass was increasing rapidly, mainly due to brown field co-firing fuel switch projects, thereby also avoiding the

closure of inefficient hard fuel power plants (Pécs, Ajka, Vértes, Kazincbarcika). These plants however remained very inefficient with net efficiencies of 25%.

Recent regulations aim to limit the use of round wood for energy purposes, which apply to all new power plants and from 2011 are likely to apply to fuel switched power plants as well. The new law under proposition calls for a special feed-in-tariff applicable only to generators using biomass meeting the following sustainability criteria:

- Certificate of origin
- Stricter certification
- Clear definition of firewood (preliminary proposal was wood with less than 8 cm in diameter)

In addition, new biomass capacity thresholds for FIT eligibility are to be introduced:

- Forestry biomass limited to under 10 MW
- Biomass power plant limited to under 20 MW upon the additional precondition that public district type heating is generated
- Biomass power plants over 20 MW can receive FIT only if agricultural by-product residue is used

There is also a planned regulation for a minimum net efficiency (see below) for biomass power plants, excluding plants below this level from the special tariff.

	Minimum net efficiency
Biomass fuelled plant	30%
Biomass fuelled plant using mixed fuel	32%
Biogas fuelled plant > 500 kW	35%
Biogas fuelled plant < 500 kW	32%
Biogas fuelled plant using mixed fuel	40%
The required efficiency requirements for heat and electricity cogeneration nominal production of the event include 15 ° C ambient temperature, 1,013 bar pressure, 60% relative humidity. ¹⁰¹	

As a result of the stricter law, these large and old biomass power plants could be excluded from the special feed in tariff scheme and would have to discontinue operation if they are unprofitable, or would have to make additional investments.

There has been a lack of green field projects due to questionable economic feasibility. There are advanced stage plans for large size straw plants to be constructed in the near future.

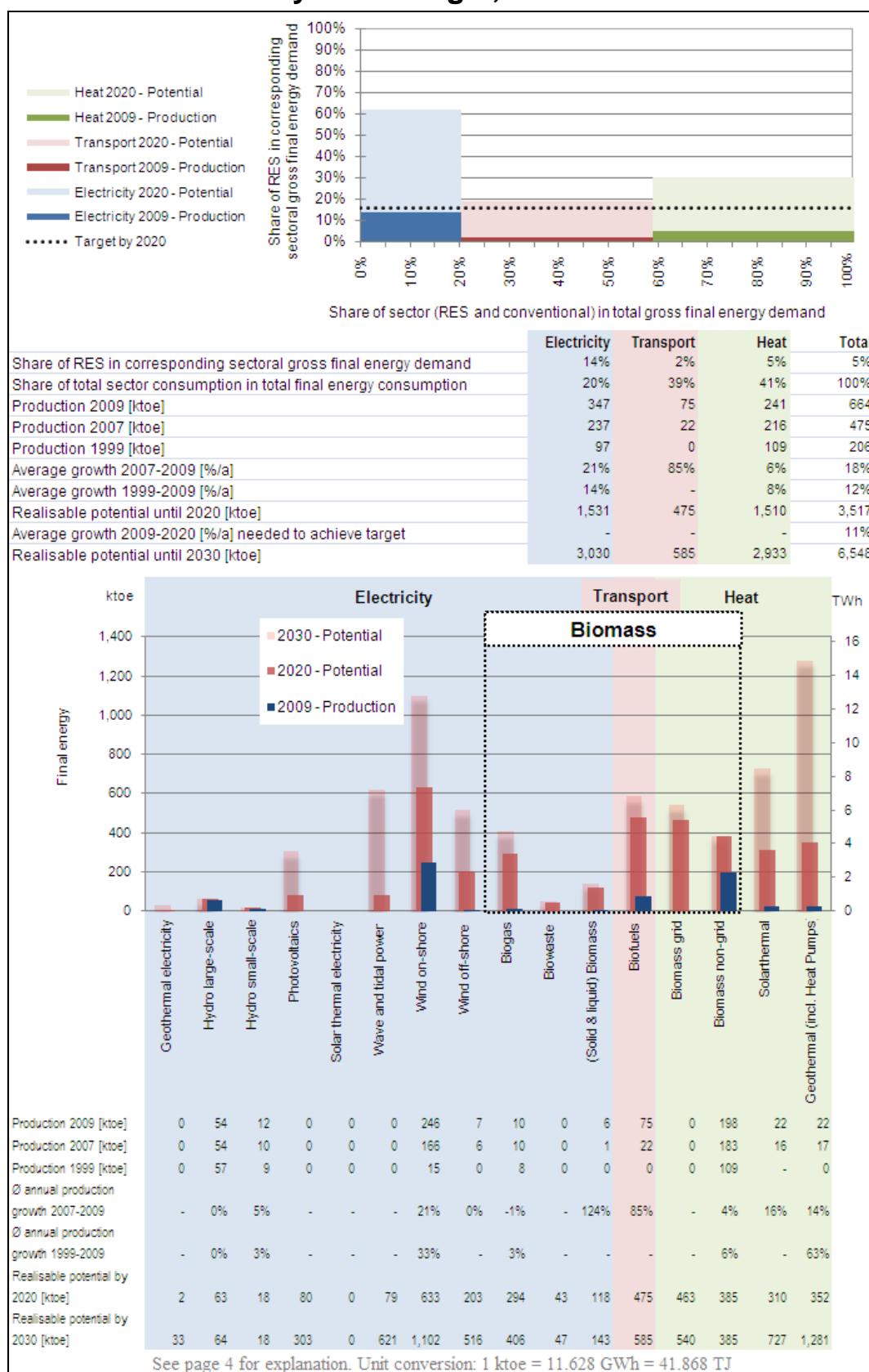
¹⁰¹http://www.kormany.hu/download/6/b9/30000/RENEWABLE%20ENERGY_REPUBLIC%20OF%20HUNGARY%20NATIONAL%20RENEWABLE%20ENERGY%20ACTION%20PLAN%202010_2020.pdf

Wind energy capacity has rapidly expanded in the second half of the decade adding some 330 MW of capacities. However, further expansion plans of a 410 MW capacity tender in 2009 did not succeed, as in 2010 the tender was suspended by the new government. Due to grid flexibility issues the technical requirements have also become stricter (introduction of gradients and minimum connecting speed).

RES-H

Biomass accounts for the largest share of Hungary's RES-H production. Forestry wastes and sawmill by-products are currently burnt in furnaces to provide heat for the forestry industry or briquetted for retail sale.

IRELAND - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

Ireland has set an overall renewables target of 16% of total final consumption by 2020. However, due to budgetary constraints a number of policies that support renewable electricity, heat and transport have been closed. Nevertheless, other new schemes have been introduced to help meet targets. A new National Biofuels Obligation Scheme has been introduced in order to help Ireland to meet its EU RES-T target of 10% renewables in transport energy by 2020. The existing REFIT scheme that provides grants for renewable energy measures for electricity generation is also to be expanded, pending state aid clearance by the European Commission.

1 Summary: RES Support Policy

RES-E

The Government's 2007 White Paper¹⁰² sets RES-E targets of 15% in 2010 and 33% in 2020 (increased to 40% in October 2008). The key policy instrument for the support of RES-E in Ireland is the feed-in tariff (FIT). The FIT scheme (REFIT) was launched in May 2006 to include support for hydro, onshore wind and biomass. An additional scheme, REFIT II (also known as REFIT 2009), is still pending state aid clearance from the European Commission. The updated scheme will include support for additional technology categories (anaerobic digestion, high efficiency CHP, ocean and offshore wind). The REFIT scheme has been successful in increasing RES-E deployment in Ireland since its introduction, and Ireland has achieved its 2010 RES-E target and is on track to meet its 2020 target.

RES-H&C

Ireland's Energy White Paper sets RES-H targets of 5% in 2010 and 12% in 2020. The main support instrument for RES-H in Ireland is the grant scheme "Greener Homes Scheme" for domestic applications. Another measure for commercial and public sectors, the Renewable Heat Deployment Programme (ReHeat) was closed due to lack of budget. Grants for biomass CHP and anaerobic digestion CHP (under the "CHP Deployment Scheme") have also been stopped due to lack of budget.

RES-T

Ireland has a number of implemented measures to support the build up of the nascent biofuels industry in the country. A national Biofuels Obligation Scheme (BOS) was introduced in 2010 which obliges all road transport fuel suppliers to integrate a percentage of biofuels into their sales.

A National Energy Crop Premium is also available for farmers, in addition to any EU support for growing energy crops, and establishment grants are also available to farmers wishing to grow miscanthus or willow.

The initial obligation level for the BOS is that 4 litres in every 100 litres of road transport fuel must be biofuel. It is intended that BOS will be continued as the main instrument to achieve the EU target of 10% renewable transport fuel at least to 2020.

102 Department of Communications, Marine and Natural Resources. Delivering a sustainable energy future for Ireland. <http://www.dcenr.gov.ie/NR/rdonlyres/54C78A1E-4E96-4E28-A77A-3226220DF2FC/27356/EnergyWhitePaper12March2007.pdf>

2 Details RES-Electricity Support Policy

Renewable Feed-in tariff (REFIT)

The REFIT is a feed-in tariff scheme which is managed by the Department of Communications, Energy and Natural Resources (DCENR) and is the main support instrument in place for RES-E projects¹⁰³. An additional scheme, REFIT II, is planned for introduction once state aid clearance has been obtained from the European Commission which will include additional technology categories.

The scheme was launched on 1 May 2006. The initial REFIT scheme was designed to ensure that Ireland would reach its 2010 renewable electricity target. It provided support for small hydro, wind and landfill gas and biomass combustion projects. Support for any particular project cannot exceed 15 years and may not extend beyond 2024, implying that REFIT payments should start no later than the end of 2009. However, if a project is delayed by circumstances beyond the developer's control, then an extension beyond this deadline can be requested. Under REFIT II support is extended to cover wave and tidal projects, and offshore wind, anaerobic digestion high efficiency CHP and biomass co-firing. Any particular project cannot exceed 15 years and may not extend beyond 2030. Access to the ocean energy feed in tariff is only available until 2015.

Under the REFIT, a maximum size of 5MW is in place for hydro power projects. There is no such restriction on other eligible technologies (i.e. biomass or wind projects), neither is there a minimum size limit for RES-E projects. Note that support for biomass CHP to produce heat and electricity is eligible for plants larger than 20MW that have an electrical efficiency of >30% and an overall CHP efficiency of >80% and for small to medium-scale plants (1MW to 20MW) that have an electrical efficiency of >20% and an overall CHP efficiency of >70%. The initial REFIT scheme aimed to allocate support towards the construction of 400MW of RES-E by 2010. REFIT 2009 has a new target of 16% of energy from renewable sources by 2020.

There is no cap on the total volume of electricity produced per year. Overall budgetary control is maintained by controlling total installed capacity supported. The support programme is allocated up to a cumulative capacity limit of 1,450 MW and the budget foreseen is €150 million overall, or €10 million annually¹⁰⁴. The same project cannot be supported by more than one support measure.

The terms and conditions do not refer specifically to certified equipment. However, applications for REFIT cannot be approved unless the generator has a connection offer from the network operator who will approve/disapprove the equipment being connected. A generator must apply to the Commission for Energy Regulation (CER) for an Authorisation to Construction licence. As part of the application process they must provide a detailed description of measures to be taken by the applicant to ensure the safety and security of the electrical system.

103 Further information regarding the scheme can be found at:
<http://www.dcenr.gov.ie/Energy/Sustainable+and+Renewable+Energy+Division/Sustainable+and+Renewable+Energy+Division.htm>

104 See the Commission's Decision on State Aid: N571/2006.
<http://www.dcenr.gov.ie/Energy/Sustainable+and+Renewable+Energy+Division/Sustainable+and+Renewable+Energy+Division.htm>

REFIT is a feed-in tariff and not a feed-in premium. In order to be eligible, the project developer will require planning permission, signed grid connection offer and an offer of a power purchase agreement from a registered supply company.

FITs for each RES-E source are listed in table 1 below. As can be seen in this table the tariff in place for onshore wind is dependent on the project size (i.e. 5 MW threshold). However, there are no other criteria that differentiate tariff support.

Table 1: Summary of the FITs per technology type in the REFIT schemes

Technology	Tariff duration	2006 (€/MWh)	2009 (€/MWh) ¹⁰⁵
REFIT			
Onshore wind > 5MW		57	66.353
Onshore wind < 5MW		59	68.681
Biomass (landfill gas)		70	81.486
Other biomass *		72	83.814
Hydro		72	83.814
REFIT II			
Anaerobic digestion			120
High Efficiency CHP			120
Offshore wind (from 2008)			140
Wave (from 2008)			220

* Co-firing of biomass in power stations with biomass is eligible for support under REFIT.

A new project is eligible to receive the tariff for a period of 15 years. Support for existing projects is guaranteed to remain at the same level for the whole support period.

REFIT tariffs are subject to an annual inflationary rise according to the consumer price index (CPI) published by the Central Statistics Office¹⁰⁶. This tariff increase is applicable for both new and existing projects. Were there to be a future significant downward shift in e.g. wind turbine prices, this would require a fundamental review of the tariffs published. REFIT II tariffs would not be subject to an inflationary adjustment, however.

A National Climate Change Bill was submitted to the Irish Parliament in December 2010, and included provisions such as a target to reduce greenhouse gas emissions by an average 2.5% per year, compared to 2008 levels, by 2020, and a 40% reduction by 2030. A National Mitigation Plan would set out the policies and measures required to meet these targets. However, a general election was triggered before this Bill could be approved by the Parliament, and scrutiny of the Bill has therefore been delayed.

105 Based on information from the Department of Communications, Energy and Natural Resources of Ireland

106 <http://www.cso.ie/statistics/conpriceindex.htm>

3 Details RES-Heating and Cooling Support Policy

Ireland has a number of grant funding schemes available to promote RES-H in the country. The Government's White Paper sets RES-H targets of 5% in 2010 and 12% in 2020. Key support schemes are detailed below.

Renewable Heat Deployment Programme (ReHeat)

The Renewable Heat Deployment Programme¹⁰⁷ (ReHeat) was a grant scheme for the deployment of RES-H systems in industrial, commercial, public and community premises in Ireland. This scheme was closed due to budgetary constraints at the beginning of 2011. The programme was administered by Sustainable Energy Ireland (SEI) and was an expansion of the previous Bioheat Boiler Deployment Programme which only supported woodchip or pellet boilers.

The ReHeat scheme was launched in March 2007 and funding is available until 2010. Grant support of up to 30% of eligible costs is available for capital investment projects and support of up to 40% of eligible costs is available for feasibility study projects.

Grants were available for the deployment of the following qualifying RES-H systems:

- Wood Chip or Pellet Boilers
- Solar Hot Water Heating Systems
- Heat Pumps
 - Horizontal ground collector
 - Vertical ground collector
 - Water (well) to water
 - Air source

Qualifying technologies had to meet certain standards of manufacture, such as the CE mark, and certain efficiency standards in the case of biomass boilers¹⁰⁸.

In the 2006 Budget presented in December 2005, the Minister of Finance announced the allocation of €65 million over the period 2006 to 2010 to "launch several innovative grant schemes relating to biofuels, CHP, biomass commercial heaters and domestic renewable heat grants". An indicative allocation of €22 million was made for a Bioheat Boiler Deployment Programme to run from 2006 to 2010. In the 2007 Budget, an additional €4 million was announced to expand the Bioheat Boiler Deployment Programme to include Solar Thermal Systems and Heat Pumps. There is no annual cap to the available funding.

107 http://www.sei.ie/Grants/Renewable_Heat_Deployment_Programme/

108 Further information on eligibility criteria is available here:
http://www.sei.ie/Grants/Renewable_Heat_Deployment_Programme/How_to_Apply/Eligibility_Criteria/

Greener Homes Scheme

The Greener Homes Scheme¹⁰⁹ offers grant funding for domestic RES-H. The scheme is administered by SEI.

Grants are available to homeowners who intend to purchase a new RES-H system for existing homes which were first occupied before 30 June 2008. Phase III of the scheme opened on 22 July 2008 and applications can be made at any time.

The following grants are available for the following technologies:

Solar Thermal Space and or Hot water heating (Evacuated Tube)	€300 per m ² (to max 6 m ²)
Solar Thermal Space and or Hot water heating (Flat Plate)	€250 per m ² (to max 6 m ²)
Heat Pump - Horizontal ground collector	€2,500
Heat Pump - Vertical ground collector	€3,500
Heat Pump - Water (well) to water	€2,500
Heat Pump - Air source	€2,000
Wood Chip/Pellet Stove	€800
Biomass / Wood pellet Stove with integral boiler	€1,400
Wood Chip/Pellet Boiler	€2,500
Wood Gasification Boiler	€2,000

SEI manages a list of registered installers of RES-H systems.

Biomass CHP/Anaerobic Digestion (AD) CHP Call for Proposals¹¹⁰

As part of the 2006 Budget announcements, the Minister of Finance announced an indicative allocation of €11 million for a CHP programme to run in the 2006 to 2010 timeframe. This programme has now closed due to budgetary constraints.

The Biomass CHP / anaerobic digestion CHP Call for Proposals, administered by SEI, had an indicative budget of €5.8 million (out of the €11 million), and provided grant support to assist the deployment of CHP systems fuelled by biomass. To qualify, projects had to start operation before 31 December 2010.

The Programme provided up to 30% investment grant support to eligible projects, dependent on the size of the project and the technology.

High efficiency CHP will be supported in the REFIT II scheme¹¹¹.

109 <http://www.sei.ie/Grants/GreenerHomes/>

110 http://www.sei.ie/Grants/Biomass_CHP_Anaerobic_Digestion_CHP_Call_for_Proposals/

111 Refer to page 5: <http://www.dcenr.gov.ie/NR/rdonlyres/3B13ECAA-9351-41E0-8B44-7C02E98E4F50/0/AdditionalREFITcategories.pdf>

4 Details RES-Transport Support Policy

Ireland has a number of implemented measures to support the build up of the nascent biofuels industry in the country. The mineral oil tax relief scheme ended in December 2010 and was replaced by the biofuels obligation scheme. The national energy crop premium scheme ended in 2009, following an EU decision to end EU energy crops schemes.

Bioenergy Scheme

The Department of Agriculture, Fisheries and Food also operates the Bioenergy Scheme which offers establishment grants to farmers to grow miscanthus and willow for the production of biomass suitable for use as RES (electricity, heat or transport). The scheme was introduced on a pilot basis in February 2007 and lasted until 2009. It was then relaunched with a further €1.6 million in February 2010. Eligible costs include those associated with ground preparation, fencing, vegetation control, the purchase of planting stock, planting and first year cutback, and costs associated with other approved operations. Aid is payable on 50% of the approved costs associated with establishing the crop, subject to a maximum payment rate of €1,450 per hectare, with the balance to be invested by the applicant. Funding to plant a further 1,000 hectares in 2010 was made available and 91 farmers submitted applications for 867 hectares. The last of the pre-planting approvals are currently issuing.

Public fleets

The Department of Transport (DoT) has instructed public transport operators to move to a 5% biodiesel blend in the current fleet with a view to ensuring that all new buses, as part of future fleet replacement, can operate on a 30% blend, subject to technical and logistical constraints. The obligation was planned to be implemented in 2009. The DoT will also continue to look at the technical and economic feasibility of buses and heavy goods vehicles (HGV) operating on 100% pure plant oil (PPO), as well as any potential regulation of engine modification or suitable fuels.

Biofuels Obligation Scheme¹¹²

In the March 2007 Energy White Paper Ireland, plans were announced introduce a Biofuels Obligation Scheme (BOS) by the end of 2009. The scheme was actually introduced in July 2010. The scheme is administered by the National Oil Reserves Agency (NORA). NORA is currently responsible for ensuring that Ireland complies with its EU and international requirements for emergency oil supplies. The agency is funded by a levy on fuel, which it collects from oil suppliers. It is intended that BOS will be continued as the main instrument to achieve the EU target of 10% renewable transport fuel at least to 2020.

Ireland intends to increase the obligation level gradually over time to the extent that supply and technologies allow, and to ensure that the country meets its 2020 RES-T target set by the EU.

¹¹²<http://www.dcenr.gov.ie/Energy/Sustainable+and+Renewable+Energy+Division/Biofuels+Obligation+Scheme.htm>

The obligation is set on suppliers of petrol and auto-diesel, applied at the point at which excise duty is normally applied to Irish transport fuels. The obligation requires suppliers to include at least 4% of biofuels in their fuel mix. Obligated suppliers are required to report the details of their fuel sales on a monthly basis to NORA. The suppliers are awarded certificates for every 1 litre of biofuel or biogas they place on the market. For biofuels produced from biodegradable waste, residue, non-food cellulosic material, lignocellulosic material or algae, 2 certificates per litre are awarded. These certificates can then be traded among participants. There is a penalty for non-compliance with the scheme, which is calculated on the basis of the number of certificates short multiplied by the established amount per certificate. The legal basis for the scheme is Energy (Biofuel Obligation and Miscellaneous Provisions) Act 2010.

The proposed initial obligation level is 4% (by volume) in 2010. A penetration rate of 4% by 2010 (by volume) would result in approximately 220 million litres of biofuels being placed on the market in Ireland in that year. The rate and pace of the increase in obligation level will be determined following a review of the operation of the BOS in 2012 and EU policy developments and experience in other Member States.

There is no price cap proposed for BOS certificates, but obligated parties who do not meet their obligation will be required to pay a levy. The levy is 0.20€ per litre.

Support for other RES-T options

In February 2008 the DoT launched a Vision for 2020: Sustainable Travel and Transport public consultation¹¹³, which sets out a vision for a sustainable transport system by 2020 trying to reduce discretionary demand for travel and improve energy efficiency.

The need for a Sustainable Travel and Transport Action Plan (STTAP) also emerged during the preparation of the Energy White Paper Delivering a Sustainable Energy Future for Ireland and the revised National Climate Change Strategy (NCCS) 2007-2012, when it was recognised that adverse trends in the transport sector in Ireland had to be addressed.

In April 2009 the government introduced an Electric Vehicle Grant Scheme. The scheme provides a grant of up to €5000 for the purchase of Battery Electric Vehicles (BEV), and up to €2,500 towards the purchase of Plug-In Hybrid Electric Vehicles in 2011 and 2012. The scheme is in addition to full vehicle registration tax relief for BEVs and relief up to €2500 for plug in vehicles. The objective of the scheme is to achieve 6,000 electric passenger vehicles in Ireland by 2012.

5 RES-E Grid Integration

At present, the grid operator, Eirgrid, is obliged to grant access to the grid according to non-discriminative criteria. RES-E is not given priority (compared to conventional generators).

Dispatch of plant is initially determined on the basis of an unconstrained merit order of all available plants. RES-E generators are entitled to priority dispatch, subject to system

¹¹³ <http://www.sustainabletravel.ie>

security considerations. Autonomous generation such as wind and hydro below 5 MW is effectively always dispatched.

Connection charges to the distribution network are considered to be "shallow" in that the connecting generator pays for the assets required to connect it to the distribution network. Upstream grid reinforcement costs are paid for by the network operator and split among all network users.

RES-E projects are responsible for forecasting production. Payments are based on uninstructed imbalances and whether the imbalance falls inside or outside of a tolerance band (set annually ex-ante)¹¹⁴.

Autonomous generators are not required to pay for the balancing of energy.

Eirgrid has implemented a number of different initiatives to facilitate the generation of renewable energy. One is a 'gate' approach to wind-powered electricity generation which provides for large batches of connection applications from wind farms to be studied together. Eirgrid is also undertaking a number of technical studies to ensure that future operational practices are sufficient and suitable for increased renewable energy generation in the future.¹¹⁵

6 RES Production, Potential and Market Development

RES-E

The share of electricity from renewable sources was 14.4% in 2009. Wind accounted for 10.5% of all electricity generation in the same year, with an installed wind capacity of 1,379MW. Hydro power accounted for 3.2% of all electricity. Overall renewable capacity in 2010 was 1,441MW.¹¹⁶

Traditionally, hydropower has been by far the most important RES-E source in Ireland. However, in recent years production from wind, primarily onshore but increasingly offshore, has increased significantly and since 2004/2005, represents the dominant RES-E source. Ireland is now ranked fourth in the world in terms of contribution of wind energy to electricity use, supplying 8.7% of the total electricity demand¹¹⁷. Biogas, primarily from landfill projects, contributes a small share of the overall RES-E generation mix.

Wind energy will continue to play a leading role in Ireland's RES-E generation in the coming years. Tidal and wave power is also set to play a future role. The Irish Government has established the Ocean Energy Development Unit¹¹⁸ to accelerate the

¹¹⁴ Ireland Country Report, Innovative Electricity Markets to Incorporate Variable Production to IEA – Renewable Energy Technology Deployment, 2008, http://www.iea-retd.org/files/IEMVP_Ireland%20Country%20Report.pdf

¹¹⁵ <http://www.eirgrid.com/renewables/facilitationofrenewables/>

¹¹⁶ http://www.seai.ie/Publications/Statistics_Publications/SEI_Renewable_Energy_2010_Update/RE_in_Ire_2010update.pdf

¹¹⁷ http://www.ieawind.org/AnnualReports_PDF/2009/ExSumm.pdf

¹¹⁸ http://www.sei.ie/Renewables/Ocean_Energy/Ocean_Energy_Development_Unit/

development of these technologies, with a specific objective of connecting 500MW by 2020. The unit is currently in Phase 2 (2008-2012) of the Ocean Energy Strategy and is focused on taking successful prototype designs to fully operational pre-commercial models. Co-firing of biomass is also increasing due to a government target (as announced in the Government White Paper) that peat power stations will need to co-fire a minimum of 30% biomass by 2015 (equivalent to around 110MW). A Miscanthus Pilot Demonstration Programme was launched on 30th April 2010 to provide assistance for the deployment of renewable heating systems fuelled by miscanthus in commercial, industrial, services and public sectors and also community organisations and Energy Supply Companies (ESCOs), in Ireland. The scheme will cover 5 to 15 pilot boiler sites and will provide information on the suitability of miscanthus as a boiler fuel in Ireland.¹¹⁹

RES-H&C

The country's target was (and is) to achieve 5% RES-H by 2010 and 12% by 2020. Forecasts to 2020 estimate a total thermal consumption of 4,931 ktoe in 2020 requiring 591 ktoe of renewable energy in order to meet the RES-H target of 12% by 2020. This would require an annual growth rate of 10%, much higher than the 3% growth rate seen on average between 1990 and 2008.

The vast majority of RES-H use and potential in Ireland is from biomass, in particular the use of waste wood in industry. The introduction of the Greener Homes Scheme for the domestic sector reversed the overall declining trend in RES-H in households (45 ktoe in 1990 to 15 ktoe in 2003). In 2008, RES-H in homes accounted for 44 ktoe and represented 22% of total RES-H use in Ireland.

Renewable heat stood at 3.6% of all thermal energy in Ireland in 2008. The majority of this renewable thermal energy came from industrial biomass (70%), which accounts for 2.8% of total thermal energy use in Ireland. Industrial biomass use increased dramatically between 1990 and 2008 (3.9% annual growth), although this increase has levelled out since 2005.¹²⁰

RES-T

The year 2005, saw the first biofuels production in Ireland. Biofuels increased sevenfold between 2006 and 2007, albeit from a low base and accounted for 0.5% of petrol and diesel consumption in 2007¹²¹. In absolute terms, RES-T increased from 1 ktoe in 2005 to 3 ktoe in 2006 and 21 ktoe in 2007¹²². Of the 21 ktoe biofuels in 2007, the majority of this (16 ktoe) was biodiesel.

¹¹⁹<http://www.dcenr.gov.ie/Press+Releases/Minister+Ryan+announces+new+Government+support+price+for+bio-energy.htm>

¹²⁰http://www.seai.ie/Publications/Statistics_Publications/SEI_Renewable_Energy_2010_Update/RE_in_Ire_2010update.pdf

¹²¹ Sustainable Energy Ireland (2008) Energy in Ireland 1990-2007:
http://www.sei.ie/Publications/Statistics_Publications/Energy_in_Ireland/Energy_in_Ireland_1990-2007.pdf

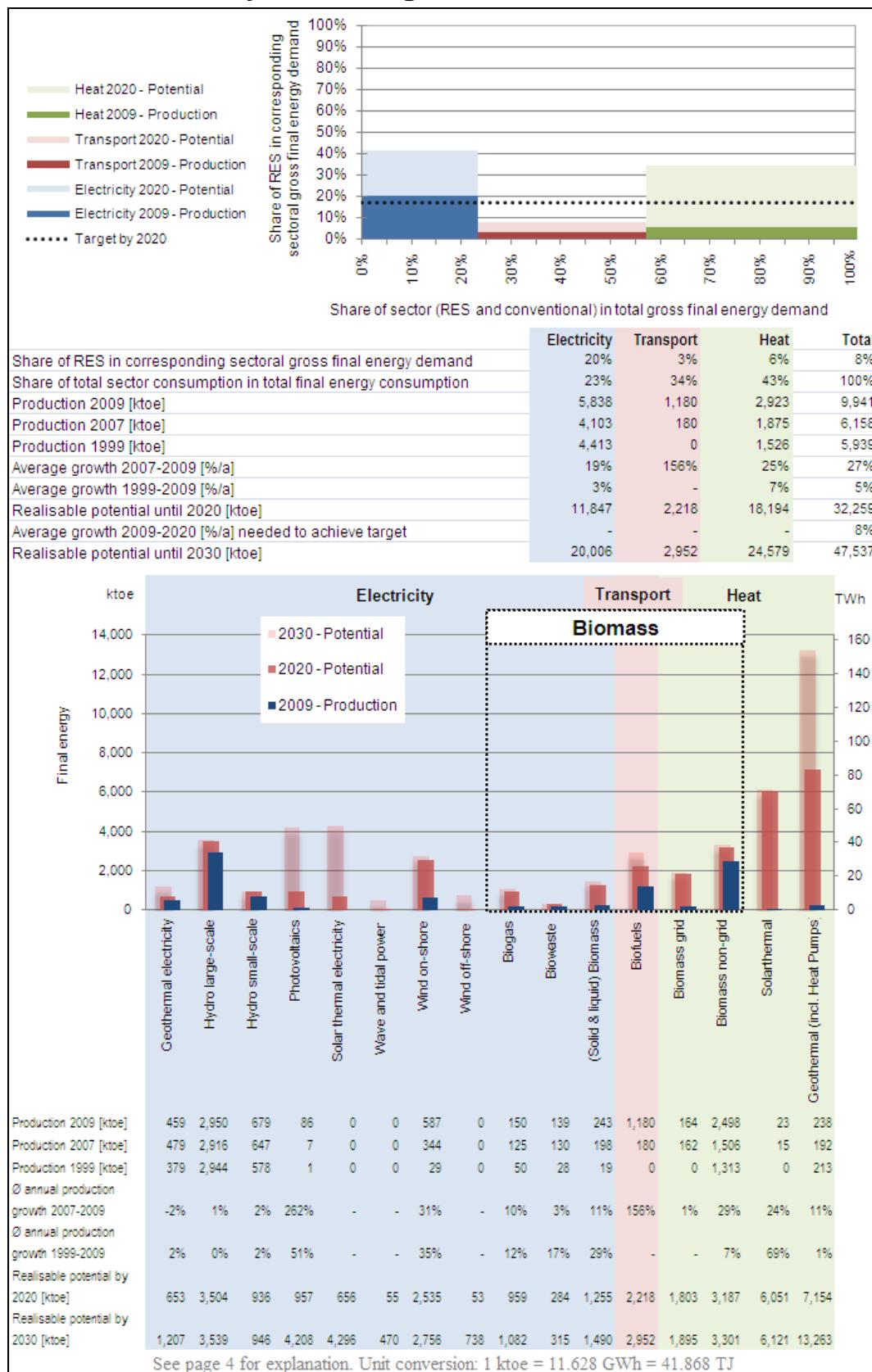
¹²² Sustainable Energy Ireland (2008) Renewable Energy in Ireland 2008 Report:
http://www.sei.ie/Publications/Statistics_Publications/SEI_Renewable_Energy_2008_Update/Renewable%20Energy%20Update%202008.pdf

In 2009 it is estimated that 1.5% of road transport fuel came from biofuels. The government target of 2% by 2008 was therefore not met. Biodiesel accounts for 63% of biofuel usage in 2007, with the remainder from bioethanol and pure plant oil¹²³.

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http://www.seai.ie/Publications/Statistics_Publications/SEI_Renewable_Energy_2010_Update/RE_in_Ire_2010update.pdf

ITALY - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

Since 2009 there haven't been major changes in the legislative landscape, until March 2011, when a deep revision of the support policy was designed by decree law 28 of March 3rd, in order to try to reduce the impact of the incentive policy on electricity bills.

From January 1 2013 the quota system will be replaced by a tender scheme for new plants (except biomass) with a capacity above determined thresholds. Below these thresholds a feed-in tariff will apply.

The Italian Government approved Legislative Decree number 28 that transposes into the Italian law the Directive 2009/28/EC. The Decree reforms the whole system of incentives for RES and introduces some changes in the administrative procedures.

The Legislative Decree actually delineates only the general framework, delegating the definition of the specific norms to further Ministerial Decrees to be adopted namely by the Ministry of the Economic Development (usually in concert with the Ministry of the Environment and Land and Sea Protection) and in some cases with the agreement of the so called "Unified Conference" of regions, provinces and towns.

The new law actually requires the adoption of 14 Ministerial Decrees until the end of 2011, the new system coming into force from 2012 for RES-H and from 2013 for RES-E with no significant changes for the transport sector.

Nevertheless there are few changes that come into force immediately:

- A 22% cut on the price of green certificates recognized by the System Operator (GSE) accordingly to the law 244/2007;
- The repeal from May 31st, 2011 of the so called "Terzo Conto Energia" (the third revision of the mechanism that just came into force in January) that provides incentives for PV with a new Ministerial Decree to be adopted by the end of April;
- The provision of 1 MW (or 10% of the area) cap on the installed capacity eligible for incentives of PV plants built on agricultural land;
- The set-up of specific incentives for biomethane (a Ministerial Decree to be adopted in 120 days should define the new regime).

1 Summary: RES Support Policy

RES-E

The Italian system of incentives for RES-E is based on:

- Tradable green certificates (TGC) with technology banding;
- Feed-in tariffs (15 years) for electricity produced by renewable energy plants with a maximum power output of 1 MW (0.2 MW for wind energy), as an alternative to the green certificates;
- An incentive scheme (“Conto Energia”) for photovoltaic and solar thermodynamic plants through the feed-in premium mechanism;
- Simplified means of selling energy produced and fed into the grid at fixed market prices for small producers (indirect sale through GSE - “Ritiro dedicato”);
- Net metering mechanism for plants with a maximum power output of 200 kW with the possibility of placing greater value on energy produced.

The aforementioned Legislative Decree approved on March 3rd, 2011 is going to produce radical changes in the Italian support policy to RES-E. From January 1 2013 the quota system will be replaced by a tender scheme for new plants (except biomass) with a capacity above determined thresholds. Below these thresholds a feed-in tariff will apply.

RES-H

The main measure to support RES-H in Italy is given by fiscal policy ruled by central government, and by the possibility to qualify RES-H systems to white certificates, or energy efficiency certificates (TEE). Investments in RES-H systems (heat pumps, solar thermal systems or biomass systems) can be deducted from the income tax in the measure of 55% through 3 to 10 years.

RES-T

Incentives for biofuels are mainly represented by law 81/2006 which sets an obligation for distributing companies to make available for consumption a quota of biofuels, fiscal measures; a certain number of tons are exempt from the excise tax of fossil fuels. Such a tax free biofuel amount is set every year, causing considerable uncertainty in the market.

2 Details RES-Electricity Support Policy

Quota Obligation

Starting from 2001, with the Decree Law 79/99 – Decreto Bersani - the old feed-in CIP6/92 program from 1992 was initially integrated and then replaced by a TGC system with a mandatory RES-E quota: An obligation was introduced for producers and importers of electricity to supply a growing share of RES-E. The quota had to be achieved with new generation, connected to the grid after March 1999, either under CIP6/92 contracts (in this case the Electricity Services Administrator (GSE) obtained the Certificates and could sell them on the market), or under the Green Certificates scheme. This system was able to guarantee the transition from one incentive scheme to the other incentive scheme.

The quota was initially set at 2% for produced or imported electricity, to be fulfilled with certificates issued for 8 years. High efficiency CHP and RES-E are exempted from the obligation.

In 2006, the duration of TGC was then increased to 12 years for plants online before December 31st 2007 and 15 years for those starting after that date. Banking of TGC is allowed for 3 years.

Since 2008 the TGCs are differentiated according to technologies with coefficients, taking into consideration different generation costs.

With the resolution 280/07, specified by D.L 387/03 and Law 239/04, the electricity regulator AEEG defined the procedures for RES-E purchase for source type and size of the plant as follows:

Programmable RES	< 10 MVA	- Collection by GSE (the body in charge of supporting RES) - Prices defined by AEEG as hourly zonal prices increased by standard losses - Minimum prices guaranteed for the initial 2000 MWh for plants under 1MW - Sold on Electricity Market - Market prices
	>= 10 MVA	
Non Programmable RES	< 10 MVA	- Collection by GSE - Prices defined by AEEG as hourly zonal prices increased by standard losses - Minimum prices guaranteed for the initial 2000 MWh for plants under 1MW
	>= 10 MVA	- Collection by GSE - Prices defined by AEEG as hourly zonal prices increased by standard losses

Since 2005, in order to promote all the technologies, other mechanisms have been introduced to support specific RES technologies, slowly introducing a feed-in tariff mechanism in Italy.

The quota set for importers and producers in 2011 is 6.8% of the total electricity produced or imported.

Electricity suppliers can fulfil their obligation using tradable Green Certificates, issued by GSE, the body in charge of collecting resources from electricity suppliers and giving them to the producers. Eligible for TGCs are hydro, wind, geothermal, solar, marine, biomass and waste with a production of more than 50 MWh per year and commissioned after March 31st 1999. The certificates can be traded on a specific market managed by GME (Electricity Market Administrator), or exchanged through bilateral contracts (tracked by GME as well).

The quota had an annual increase of 0.35%, from 2004 to 2006, and of 0.75% from 2007 to 2012, though a change in the support system is expected in 2011. The obligation has been always been fulfilled in the past few years, thanks to the role of the green certificates issued to GSE for the production of projects under the previous CIP6/92 scheme, which played a role in the transition.

Table 1: Italy's TCG Quota and duration

	TGC Quota increase	New RES-E Quota	TGC Duration (years)
2001-2003	--	2%	8
2004	+ 0.35%	2.35%	8
2005	+ 0.35%	2.70%	6
2006	+ 0.35%	3.05%	12
2007	+ 0.75%	3.8%	15
2008	+ 0.75%	4.55%	15
2009	+ 0.75%	5.30%	15
2010	+ 0.75%	6.05%	15
2011	+ 0.75%	6.80%	15
2012	+ 0.75%	7.55%	15

The certificate scheme is handled by GSE and AEEG (Regulatory Authority for Electricity and Gas); GSE verifies the amount of certificates handed over by the obligated subjects and, in case of non-compliance, informs AEEG, who can impose a sanction. Unfortunately the sanctions have not been specified and remain undefined.

The value of the certificates is regulated by the market, although in case of excess of certificates on the market (long market), GSE must buy them at a published price. In order to give continuity to the system, the GSE selling price is calculated as the average certificates' price in the previous three years, weighted on exchanged volumes, i.e. 98 €/MWh for 2009. In case of shortage of certificates (short market), GSE can sell those certificates coming from the former CIP6 scheme at a published price, calculated as the difference between 180 €/MWh and the annual average market price of electricity in the previous year, which is 87.38 €/MWh in 2011, net of VAT.

TGC Banding and Optional Feed-in Tariff

The 2008 Budget Law (244/2007), updated by law 99/2009, introduced some important incentives, particularly the introduction of a 15 years feed-in tariff for RES-E schemes under 1 MW as alternative to TGCs and a coefficient for banding TGC according to technologies, which is expected to produce a significant effect on the market. Every MWh produced receives k certificates, with k defined in the following table:

PV is not included in the feed-in tariff, because it has a specific program based on a premium.

Table 2: Technology-specific certificate coefficients and Feed-in tariffs for small plants

	Any Plant	Plant capacity < 1MWe
	GC coefficient K	Optional Feed-in tariff (€/MWh)
Wind on-shore	1.0	220
Wind off-shore	1.1	--
Geothermal	0.9	200
Wave & tide	1.8	340
Hydro	1.0	220
Biodegradable waste, biomass different from that defined below	1.3	220
Biomass and agricultural/forestry biogas	1.8	280
Biomass and biogas used in high yield CHP reusing the heat power produced in agricultural sector	1.8	--
Other Biogas (including landfill and sewage gas)	0.8	180

PV Premium “Conto Energia”

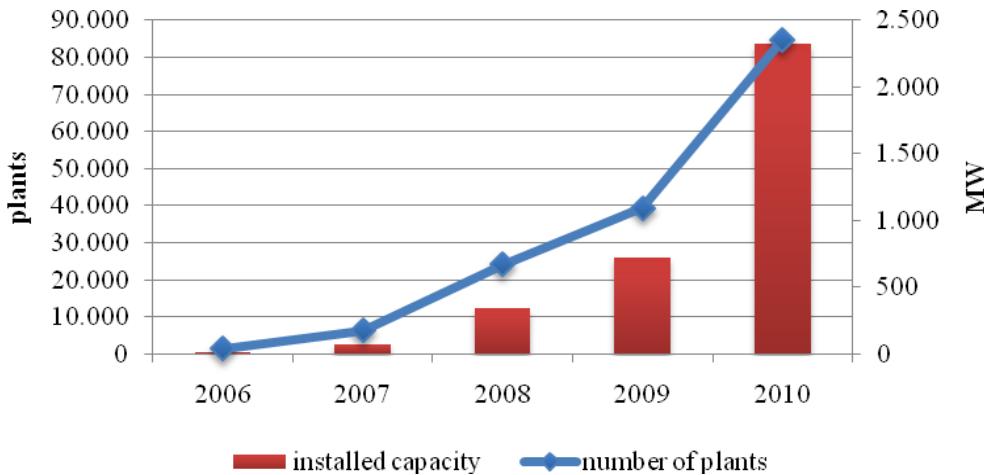
PV is supported with a Premium (named Conto Energia), initially introduced in 2005 and then modified again in 2007 (D.M. 28/07/2005, 06/02/2006, 19/02/2007, AEEG deliberation 188/05 and its updates) and in 2010 (third Energy Bill). This defines a premium for PV production differentiated by size and level of architectural integration. The premium is constant for 20 years. The electricity produced can be used for own consumption, sale, or exchange with the network (net metering up to 200 kW installed capacity). The initial premiums of 2007 have been reduced by 2% per year, and will be reduced by a further 2% for plants beginning production in 2010. Nothing is yet known regarding the premium level for installations commissioned in 2011 or later after the first quarter 2011, but a new decree is expected in April (see www.gse.it for update).

Table 3: PV premiums first quarter 2011

Plant size	Building integrated	Non integrated	Duration (years)
[kW]	[€/kWh]	[€/kWh]	
1≤P≤3	0.402	0.362	
3<P≤20	0.377	0.339	
20<P≤200	0.358	0.321	
200<P≤1000	0.355	0.314	
1000 <P≤5000	0.351	0.313	
P>5000	0.333	0.297	

The Conto Energia programme has enjoyed a huge success (see fig. 1), with more than 2 GW installed in 2010 and 273 MW installed in the first two months of 2011.

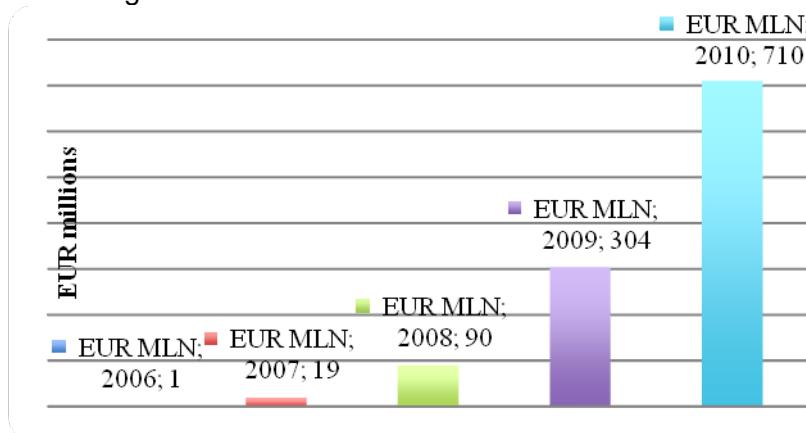
Figure 1: number of plants and installed capacity under provisions of "Conto Energia"



Source of data: GSE, 2011

Nevertheless this boom, mostly unexpected, caused vocal complaints (especially from Confindustria, Italy's employers' federation) about the scheme, which was judged too generous and engendering a huge speculation at the expenses of consumers and enterprises that bear the burden through their electricity bills (see fig. 2).

Figure 2: Conto Energia costs 2006-2010



Source of data: GSE, 2011

This has lead to the repeal (see § 1) of the Ministerial Decree (DM 6/08/2010) regulating the mechanism in the three years period 2011-2013. Only plants connected before May 31st will benefit from the current mechanism, whilst after that day other dispositions (to be defined by the end of April) will apply.

Actually this has not been the only modification that this instrument has encountered. In 2010 another Law Decree (DL 78/2010) ruled that all those subjects sending a written declaration to GSE that the installation of the PV field was completed by the end of December 2010, will enjoy the 2010 premium if they will be able to connect their plant

before the end of June 2011. Of course, the 2010 premium being higher than the 2011 one, this disposal led to a rush (more than 3000 MW according to the estimate of GSE) that seemed uncontrolled, undermining the legitimacy of the entire mechanism and leading to its premature repeal.

Net metering “scambio sul posto”

From January 1st 2009, the AEEG Deliberation n. 74/08 has evolved the existing net-metering, introducing the so called “scambio sul posto” (net metering or exchange on the spot) for:

- RES plants with a capacity up to 20 kW,
- RES plants with a capacity up to 200 kW which started production after 31.12.2007,
- high-efficiency CHP plants with power up to 200 kW.

The mechanism allows the auto-producer to compensate the value of energy consumed with the value of the energy produced in different periods, in addition to the premium, thus reducing the producer's electricity bill.

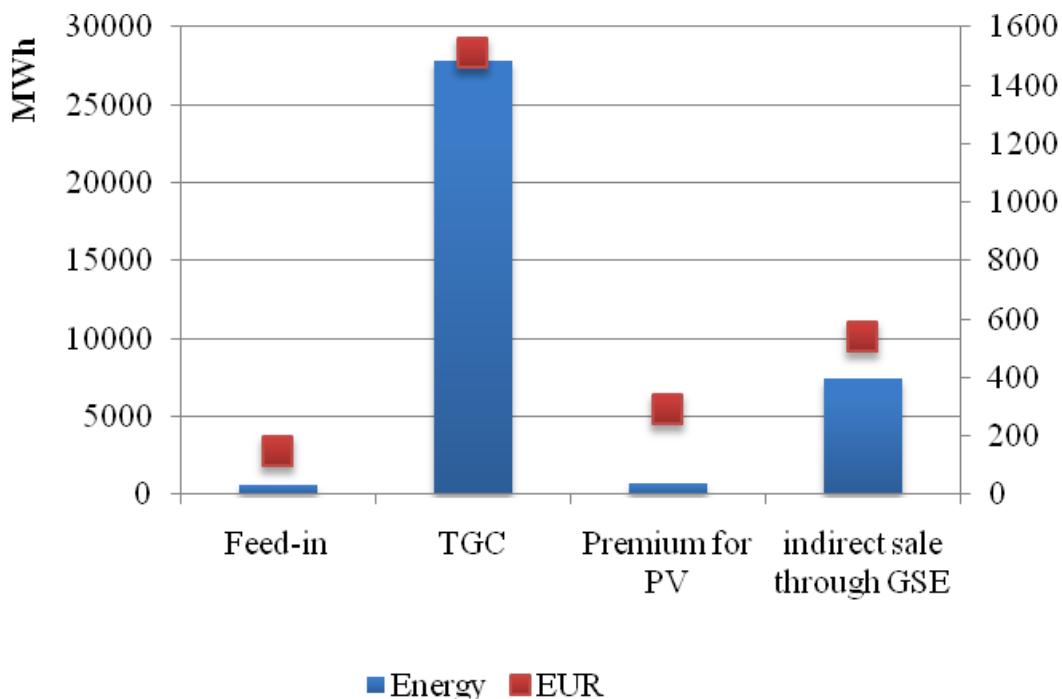
The producer has a contract with GSE, who pays the amount due quarterly; the amount due is the sum of the energy share (minimum equivalent value between electricity produced and electricity consumed - if the electricity produced is more, the amount is written to credit for the following periods) and the service share, the charge due for the use of the grid, calculated by the amount of electricity exchanged. The amount due for the use of the grid is not very high, with 30 € of fixed cost and a variable cost function of different parameters of the exchange patterns.

PV in Building Obligation

In 2007, starting from January 1st, 2009, an obligation has been introduced to install PV on new buildings: A minimum of 1 kW for each residential unit has to be covered by RES and 5 kW in industrial buildings larger than 100 m². With DL 207/08 converted in Law 14/09 the starting date was postponed to January 1st, 2010.

Fig. 3 and table 4 show the resources invested and the energy produced and capacity installed of plants which received support in 2009.

Figure 3: incentives by instrument 2009 (EUR millions, MWh)



Source of data: GSE, 2010

Table 4: incentives by sources, installed capacity, production in 2009

2009	POWER (MW)	PRODUCTION (MWh)	INCENTIVE ('000€)	Average incentive (€/kWh)
Solar	878	672,739	€292,027.83	€0.43
Wind	7,223	9,402,243	€745,425.64	€0.08
Hydro	7,133	20,672,276	€963,160.32	€0.05
Biomass & Waste	4,064	9,841,440	€1,143,750.88	€0.12
Geothermal	503	2,760,164	€151,750.80	€0.05
TOTAL	19,801	43,348,862	€3,296,115.48	

Source of data: GSE, 2010

Expected future changes

The aforementioned Legislative Decree approved on March 3rd, 2011 is going to produce radical changes in the Italian support policy to RES-E.

From January 1 2013 the quota system will be replaced by a tender scheme for new plants (except biomass) with a capacity above determined thresholds, differentiated accordingly to specific features of different RES, in any case over 5 MW of output capacity. Below these thresholds a feed-in tariff will apply. The new system is going to be managed by the System Operator (GSE) from 2013.

The Decree does not provide many details about this new regime, postponing its definition to further Ministerial Decrees to be approved six months after its publication at latest.

What is known from the text of the Decree is:

- The feed-in tariffs (where they apply):
 - Will be granted for the average productive lifespan of the plant;
 - Will be constant during the entire period;
 - Will be differentiated according to energy sources (technology banding) and nominal power;
 - Could take into account the value of the energy produced;
 - Could be increased if plants improve the predictability of their production;
 - Will be revised two years after their definition, and every three years thereafter;
 - Will be managed by GSE.
- A tender scheme:
 - Will be managed by GSE, which will hold periodical tenders;
 - The starting price of the auction will be based for each technology on the incentive applying to the last bracket below the installation threshold;
 - There will be minimum admission requirements for both projects and participants.

These support mechanisms will be financed through a specific charge (so called A3 component) on the electricity bill.

3 Details RES-Heating and Cooling Support Policy

Tax Rebate

The 2007 Budget Law (296/2006) introduced a tax rebate in Italy of 55% for building renovation, aimed at improving energy efficiency, including installation of RES-H systems such as condensing boilers or solar thermal collectors, up to an overall ceiling for each activity, carried out until the pre determined national budget is reached. The ceiling was set at 15 mio € per year in 2007 – 2009. In 2008 Budget Law, the tax rebate was confirmed to be in effect until 2010 and only at the end of 2010 was renewed for 2011. The rebate is available to businesses, as well as residential users, but would benefit from a more stable definition.

Building Obligation

In the 2008 Budget Law, the obligation for new buildings to have a RES-H system for the production of hot water was also introduced. Nevertheless, this was designed as a rule

to be implemented in the local municipalities building regulations, and throughout most of the country it has not yet been adopted.

The building obligation was set up in 2008, but never really enacted (beside specific disposal of cities' building regulations). The new Decree establishes the obligation from 2012 for new buildings and buildings subjects to "major renewal" (without specifying what "major" means) an obligation to cover up their energy consumption (both heat and electricity) recurring to RES according to this path:

20%	From 2012 till 2013
35%	From 2014 till 20126
50%	After 2017

White Certificate System

Another support policy is represented by the white certificate system (TEE), introduced by D.M. 24.04.2001 and updated by D.M. 20.06.2004 and D.M. 21.12.2007, now in its third year of enforcement, based on an obligation on electricity and gas distributors to achieve a minimum level of energy savings, growing from 1.2 Mtoe in 2008 up to 6 Mtoe in 2012.

TEE certificates are issued to energy saving investments obtained through technologies and efficiency systems, according to an AEEG regulation. The certificates are issued by the Electricity Market Administrator (GME) to energy distributors, their companies or any ESCo registered in the AEEG website. A TEE corresponds to the saving of 1 toe and can be either traded on the market or exchanged through bilateral contracts. The mandatory quota set for suppliers of electricity and gas can be also reached through projects involving final users. The savings are verified by AEEG and documented in annual reports.

The mechanism now appears to be evolving in the right direction, contributing to the reduction of energy consumption and to the development of an energy service market, although it was initially affected by some issues, such as:

- excess of TEE due to high energy savings obtained at the beginning of the system (investments cumulated in the previous 5 years could account);
- price reduction on the exchange market;
- imbalance between gas and electricity TEE;
- extensive bilateral exchange with consequent lack of transparency of the market.

Several measures were also adopted at regional level, often based on funds assigned with tenders, mainly coming from EU convergence programs.

Expected future changes

The Legislative Decree n. 28 of March 3rd 2011 finally foresees new initiatives. As in other cases it defers the definition of the instrument to ministerial decrees (to be approved by six months from its entry into force). We only know that:

- The incentives for RES-H will be paid through the gas bill;



- The incentives will not be paid for more than 10 years;
- The incentives will be constant during that period.

4 Details RES-Transport Support Policy

Quota Obligation and Tax Relief

Budget Law 2007 introduced a quota of 250,000 tons of biodiesel with a reduced tax excise, in the measure of 20% of the corresponding excise for diesel fuel. The quota is split among accredited producers; the program is valid until the end of 2014 with quota and excise reduction redefined each year, to avoid overcompensation.

In the same year an obligation to mix biofuel with traditional fuel for consumption was introduced, in the attempt to stimulate the production and use of biofuels.

The quotas are set as follows:

- 1% from 1st January 2007
- 2% from 1st January 2008
- 3% from 1st January 2009;
- 5% from 1st January 2014.

The percentage is calculated on the entire volume of fuel consumed the previous year, measured on energy content.

Fulfilment of the obligation is verified by a certificate, one per each 10 Gcal put on the market, a certificate that can be sold or bought either on a market regulated by the Ministry of Agriculture or with bilateral contracts.

2007 Budget Law states that the production of electricity or heat through biofuels by farmers is to be considered part of agricultural activity, and is therefore subject to a reduced fiscal regime. The same law defines the excise applied to biodiesel to be 20% of the excise normally applied to traditional fuels.

With Law 99/2009, all biofuels used to produce electricity are included in a feed-in tariff of 0.18 cent (0.28 under 1 MW), with the possibility to qualify for other National or local support measures.

The targets defined with 2008 Budget Law, which comply with 2003/30/EC Directive should give a new drive to the market.

5 RES-E Grid Integration

There is no grid connection priority for RES producers, although they are granted priority in transmission. If there are more offers of electricity at the same price, the transmission priority will be granted, as long as grid security can be maintained. Electricity generated from fluctuating and non-dispatchable sources, namely wind, solar and geothermal energy, run-of-the-river water and biogas, has the highest priority, and controllable

sources (CHP and other renewables) have the second-highest priority. The present transmission regulation, as issued by TERNA, the Italian grid operator, says that if a renewable plant can not be dispatched for grid security reasons even if available, it is remunerated as if it were producing.

For national security reasons, a local capacity limit could be imposed by the grid operator.

Costs associated with grid usage are borne by the electricity producer and in areas where new installations are concentrated; TERNA is required to share connection between different investors. This negotiated procedure sometimes delays investments.

The grid user is entitled to a grid expansion or reinforcement, if this is required to satisfy the demand for grid connection; costs are distributed between grid operator and grid user: The applicant will pay for the expansion and get part of the costs refunded according to grid code (AEEG 281/05, Art. 13).

6 RES Production, Potential and Market Development

RES-E

RES-E production is still below 20% of total production and after a decrease before 2007, it has increased from 16% in 2007 to 23.9% in 2009, attributable to the good year in terms of water resources (2009 data are well above the statistical average). Total generation amounts to about 68.2 TWh in 2009, up from 59 TWh in 2008 (49.4 TWh in 2007) with large hydropower stations covering about 50% of the production. When large hydro is excluded, the largest share of generation is given by biomass/waste and small hydro, each one with nearly 30% of the total. Geothermal is more or less stable at 23% while wind on-shore has reached in 2007 a share of 17% of the RES-E production, showing the highest average annual growth of all technologies. Installed PV in 2011 reached the capacity of 4000 MW and the present growth is expected to lead to some 6000 MW installed by end 2011. It is significant, that while the growth trend for geothermal and biomass is slowly decreasing, wind and especially solar are rising sharply after a period of low growth. Considering the installed power and the number of plants in the period, it appears that the growth rate is negligible for hydropower and geothermal. PV shows a different trend: the introduction of the feed-in tariff in 2005 led to the sharp increase in the number of plants and installed power, a trend that could continue if stable conditions are created in 2011.

RES-H

The production of heat from RES in Italy is covered primarily by biomass, with nearly 80% of the total, while solar heat is far behind other EU countries. Nevertheless, in 2008, solar heat had a good growth with a 28% increase to reach 295 MW_{th} of installed capacity (Assolterm 2008). Geothermal heat has a relatively stable position, and solar heat and CHP show a clear increase in market penetration. A study carried out by Assolterm and ESTIF demonstrates the remarkable growth of solar thermal in the past two years in terms of installed capacity: nearly 100% in the period 2006-2008, with 295 MW_{th} installed in 2008, for a total of over 1 GW_{th}. In spite of the significant growth, the capacity per inhabitant is still very low: only 18 kW_{th} per 1000 inhabitants against an EU average of 38 kW_{th} per 1000 inhabitants. (Assolterm and ESTIF data 2008/2009).

RES-T

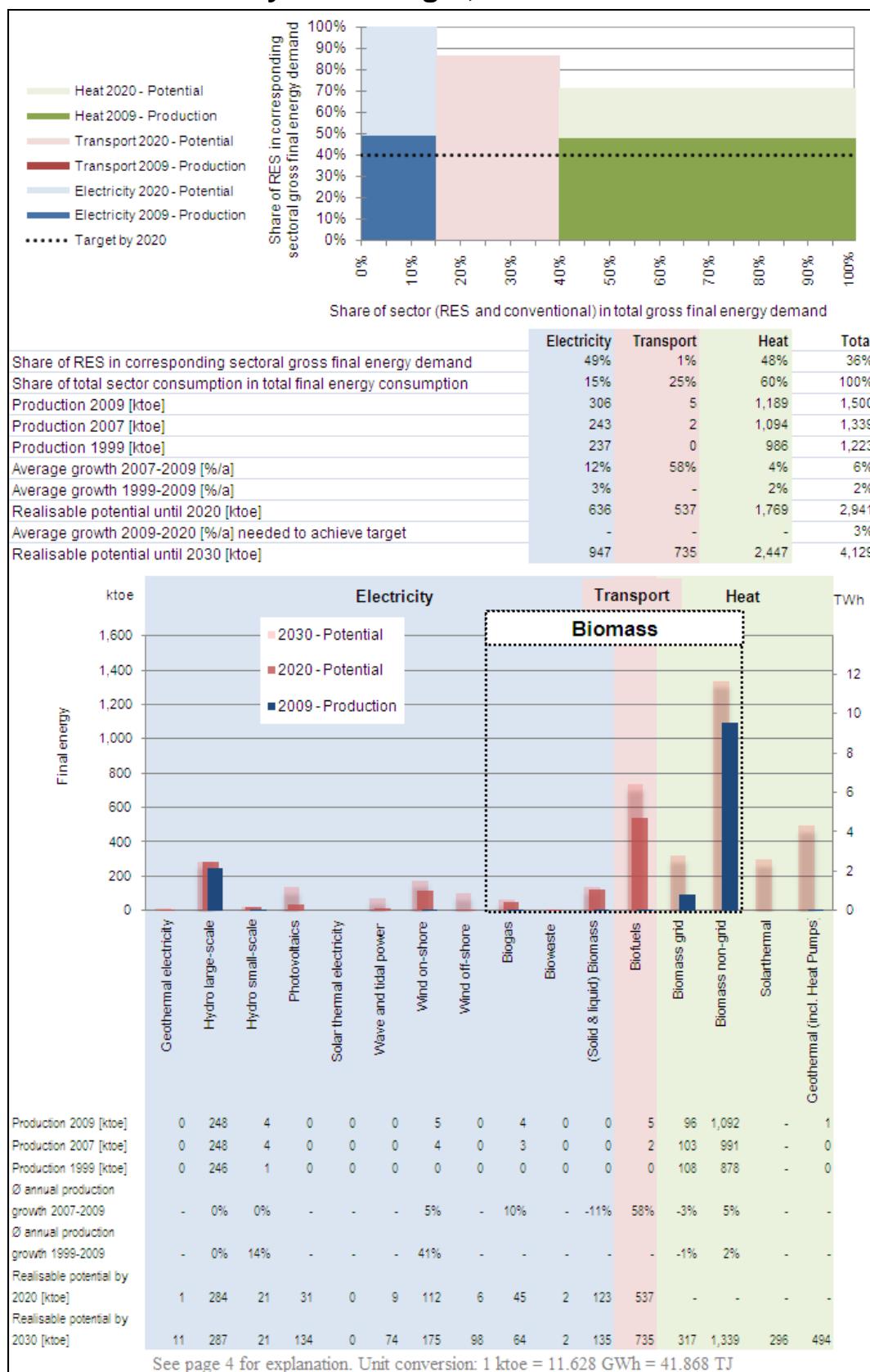
Biofuels still have a rather low penetration, with much scope for growth, although Italy was the third biodiesel producer in Europe after Germany and France in 2008 (European Biodiesel Board 2008) and is fourth for production capacity in 2009 (Assocostieri 2008-2009).

Table 3: Biodiesel production and capacity

Biodiesel Production (kton)		Production Capacity (kton)
2007	2008	2009
469.7	668.3	2257.1

Considering the quantity of biodiesel consumed in the domestic market (Ministry of Economic Development, 2009; Assocostieri 2008-2009), it is easy to notice how there has been a clear shift towards the use in transportation rather than heating (Figure 9).

LATVIA - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

Some changes have occurred in Latvia's RES-E legislation during 2010. Since 1 April 2010, a new order of administration of feed-in tariff has been implemented. Currently the tariff is granted to biomass, biogas, solar and wind power stations on the basis of a tender. Hydro power plants receive feed-in tariff by submitting an application and necessary documents to the Ministry of Economy and they do not participate in a tender. The new regulation is more transparent and clearer. Clearer regulations were stipulated for CHP plants larger than 4 MWe. Today these CHP plants might receive support in a form of capacity and energy payments.

Furthermore, climate change financial instruments are actively used to support RES-E, RES-H and RES-T. These instruments are dedicated to limit GHG emissions by introducing RES technologies in heat and electricity production and are applied for household sector, public buildings and businesses of various sizes.

1 Summary: RES Support Policy

RES-E

A feed-in tariff is the main instrument currently used. Power plants that participate within the framework of mandatory procurement have a right to receive a technology specific feed-in tariff. However the way how to receive the tariff has changed in 2010; it is now granted to biomass, biogas, solar and wind power stations on the basis of a tender. Hydro power plants receive a feed-in tariff by submitting an application and necessary documents to the Ministry of Economy and do not participate in a tender. Some Latvian taxes are favourable to RES-E, and support from the Cohesion fund is available, too. In 2010, a climate change financial instrument started to be used; tenders for RES-E promotion in household entities of various sizes were organized. A draft of the Law on RES is prepared. It is expected that this Law will come into force in July 2011.

RES-H&C

A climate change financial instrument started to be actively used to support RES utilization in a heating sector in 2010. Financial incentives (direct grants) are also available to promote RES-H in Latvia.

RES-T

Biofuel market development in Latvia was mainly promoted by a quota obligation. However it was valid until 31 December 2010. Fixed direct governmental support for each unit of biofuel produced was provided to manufacturers who participate in the quota obligation. Biofuels are also supported by fiscal measures, such as excise duty on biofuel. State aid for the production of biofuels is also foreseen in the Budget Law for 2011, but no details are known yet. The climate change financial instrument is also used to support RES-T.

2 Details RES-Electricity Support Policy

Feed-in tariff

The feed-in tariff system is implemented in accordance with two regulations, i.e. Regulation No. 262 on Electricity Generation from RES and the Price Setting [1], which came into force on 1 April 2010, and Regulation No. 221 on Electricity Generation and Price Setting for Electricity from Cogeneration [2], which is valid since 18 March 2009.

The Regulation No. 262 sets the rules regarding the acquisition of the right to sell RES-E based on a mandatory procurement. According to this regulation, a power plant that has received the right to participate within the framework of a mandatory procurement, also obtains the right to receive a feed-in tariff. Mandatory procurement rights are granted to biomass, biogas, solar and wind power stations on the basis of a tender. A tender is organized every year from 1 to 31 October. The volume of RES-E is the object of the tender. Hydro power plants receive mandatory procurement rights by submitting an application and necessary documents to the Ministry of Economic Affairs till 1 April of the respective year and they do not participate in the tender.

The calculation of feed-in tariffs is based on a formula (see Table 1). The level of feed-in tariffs depend on the end user natural gas price, the exchange rate between the LVL and the €, and a certain coefficient depending on the installed capacity of the RES-E plant. The feed-in tariffs will be reduced after 10 years of plant operation as presented in table 1. All RES technologies receive support for 20 years.

C – purchase price of RES-E (without VAT);

e – exchange rate of Latvian LVL and € on the date of electricity bill;

Tg – end user natural gas price approved by the Regulatory Authority (without VAT);

k – certain coefficient depending on the installed capacity of PP.

Table 1. Support level for RES-E production differentiated according to the technologies

Resource	Technology	Support level 1: For the first 10 years	Support level 2: For 10 years after the end of support level 1
Wind	Installed capacity < 0.25 MW	$C=147*e*k$ 83.47-129.38 €/MWh	$C=147*e*k*0,6$ 50.08-77.63 €/MWh
	Other	$C=120*e*k$ 68.14-105.62 €/MWh	$C=120*e*k*0,6$ 40.88-63.37 €/MWh
Biomass, biogas	Installed capacity of biomass PP < 4 MW	$C = \frac{T_g * k}{9.3} * 4.5$ Biomass At a price 130 LVL/thous. Nm ³ 91.05-116.99 €/MWh	$C = \frac{T_g * k}{9.3} * 3.4$ Biomass At a price 130 LVL/thous. Nm ³ 68.79-88.40 €/MWh
	Installed capacity of biogas PP > 2 MW	$C = \frac{T_g * k}{9.3} * 4.5$ Biogas At a price 130 LVL/thous. Nm ³ 137.74-176.99 €/MWh At a price 230 LVL/thous. Nm ³ 114.19-141.60 €/MWh	$C = \frac{T_g * k}{9.3} * 3.4$ Biogas At a price 230 LVL/thous. Nm ³ 104.07-133.73 €/MWh At a price 130 LVL/thous. Nm ³ 57.03-70.72 €/MWh At a price 230 LVL/thous. Nm ³ 86.28-106.98 €/MWh
Biomass	Installed capacity > 4 MW	$C = \frac{T_g * k}{9.3} * 3.6$ At a price 130 LVL/thous. Nm ³ 60.38-72.84 €/MWh At a price 230 LVL/thous. Nm ³ 91.35-110.19 €/MWh	$C = \frac{T_g * k}{9.3} * 3.0$ At a price 130 LVL/thous. Nm ³ 50.32-60.70 €/MWh At a price 230 LVL/thous. Nm ³ 76.13-91.83 €/MWh
Biogas	Installed capacity < 2 MW	$C=188*e*k$ 134.51-165.47 €/MWh	$C=188*e*k*0,8$ 107.61-132.37 €/MWh
Hydro	Installed capacity < 5 MW	$C=159*e*k$ 108.91-139.94 €/MWh	$C=159*e*k*0,8$ 87.13-111.96 €/MWh
Solar	-	$C=427*e$ 234.31 €/MWh	

Source: Regulation No. 262 on Electricity Generation from RES and the Price Setting; Exchange rate 1 €=0.7098 LVL

Regulation No. 221 handles a mandatory procurement of electricity generated in cogeneration. The regulation states that the following merchants are eligible for qualification to sell electricity within the framework of compulsory purchase or receive a guaranteed price for installed electrical capacity:

- ❖ who use a power plant that produces electricity in cogeneration using RES;
- ❖ who plan to build a power plant that produce electricity in cogeneration using RES;
- ❖ who plan to increase its ownership or use an existing power plant capacity, if the power plant produce electricity in cogeneration using RES.

The mandatory procurement price formulas for cogeneration plants are presented in Table 2. The support level is different and depends on factors like installed capacity, end user natural gas price, and European Emission Allowance (EUA) spot price:

C – price at which trader buys electricity produced within cogeneration process (without VAT), LVL/MWh;

Tg – end user natural gas price approved by the Regulatory Authority (without VAT);

k – certain coefficient depending on the installed capacity of power plant;

CO₂ – European Climate Exchange (ECX) EUA average spot price for a billing period;

K – certain capital return correction coefficient;

P – installed electrical capacity, MW.

If a CHP plant is larger than 4 MW_e and participates within the framework of a mandatory procurement it might receive both feed-in and capacity payment (Table 2). The validity of the support is not restricted to any time horizons.

Table 2. Support level for RES-E production in cogeneration process

Resource	Technology	Support level
RES, peat	< 4 MW _e	$C = \frac{T_g * k}{9.3} * 4.5$ At a price 130 LVL/thous. Nm3 91.05-116.99 €/MWh At a price 230 LVL/thous. Nm3 137.74-176.99 €/MWh
Other cogeneration units	< 4 MW _e	$C = \frac{T_g * k}{9.3} * 3.4$ At a price 130 LVL/thous. Nm3 68.79-88.39 €/MWh At a price 230 LVL/thous. Nm3 104.07-133.73 €/MWh
All CHP plants participating within the framework of a mandatory procurement	> 4 MW _e	1. <i>The energy component</i> : $C_E = \frac{T_g * 1.2}{9.3} + CO_2 * 0.17$ 2. <i>The capacity component</i> paid for the installed electrical capacity (LVL/MW per year): $C_J = 134 * P^{-0.08} * K * 1000$ The utility pays the capacity component once per month, dividing the annual payments into 12 parts.

Source: Regulation No. 221 on Electricity Production and the Price Setting for Electricity from Cogeneration

Regulation No. 262 sets annual mandatory procurement support volumes for various types of RES for 2010 and the following 10 years, expressing these volumes as a percentage of total final electricity consumption (Table 3). The share of supported volume (in %) will be constant till the end of 2020. Since it is foreseen that there will be a growth in final electricity consumption (in MWh), this would mean a growth of supported RES-E in MWh. Regulation No 221 does not determine any quantitative restrictions on the purchase of RES-E from cogeneration.

Table 3. Supported share of RES-E in final electricity consumption

RES	2010 and for next 10 years, %
Hydro power plants (>5 MW _e)	34.31
Hydro power plants (<5 MW _e)	1.98
Wind power plants	5.37
Biogas power plants	7.93
Biomass power plants	4.97
Solar power plant	0.01
<i>TOTAL</i>	<i>54.57</i>

Source: Regulation No. 262 on Electricity Generation from RES and the Price Setting

The Ministry of Economics is responsible for the monitoring of RES-E production and acquisition.

Guaranteed capacity payment system in Latvia

According to Regulation No. 262 on Electricity Generation from RES and the Price Setting, biomass or biogas plants with installed capacity above 1 MW and with an operational time of more than 8,000 hours per year are not subject to the feed-in tariff system described above. Instead, plant operators may claim a guaranteed payment for the installed electrical capacity.

The fee for the installed capacity per month is calculated as $M = \frac{157,750 * P}{12}$ where

P is the installed electrical brutto capacity (MW) of qualified biomass and biogas plants; 157,750 is a certain coefficient specifying the amount of support for 1 MW of installed electrical capacity per year.

For example, if installed capacity of biomass or biogas plant is 1.5 MW and it is qualified to receive guaranteed capacity payment then the guaranteed capacity payment per month will be about 13.15 LVL/kW (18.52 €/kW/month¹²⁴). Guaranteed fee for installed capacity in plants is paid on the basis of an agreement between the operator of plants and the Transmission System Operator (TSO) for 15 years from the date the agreement was enforced.

According to Regulation No. 221 on Electricity Generation and the Price Setting in Cogeneration, TSO can pay a guaranteed payment for installed electrical capacity of cogeneration plants using solid and fossil (natural gas or heating oil) fuels. The monthly guaranteed payment for solid fuel based cogeneration plants is $M = \frac{157,750 * P}{12}$ where

P is the installed electrical brutto capacity (MW). For cogeneration plants using natural gas the monthly guaranteed payment is reduced to $M = \frac{95,712 * P}{12}$.

However, CHP of more than 4 MW_e and participating within the framework of a mandatory procurement may receive both a feed-in (C_E) and a capacity payment (C_J).

124 Exchange rate 1 €=0.7098 LVL

Financial support

According to the Law on Electricity Tax, electricity supplied to the end user is taxable [3]. The tax rate for electricity during the period 2007-2009 grew from 0.35 LVL/MWh (0.49 €/MWh) to 0.55 LVL/MWh (0.77 €/MWh) by 0.10 LVL/MWh (0.14 €/MWh) annually and from 1 January 2010 it is set 0.71 LVL/MWh (1.00 €/MWh). According to the Law on Electricity Tax, electricity produced in RES, hydropower plants as well as in CHP power plants complying with the efficiency criteria is exempt from this tax.

According to the Law on Natural Resources Tax, water use in waterworks, including hydropower plants and reservoirs, is exempt from natural resources tax [4].

The Law on State Aid Control (2009) foresees state aid for RES-E (solar, wind, biomass, geothermal and hydro) production projects. Support for investment may cover up to 60% of the costs [5].

According to the Regulation No. 268 on Procedure for granting State and EU support for the measure "Support for business creation and development" in force since 16 March 2010, support for energy production from agricultural and forestry biomass is foreseen [6]. This scheme will be valid till 2013. Support may not exceed 40% of the eligible costs. The eligible costs are limited to 3,000 LVL (4,227 €) per kW for capacities up to 500 kW and 2,500 LVL (3,522 €) per kW for capacities exceeding 500 kW. Total eligible expenditure for one support applicant may not exceed 4,000,000 LVL (5,635,390 €).

The Ministry of Environment Protection and Regional Development elaborated Climate Change Financial Instruments, using transferred revenues from the sales of GHG assigned amount units (AAU under the Kyoto Protocol) for environmental and energy efficiency measures with the focus on climate benefits. This support measure is described in more detail in the section on RES-H support.

The support instruments are revised from time to time but not periodically. The revision depends on the overall situation of the market.

In addition, a draft of the Law on RES is prepared. The following RES-E related measures are planned to be implemented: payment of premiums for RES-E generation, transmission system operators will cover that part of the costs of connecting renewable energy generators' systems incorporating the reconstruction costs of connecting the existing transmission and distribution system to generating plants at connection points chosen by RES generators. It is expected that the Law on RES will come into force in July 2011.

3 Details RES-Heat and Cooling Support Policy

Latvia is promoting the use of RES by a few financial support measures, but there is no direct support for RES-H.

Climate change financial instruments

Climate change financial instruments are funded by the state-owned assigned amount units (AAUs) under the Kyoto Protocol 2008-2012. Revenues from the sale of GHG assigned amount units are used to finance environmental and energy efficiency projects.

The support to projects is provided on the basis of public tenders. Since 2010 RES related projects are funded under the following public tenders:

Low-energy buildings. The tender is based on Regulation No. 1185 of 28 December 2010 [7]. This tender will be valid till 21 March 2011. The support can be provided for new building or reconstruction of the following buildings: single-family buildings, semi-detached houses, office buildings, retail or industrial buildings, museums, public buildings, sport buildings, social apartments and hotels. Total budget of the tender is 7,261,722 LVL (10,230,659 €) and the maximum amount per project is 750,000 LVL (1,056,635 €). The intensity of the total eligible costs shall not exceed 65% for small (micro), small businesses and individuals, 55% for medium-sized enterprises, 80% for direct or indirect administration bodies and local authorities. Support is provided for the installation of solar collectors, wood pellets or wood chip boilers, air or ground heat pumps.

Renewable energy, reduction of GHG. The tender is based on Regulation No. 12 of 4 January 2011 [8]. It started on 1 February 2011 and will continue till 4 April 2011. Total budget of the tender is 27,716,876 LVL (39,048,853 €). The support is provided to acquisition, construction, installation, reconstruction or replacement of RES technologies (heating, electricity generating, cogeneration). The following projects are eligible:

- solar cells with a total installed capacity of 10 kW or more;
- solar system with a total installed capacity of 25 kW or more;
- wind power plants with total installed capacity of 10 kW or more;
- hydro power plants with total installed capacity of 50 kW or more;
- wood chips, biomass chips, straw and biogas technologies with a total installed capacity up to 3 MW;
- wood chips, biomass chips, straw and biogas cogeneration power plants with a total installed thermal capacity up to 3 MW;
- heat pumps with a total installed capacity of 50 kW or more.

Renewable energy for household sector. The tender is based on Regulation No. 11 of 4 January 2011 [9]. It started on 28 January 2011 and will continue till 24 March 2011. The total budget of the tender is 11,399,481 LVL (16,060,131 €) and 7,000 LVL (9862 €) per project. Intensity may not exceed 50% of the total project costs. The tender supports applicants that will purchase and install the following equipments:

- wood chips or straw boilers, pellets or wood-fired boilers and biomass fireplaces with a total installed capacity of 50 kW;
- solar system with a total installed capacity up to 25 kW;
- heat pumps with a total installed capacity of 50 kW;
- wind generators with total installed capacity up to 10 kW;
- solar cells with a total installed capacity up to 10 kW.

The three following tenders have already taken place during 2010:

- Complex solutions to reduce GHG in municipal buildings [10]. The total budget of the tender was 8,521,500 LVL (12,005,495 €). There were submitted 101 applications (for 333 buildings), however only 18 projects were approved and the remaining 83 rejected (20 because of administrative non-compliance and 63 because of a lack of funding). Installation and connection of solar collectors, air or ground heat pumps, pellets or wood chips boilers were eligible activities.
- Complex solutions to reduce GHG in state and local government vocational education building [11]. The total budget of the tender was 11,563,312.2 LVL (16,290,944 €). There have been submitted 62 applications (for 111 buildings) and requested financial funding was 22,938,363.30 LVL (32,316,657 €). 27 projects were approved and 35 rejected. Installation and connection of solar collectors, air or ground heat pumps, pellets or wood chips boilers were eligible activities.
- Technologies change from fossil to RES [12]. The total budget of the tender was 8,082,346 LVL (11,386,793 €). 80 projects were submitted, however only 47 of them were approved. The tender supported solar PV, solar collector systems, wind and hydropower technologies, chips, straw and pellets boilers with a total installed thermal capacity up to 3 MW, heat pumps.

The Ministry of Environment Protection and Regional Development (<http://www.vidm.gov.lv>) elaborates and publishes information on all available climate change financial instruments.

EU Cohesion Fund

Latvia participates in an EU regional aid scheme that supports investment projects, which aims to substantially increase the RES-E and RES-H production. The scheme is part of Latvia's Operational Programme and is based on Regulations No.165 on Development of CHP Utilizing RES (latest amendment on 1 May 2010) [13]. The scheme is valid from 12 March 2009 till 21 December 2013. Projects are financed through the EU Cohesion Fund. The aid is provided in the form of direct grants. Resources from the national budget are not foreseen. In all cases the beneficiary will provide a contribution of at least 25% of the amount of the total eligible cost. The minimum allowed financing amount for one project is 100,000 LVL (140,885 €) and the maximum amount is 4 million LVL (5.6 million €) with a foreseen number of beneficiaries between 11 and 50. The total budget of the scheme is 17,345,202 LVL (24.4 million €). According to this scheme, investments in construction of new CHP utilizing RES and investments in reconstruction of existing boiler houses into CHP utilizing RES can be supported. In general, utilization of biomass and biogas will be supported. The Ministry of Economics and the Latvian Investment and Development Agency ensures the implementation of this scheme.

Support for RES use in district heating sector was also available under the Regulation No. 162 on Measures to increase efficiency in district heating systems first round [14]. Projects are financed through the EU Cohesion Fund. In 2010 a second round started based on a new Regulation No. 824 [15]. Currently the total support amounts to 35,618,167 LVL (50,180,568 €). Minimum support level is 50,000 LVL (70,442 €) and

maximum 6 million LVL (8.5 million €). However the support is not provided to heat production from biogas.

The Latvian Environment Protection Fund

The Latvian Environment Protection Fund Administration announces project tenders for the funding. The main goal of the Fund is to promote sustainable economic development integrating the requirements of environmental protection in all sectors of the economy. No tenders directly related to RES were organized during 2010.

More information about the measure can be found on websites of Latvian Investment and Development Agency (<http://www.liaa.gov.lv>) and Latvian Environment Protection Fund Administration (<http://www.lvaf.gov.lv>).

Building obligations

There are no building obligations that require the use of RES.

4 Details RES-Transport Support Policy

Quota obligation

According to the Law on Biofuel (2005), biofuels in total fuel consumption should sum up to 5.75% by 2010 [16].

In order to promote the biofuel quota obligation, direct state support, fiscal measures (tax reductions and exemption from tax) and climate change financial instrument has been used.

The quota system was in place until 31 December 2010 and fiscal measures were not terminated before that. The conditions, which applicants had to satisfy in order to get support for biofuel production, were determined in the Rules No. 280 on Financially Eligible Quotas for Biofuels [17]. Beneficiaries of this support were producers of biofuel from rapeseed grains, rapeseed oil and grains. The latest amendment of these rules was done on 30 October 2009, but the quota obligation was not prolonged. Thus far the Ministry of Economy did not update information on its website on the quotas for biofuel producers. However according to the Law on the 2011 State Budget [18], state aid will be provided for the production of biofuels. The amount of the support will remain as it was in 2010, i.e. 3,322,969 LVL (4.681.557 €).

Direct state support is provided in the form of subsidy for each unit of biofuel produced under quota obligation. There is a differentiation on the support according to fuel produced. Different subsidies for biodiesel and bioethanol production are set. Based on information provided by biofuel manufacturers, the Ministry of Economics calculates the amount of direct support for biofuels. In accordance to data of 2010, support was provided for 30,500,000 litres of bioethanol and 40,425,888 litres of biodiesel.

Regulation No. 648 of 25 June 2009 on amendment of Regulation on Conformity Assessment of Petrol and Diesel [20] stipulates that only diesel with biodiesel content of 4.5-5.0% and petrol with 4.5-5.0% of bioethanol may be sold in Latvia.

According to the Law on Excise Tax, reduced excise tax is applied for biodiesel produced from rapeseed oil. Reduced excise tax is in a range from 164 LVL (231 €) to 223 LVL (314 €) depending on the quantity of additives. If biodiesel is fully derived from rapeseed oil, the excise tax is at a rate of 0 LVL [21].

Climate change financial instrument “Renewable energy in transport sector” is dedicated to support RES utilization in transport sector. The tender is based on Regulation No. 898 of 21 September 2010 [22]. It was valid till 20 January 2011. The aim of the tender was to reduce GHG by providing a vehicle to use RES. The total budget of the tender was 3,522,621 LVL (4,962,836 €). Minimum financial support foreseen – 15,000 LVL (21,133 €), maximum – 350,000 LVL (493,097 €). Intensity of the support could vary in a range of 35-55% and depended on the size of a company.

5 RES-E Grid Integration

RES projects do not have priority in grid connection. The RES project is entitled to non-discriminating treatment [23]. The cost of grid expansion is determined in pursuance of the general provisions of Law on Energy. According to the Ministry of Economics, the grid operator has to bear the costs of a grid expansion as long as this expansion is part of his general obligation. The cost of a grid expansion is borne by the RES project if the expansion is necessary to connect and operate its system.

Each electricity producer participating in the market is required to have a contract with the relevant system operator regarding the supply of the balancing electricity.

6 Production, Potential and Market Development

RES-E

Overall, large-scale hydropower is the dominant source of electricity generation in Latvia, generating 2,665 GWh in 2007. Electricity production at small-scale hydropower amounted to 68 GWh in 2007. RES-E production from wind increased slightly to 53 GWh in 2007. Electricity production from solid biomass amounted to 5 GWh and from biogas to 38 GWh in 2007.

The contribution of RES to the overall electricity consumption in Latvia was 46.7% in 1997 and 36.4% in 2007. The RES-E share reduction has been influenced by hydro power fluctuation.

RES-H&C

In 2007 42.6% of the total heat demand was covered based on renewable sources with a total RES-H&C generation of 1,107 ktoe.

Biomass is still mostly fired in small boilers of low efficiency in private households. But it is also used in district heating, which is widely used in Latvia, as around 70% of its households are connected to a heat grid.

In total, biomass covers over 50% of private household energy consumption due to its high share in heat production.

RES-T

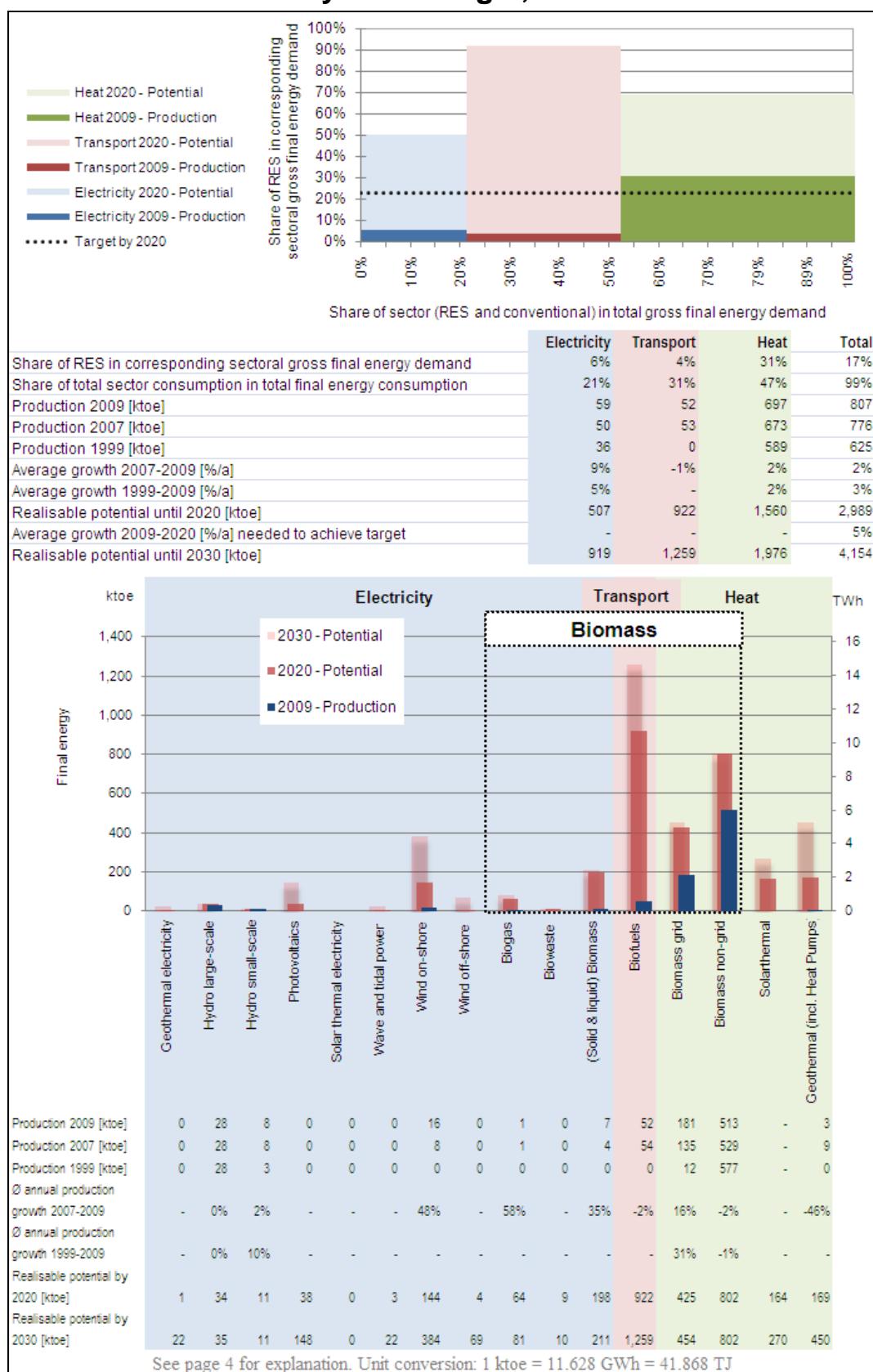
In 2007, biodiesel consumption in Latvia was only 2 ktoe. However, during 2007-2008, biodiesel production in Latvia tripled. The sharp increase in biodiesel production was caused by the state subsidy, that the producer receives directly for each litre of biodiesel produced.

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LITHUANIA - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

There were no very important policy changes during 2010. The National Strategy for Development of RES was approved by decision No. 789 on 21 June 2010 [1]. The main aim of the strategy is to ensure that the share of RES in the country's total final energy consumption reaches at least 23% in 2020. The Plan of Measures for the Implementation of the National Strategy for the development of RES for 2010-2015 was approved by decision No. 1-180 on 23 June 2010 [2]. According to this plan it is foreseen to prepare and implement support schemes, which would ensure favourable conditions for RES utilization. These measures are planned to be prepared and implemented during 2011. The Ministry of Energy, Ministry of Finance and Ministry of Economy are responsible for the implementation of these measures. The National Control Commission for Prices and Energy is responsible for implementing dynamic RES-E promotion mechanism (during 2010-2015) encouraging the penetration of the most effective technologies.

A draft of the Law on RES has been presented to the Seimas of the Republic of Lithuania in February 2010.¹²⁵

The Fund of the Special Programme for Climate Change was created for projects which aim to reduce greenhouse gas emissions according to the Law on Financial Instruments for Climate Change Management adopted on 7 July 2009 by decision No. XI-329. The procedure for the use of this fund was adopted on 6 April 2010. However, during 2010 the fund did not receive revenues from the sale of GHG assigned amount units.

¹²⁵ The new Law on RES was approved by decision No. XI-1375 on 24 May 2011 [3]. According to this Law RES-E will be supported by feed-in tariff. Size of feed-in tariff will be established by tender and maximum level of feed-in tariff will be defined by National Control Commission for Prices and Energy.

1 Summary: RES Support Policy

RES-E

The key support instrument for RES-E production is a feed-in tariff with purchase obligation at the national level. This instrument was introduced in 2002. In 2008 and 2009 the level of feed-in tariffs was increased. A special feed-in tariff for electricity produced from PV installations was introduced in 2010. However, according to the RES-E producers, the main barriers for an adequate development are a long lead-time for the authorisation procedure, a long EIA procedure and a long lasting change of the legal status of land.

In March 2009, the Committee on Environmental Protection of the Seimas of the Republic of Lithuania established the working group for the preparation of a new Law on RES. This working group prepared a draft of this new Law on RES and presented it to the Seimas of the Republic of Lithuania on February 2010.¹²⁶

RES-H&C

There are a few financial measures which could be considered as support instruments for RES-H production: exemption from pollution taxes, EU structural funds, the Lithuanian Environmental Investment Fund (LEIF) and the Fund of the Special Programme for Climate Change. LEIF and the Fund of the Special Programme for Climate Change provide support for RES-H project in the form of interest subsidies and soft loans.

RES-T

There are a few financial measures for RES-T production: excise tax relief, exemption from pollution taxes and compensation for raw materials sold for production of biofuels (for rapeseed grains – 160 LTL/tonne (46 €/tonne), for cereal grains – 114 LTL/tonne (33 €/tonne)).

¹²⁶ The new Law on RES was approved by decision No. XI-1375 on 24 May 2011 [3]. According to this Law RES-E will be supported by feed-in tariff. Size of feed-in tariff will be established by tender and maximum level of feed-in tariff will be defined by National Control Commission for Prices and Energy.

2 Details RES-Electricity Support Policy

Feed-in tariff

Since 1st April 2002, Lithuania has a feed-in tariff with purchase obligation.

The Law on Electricity, adopted on July 2004 by decision No. IX-2307, dictates that the National Control Commission for Prices and Energy must ensure that network connection conditions and tariffs for new electricity producers are objective, transparent and non-discriminatory, while taking into account all costs and benefits derived from RES [4].¹²⁷ The feed-in tariff system is managed by the National Control Commission for Prices and Energy (www.regula.lt). In accordance with the Law on Electricity, the National Control Commission for Prices and Energy approved the average purchase prices of electricity produced from RES in 2002 by Decree No. 7 of the Prices for Public Service Obligations in the Power Sector [5]. On 21 February 2008, the National Control Commission for Prices and Energy approved an amendment on the feed-in tariff of electricity produced from wind energy and on 2 October 2008, an amendment on the feed-in tariff of electricity produced from biomass and hydro energy [6, 7]. On 4th September 2009, the National Control Commission for Prices and Energy approved the feed-in tariff of electricity produced at PV installations [8].

These new feed-in tariffs have been introduced from 1st January 2009, except for PV (as presented in Table 1). Feed-in tariff of electricity produced from PV installations was introduced on 1st January 2010. New commissioned plants benefit from the feed-in tariff for 10 years.

Table 1: Feed-in tariff level in Lithuania since 1st January 2009

RES technology	Support level		Duration years
	LTL/MWh	€/MWh	
Hydro	260	75.3	10
Wind	300	86.9	
Biomass	300	86.9	
PV (up to 100 kW)*	1630	472.1	
PV (from 100 kW to 1 MW)*	1560	451.8	
PV (from 1 MW)*	1510	437.3	

* Feed-in tariff for electricity produced at PV installations was introduced on 1st January 2010

The level of feed-in tariffs is not periodically revised. Since 2002, feed-in tariffs were revised in 2008 and 2009 taking into account the inflation rate and other factors.

According to the order of approval of legal acts necessary for implementation of the Law on Electricity, the Ministry of Energy is responsible for the monitoring of RES-E production and purchase.

¹²⁷ The wording of this Law and all other related acts can be found, mostly in Lithuanian language, in the legal text database (http://www3.lrs.lt/dokpaieska/forma_e.htm) [3].

Energy suppliers are obligated to purchase RES-E from the involved producers at these guaranteed prices (Order No. 380 on approval of legal acts necessary for implementation of the Law on Electricity and its amendments) [9].

Lithuania had introduced an annual maximum quota of RES-E to be purchased at the guaranteed price for period 2004-2010, differentiated according to RES technologies (Order No. 1474 on approval of legal acts necessary for implementation of the Law on Electricity and its amendments) [10]. No new quotas are set yet.

According to the new Law on RES, RES-E will be supported by feed-in tariff. The size of the feed-in tariff will be established by tenders, and a maximum level of feed-in tariffs will be defined by the National Control Commission for Prices and Energy for each year. The participant who proposes the lowest price will win the tender. In case two or more tender participants will propose the same price, the bigger capacity will be the winner. Producers up to 30 kW for all RES technologies will be supported through a feed in tariff with purchase obligation. Feed-in tariffs will be defined for 12 years. This new support scheme will come into force on 31 December 2011 [3].

Existing national regulations require the usage of certified equipment.

Lithuanian Environmental Investment Fund (LEIF)

The LEIF supports investment projects in the form of interest subsidies and soft loans. The main goal of this fund is to support public and private entities in realization of environmental projects. The amount of subsidy to one beneficiary may not exceed 690,000 Litas (199,838 €) or 80% of the total eligible costs. 60% of the subsidy is paid to the beneficiary after the plant has been commissioned, and all required documents have been submitted. The remaining 40% is paid to the beneficiary after specific environmental targets have been reached.

There are biannual updates about the situation of this financial support fund via the media or the following website: <http://www.laaif.lt>. The new call of applications for investment projects is foreseen in spring 2011.¹²⁸

Lithuanian Rural Development Programme for 2007-2013

The following activities are supported under Measure 6 "Modernization of agricultural holdings" of direction I: production of biogas from waste composing at the farm (biogas can be used only for own needs), cultivation of short-rotation plantations and building of wind power plants up to 250 kW capacity. Under Measure 1 "Transition to non-agricultural activities" and Measure 2 "Support to Business Creation and Development" of direction III of this programme the following activities are financed: disposal of non-hazardous waste by incinerating or producing steam, pellets, biogas for further use as well as disposal of straw and hay waste by producing pellets. The National Paying Agency under the Ministry of Agriculture is responsible for implementation of this programme. The Lithuanian Rural Development Programme for 2007-2013 is periodically revised taking into account the economic and market situation in the country. The maximum amount of support per beneficiary cannot exceed 345,280 LTL (100,000 €) or 1,381,120 LTL (400,000 €) if the applicant is a recognized agricultural cooperative

128 The call was announced 27 May 2011, application deadline is 1 August 2011
<http://www.laaif.lt/index.php?-1898870797>

under Measure 6. The maximum amount of support per beneficiary cannot exceed 690,560 LTL (200,000 €) under Measures 1 and 2 [14].

The Fund of the Special Programme for Climate Change

The Fund of the Special Programme for Climate Change was created in order to support projects which aim to reduce greenhouse gas emissions according to the Law on Financial Instruments for Climate Change Management adopted on 7 July 2009 by decision No. XI-329 [15]. The procedure for the use of this fund was adopted on 6 April 2010 [15]. According to this procedure, the Ministry of Environment is responsible for administration of this fund. The fund will be used to finance the energy efficiency projects, the promotion of the use of RES as well as introduction of environment-friendly technologies, including cogeneration technologies and other environmental projects. No less than 40% will be used for the promotion of RES.

This Fund will provide support for RES project in the form of loans and subsidies. Loans will be granted to natural persons and legal entities conducting commercial activities. A loan under this programme will be granted through a credit institution, which has entered into a cooperation agreement with the Ministry of Environment. The total amount of a loan per applicant is not subject to restrictions; however, the share of the funds of a credit institution in the total amount of a loan shall comprise no less than 20%. The maximum term for repayment of a loan granted to the applicant shall not exceed 6 years.

Subsidies will be granted to the natural or legal persons not engaged in economic and commercial activities, rural communities, managers of the public entities (with the exception of income-generating projects), legal persons engaged in economic and commercial activities (with the exception of income-generating projects). A natural person may be granted a subsidy solely for the implementation of small-scale projects. The maximum amount of a subsidy for an applicant not engaged in economic and commercial activities should be 5 million LTL (1.45 million €), for an applicant engaged in economic and commercial activities – 690 thousand LTL (199.8 thousand €), however the amount of the subsidy per project may not exceed 80% of the total eligible project expenditure.

The fund will be used in accordance with the approved annual budget. The funds received additionally or unused during the current budget year will be used for financing projects in the following year. The Fund of the Special Programme for Climate Change during 2010 did not receive revenues from the sale of GHG assigned amount units; therefore there was no possibility to support any RES project. 240 million LTL (69.5 million €) are assigned for RES projects in 2011 according to the annual budget of the fund adopted by decision No. D1-131 on 10 February 2011 [18].

More information about the measure can be found on website of Ministry of Environment (<http://www.am.lt>).

Ongoing Significant Policy Changes at National Level

In March 2009, the Committee on Environmental Protection of the Seimas of the Republic of Lithuania established the working group for the preparation of the new Law on RES. This working group prepared a draft of the Law on RES and presented to the Seimas of the Republic of Lithuania on February 2010. Currently the draft of the Law on RES is under discussions at the Seimas of the Republic of Lithuania. Adoption of the

Law on RES could have direct impacts on RES-E, RES-H and RES-T deployment in the future.¹²⁹

3 Details RES-Heating and Cooling Support Policy

Lithuania is promoting the use of RES-H by only a few financial measures and there is no direct support for RES-H.

Heat Law

The Law on Heat adopted on May 2003 by decision No. IX-1565, regulates state control of the heat sector, activities of heat units, their relations with heat consumers and responsibilities [11]. One of the main purposes of this Law is to promote the use of domestic resources, biofuels and RES for heat production. Article 4 of this Law promotes combined heat and power (CHP) production, heat production from biofuels as well as RES within this sector. This article states that CHP production is a public service obligation and the government, or its authorized institutions, determines the amount and method of electricity purchases from CHP producers. Moreover, the State (through its municipalities) encourages purchases of heat produced from biomass, waste, geothermal energy and other RES.

According to the amendment of the Law on Heat adopted in June 2010 by decision No. XI-862, heat suppliers should purchase heat produced from RES, waste and fossil fuel from independent heat producers, which satisfy quality, supply security and environmental requirements [12]. The National Control Commission for Prices and Energy determines heat purchase order and conditions from independent heat producers. In all cases heat purchased from independent producers could not be more expensive than that of the supplier's comparable expenditures of heat production.

Exemption from pollution taxes

According to the amendment of the Law on Pollution Taxes, adopted on March 2005 by decision No. X-152, natural and legal persons who submit evidence on biofuels consumption are exempt from taxes on pollution from stationary sources [13].

The Lithuanian Environmental Investment Fund

It is possible to get support for RES-H investment projects in the form of interest subsidies and soft loans from the LEIF. This fund does not finance projects that are related to wood use in heat production within towns and regions where it is possible to use natural gas. The acceptance of investment projects was suspended in the second half of 2009 due to economical situation in the country. Currently the new call for acceptance of applications is foreseen in spring 2011.¹³⁰

129 The new Law on RES was approved by decision No. XI-1375 on 24 May 2011 [3]. The new RES support schemes will come into force 31 December 2011.

130 The call was announced 27 May 2011, application deadline is 1 August 2011
<http://www.laaif.lt/index.php?-1898870797>

EU structural funds

Investment support from EU structural funds, related to RES deployment, is dedicated only to heat production projects using biomass during 2007-2013. Heat supply companies can get support from the Economy Development Action and Cohesion Promotion Action Program. The support is provided according to the measure “Utilization of RES for energy production”. Under this measure the following activities are supported:

- modernization of boiler-houses that supply heat to district heating systems by changing the used fossil fuel type to biomass
- modernization of CHP plants that supply heat to district heating systems by changing the used fossil fuel type to biomass
- building of new boiler houses using RES
- building of new CHP using RES.

It is planned to support 35 projects with a projected capacity of up to 100 MW. It is planned to provide total support of 127 million Litas (36.78 million €) [17].

RES-H projects can also get financial support under the Lithuanian Rural Development Programme for 2007-2013 and the Fund of the Special Programme for Climate Change. The financial support is provided in accordance to the same conditions as for RES-E projects (see previous chapter).

Building obligations

There are no building obligations that require the use of RES.

4 Details RES-Transport Support Policy

The main target is 10% for energy from RES-T by 2020 (5,75% by 2010). There is no specific yearly target on RES-T technologies.

Financial support

The Law on Excise Taxes provides an excise tax relief for energy products from material of biological origin, i.e. rate of excise tax is reduced in proportion to the percentage of biomass in a tonne of the concerned product [20]. The relief is applicable to bioethanol, biodiesel, bio-ETBE and pre-vegetable oil.

The Law on Pollution Tax provides a pollution tax exemption for vehicles which use biofuel. This is based on a set of defined standards and on evidence documentation of biofuel consumption.

According to the Rules on funding for biofuel production development within the RES-T sector, adopted on 9 September 2009 by the Minister of Agriculture, compensation is granted for raw materials sold for production of biofuels: for rapeseed grains – 160 LTL/tonne (46 €/tonne), for cereal grains – 114 LTL/tonne (33 €/tonne) [21]. However, for 2010 there is a cap for compensation on the total amount of grains: 79,619 tonnes of rapeseed grains and 50,004 tonnes of cereal grains. Beneficiaries of this compensation

are producers of rapeseed oil, used for production of rapeseed methyl ester, of rapeseed methyl (ethyl) ester and of dehydrated ethanol.

There is no specific support for electric vehicles that use renewable electricity. Only in April 2011 Lithuania's first charging station for electric vehicles was opened in Kaunas [19].

5 RES-E Grid Integration

Grid access, balancing responsibility and associated costs for RES-E projects

RES-E projects do not have priority in grid connection. According to the provisions of Law on Electricity, plants generating RES-E should be connected to the grid in compliance with the principle of non-discrimination.

The charges on connection of RES-E plants are reduced by 40%. This charge also includes the grid expansion (if necessary). The grid operators shall guarantee the preferential transmission of RES-E. However, they are not obligated to expand their grids by statutory law. When expanding their grids, the grid operators are obliged to comply with the general provisions of Law on Electricity. If the grid capacity is insufficient, the grid operators shall guarantee the preferential transmission of RES-E.

According to the Law on Electricity, TSO must forecast long-term capacity balance and provide information to market participants about the forecasted shortage or limitations of the generation and/or transmission capacity.

6 RES Production, Potential and Market Development

RES-E

Current RES-E production is fully dominated by hydropower, generating 420 GWh in 2007. The growth in RES-E production from wind is remarkable: from 2 GWh in 2005, its contribution rose to 106 GWh in 2007. Electricity production from solid biomass increased to 48 GWh and from biogas to 5 GWh in 2007. The contribution of RES to the overall electricity consumption in Lithuania was 2.7% in 1997 and 4.8% in 2007.

Currently the main barriers to RES-E in Lithuania are a long lead-time for the authorisation procedure, long EIA procedures and a long lasting change of the legal status of land.

RES-H&C

Renewable heat satisfied 26.1% of the total Lithuanian heat demand in 2007.

Biomass has been traditionally used for heat production in private households were 529 ktoe worth of biomass were burnt in boilers of mostly low efficiency during 2007. A growing 135 ktoe worth of biomass were used, during the same year, in district heating, a technology reaching 75% of all Lithuanian residential buildings. A geothermal heat plant supplies the district heating grid of the city of Klaipeda. It produced 8.7 ktoe worth of heat in 2007.

RES-T

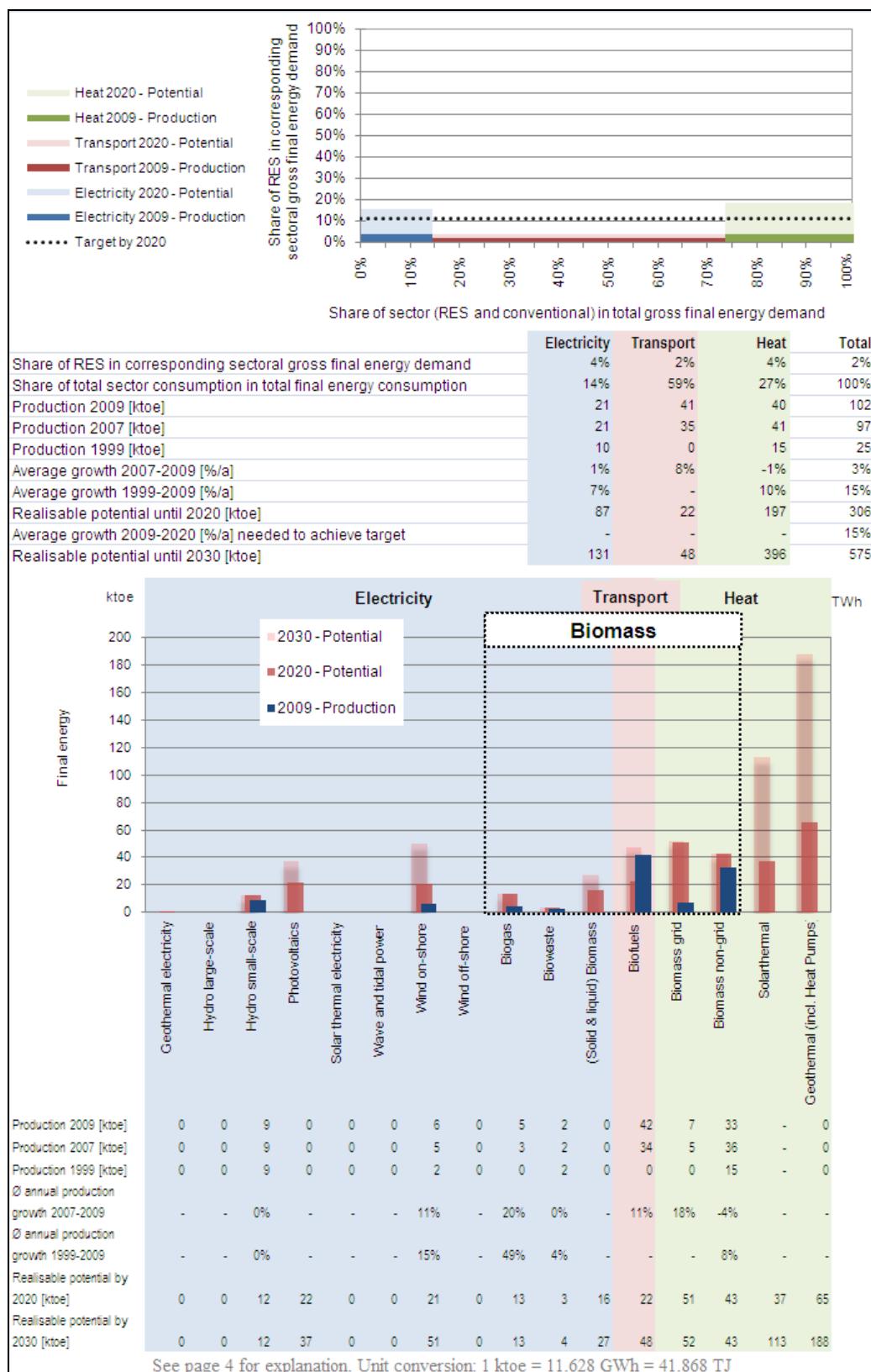
Biofuel penetration has almost doubled between 2006 and 2007. Such a significant increase in biofuel penetration has been enabled by existing support measures. In 2007, biodiesel consumption was 42 ktoe and bioethanol consumption was 11 ktoe. Roughly 80% of biofuel use in Lithuania is biodiesel, the rest being bioethanol. In 2007, Lithuania exported 5.1 ktoe of biodiesel and 0.2 ktoe of bioethanol.

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LUXEMBOURG - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

No major changes occurred in the RE policy framework of Luxembourg since the last version of RE-Shaping country profiles.

In the field of RES-E, subsidies have been introduced to support companies that invest in renewables for electricity production.

1 Summary: RES Support Policy

RES-E

The main support instrument for RES-E in Luxembourg is a feed-in tariff which was introduced in 1993 and amended in February 2008. The new tariffs are valid for installations starting after the beginning of 2008. The tariffs are declining for new installations, according to a fixed calculation method. Beneficent technologies are wind, solar, hydro, sewage and biogas, solid biomass and waste wood. In addition, solar PV in buildings is supported through subsidies. In 2010, a further grant for the use of RES-E in enterprises was introduced which covers up to 45% of the additional costs compared to a non-renewable solution. On a regional level, there is some minor support for renewables in general, including RES-E, but these schemes do not contribute substantially to the deployment of RES-E.

RES-H&C

The key support instruments for RES-H are investment incentives for the use of renewables in buildings. In the past, this instrument changed with regard to who is eligible for support. Thus, the full potential for RES-H could not be deployed.

RES-T

The key support instruments for RES-T are a biofuels quota and a tax deduction. The quota was introduced in 2007 because the tax deduction did not lead to the amount of biofuels used that was expected. In addition, a bonus model for low-emission cars is in place; the support for electric vehicles is tied to the use of renewable electricity.

2 Details RES-Electricity Support Policy

Feed-in Tariff¹³¹

The most significant support instrument for RES-E is a feed-in tariff based on the “Règlement grand-ducal du 8 février 2008 relatif à la production d'électricité base sur les sources d'énergie renouvelables” which amends the 1993 framework law for the feed-in tariff. The Ministry of Economy and Foreign Trade is in charge of implementing and executing the law.

The currently implemented feed-in tariff scheme can be characterized as follows:

- There is no end date set for this support instrument; it will be in place until further notice.
- The support is guaranteed for a fixed timeframe: Installations using wind, solar, hydro and biomass as energy sources receive the fixed feed-in tariff for 15 years; renewed or extended biogas stations receive it for 20 years. In both cases, the tariff stays constant over the whole support period.
- The feed-in tariff can be combined with a subsidy for PV installations (described as next support instrument).
- The payment of the feed-in tariff is not subject to certain, certified equipment.
- The tariff depends on the type of technology and the size of the plant (see table 1). The tariffs for new installations for all technologies will decline annually by a certain percentage. The calculation of the tariff is included in the current law (RGD 08.02.2008) and differs also between technologies.

Table 1: Feed-in tariffs for RES-E in 2009 and 2010 (€/MWh)

Technology		2009	2010	2011
Wind		82.49	82.27	82.08
solar	≤ 30 kW	407.4	394.8	382.2
	> 30 kW; ≤ 1 MW	358.9	347.8	336.7
hydro	≤ 1 MW	104.74	104.48	104.21
	> 1 MW; ≤ 6 MW	84.79	84.58	84.36
biogas	≤ 150 kW	149.63	149.25	148.88
	> 150 kW; ≤ 300 kW	139.7	139.3	138.95
	> 300 kW; ≤ 500 kW	129.68	129.35	129.03
	> 500 kW; ≤ 2500 kW	119.7	119.4	119.1
Sewage gas		64.84	64.68	64.51
Solid biomass	≤ 1 MW	144.64	144.28	143.91
	> 1 MW; ≤ 5 MW	124.69	124.38	124.06
Waste wood	≤ 1 MW	129.68	129.35	129.03
	> 1 MW; ≤ 5 MW	109.73	109.45	109.18

¹³¹ More information about the feed-in tariff can be obtained from the Ministry's website (http://www.environnement.public.lu/energies_renouvelables/) and directly at the “Administration de l'environnement”, Service des Economies d'Energie, telephone +352 - 26 84 78-400.

Investment incentive - PV

The second support instrument for RES-E in Luxembourg are subsidies, defined in the “Règlement grand-ducal du 20 avril 2009 instituant un régime d'aides pour la promotion de l'utilisation rationnelle de l'énergie et la mise en valeur des énergies renouvelables”. The focus of this support is measures regarding energy efficiency and the use of renewable energies in buildings. Primarily, renewable energies used for heating purposes are addressed; PV is the only eligible RES-E technology. The maximum size of the roof-mounted or façade-integrated PV installation is 30 kW_{peak}.

It is possible to combine these subsidies with the above-mentioned feed-in tariff. The payment of the subsidies is not linked to the use of certified equipment or installers.

Beneficiaries of this support instrument are private persons, non-profit enterprises and private and public building promoters, as long as the premises do not belong to the state. Only projects on the territory of Luxembourg are eligible. The scheme is limited to a maximum amount and / or maximum supported size per project. Up to 30% of the project's cost are subsidised with a maximum of 1650 €/kW_{peak}. There is no cap indicated in the RGD, neither annually nor in total. Further detailed information about the subsidy is given in the next section on RES-H.

Investment incentive - enterprises

Enterprises that invest in RES-E can apply for investment grants at the Ministries for Economy and Finance. According to the Law on Support for the protection of the environment and rational use of natural resources from 18 February 2010 (“Régime d'aides à la protection de l'environnement et à l'utilisation rationnelle des ressources naturelles”), all renewable energies are eligible.

Up to 45% of the additional costs compared to a conventional, non-renewable solution can be supported; this maximum can however be increased by 10 percentage points for medium and 20 percentage points for small enterprises.

The Ministries decide on the support on a case by case basis.

3 Details RES-Heating and Cooling Support Policy

Investment incentives

The most important support instrument for RES-H in Luxembourg is the provision of investment incentives, defined in the “Règlement grand-ducal du 20 avril 2009 instituant un régime d'aides pour la promotion de l'utilisation rationnelle de l'énergie et la mise en valeur des énergies renouvelables”. The focus of this support is measures regarding energy efficiency and the use of renewable energies in buildings, mainly for heating purposes.

The Ministry of Environment and the Ministry of Finance are responsible for the execution of this instrument. Applications are to be addressed at the “Administration de l'environnement”.

Further information about the subsidies can be found at the ministry of environment's website: http://www.environnement.public.lu/energies_renouvelables/index.html

Here, the legal document can also be found. In addition, the forms for requesting the subsidies are published:
http://www.environnement.public.lu/quichet_virtuel/energie/formulaires_RGD_2008/index.html. Applications can be handed in continuously.

No periodical revision is foreseen, and the amount that is to be subsidized is fixed in the current RGD. The grants are for investments that are invoiced between January 1, 2008 and December 31, 2012. It is possible to combine these grants with the above-mentioned feed-in tariff.

The grant is paid irrespectively of certified equipment or installers. However, the installed technology has to meet certain technical requirements, specified in Annex II of RGD 20.04.2009.

Beneficiaries of this support instrument are private persons, non-profit enterprises and private and public building promoters, as long as they do not belong to the state. Only projects on the territory of Luxembourg are eligible.

The scheme is limited to a maximum amount and / or maximum supported size per project, depending on the technology used (see table 2).

Table 2: Investment incentives for RES-H.

Technology	Specification	Max. % of total costs	Max. amount in €
Solar thermal	DHW	50	3000 (3000 / 15000)*
	DHW and heating	50	5000 (5000 / 15000)*
Heat pump	Ground source	40	6000 (4000 / 20000)*
	Air	40	3000 (2000 / 10000)*
Biomass	Central heating; pellets or wood chips	30	4000 (4000 / 20000)*
	Furnace; pellets	30	2500
	Central heating; log wood	25	2500 (2000 / 10000)*

* if used in multifamily houses: number in front of the slash: amount to be multiplied by the number of apartments; number after the slash: maximum amount per house

There is no cap indicated in the RGD, neither annually nor in total.

Subsidies for CHP

The subsidy support scheme for RES-E and RES-H encourages the use of micro-CHP, to the extent that micro-CHP with a combustion or Stirling engine using renewable sources can claim a subsidy of 25% of investment costs but no more than 3000€. This applies to CHP in the range of 1 – 6 kW.

Heating grids connecting at least two residential buildings can be supported with subsidies adding totalling 30% of the investment costs with a maximum of 7500€.

The connection to a heating grid can be supported with a subsidy of 50 €/kW for single family homes and 15 €/kW for multi family homes. The heat supplied to the grid has to be at least 75% from renewable sources.

The maximum eligible thermal capacity is:

- for existing buildings: 20 kW for single family homes, 12 kW for one apartment in a multi family home
- for new buildings: 15 kW for single family homes, 8 kW for one apartment in a multi family home

Premium for Heat from CHP (part of RES-E feed-in tariff)

Within the regulations for the feed-in tariff, an additional premium for the use of heat (prime de chaleur) is introduced. This premium is paid for each MWh_{th} of commercialised heat which originates from cogeneration using pure biogas or solid biomass. This is valid for both new installations and extended ones. In order to be eligible for this premium, certain conditions (specified in Article 10.5 and Article 12.4 of RGD 08.02.2008) have to be fulfilled. The premium amounts to 30 €/MWh_{th} (commercialized heat).

There are no special support schemes for RES-H&C in industrial applications.

4 Details RES-Transport Support Policy

Quota

Since the beginning of 2007, a quota for biofuels is set which has to be fulfilled by those operators who provide transport fuels for consumption. The quota is set in the budget law, which is the responsibility of the entire government. The respective budgetary law can be found here: <http://www.legilux.public.lu/leg/a/archives/2008/0200/a200.pdf>

The annually renewed law can be found via the search function of <http://www.legilux.public.lu/>

Since 2007, the quota is set at 2%. In case the quota is not fulfilled, a penalty called “pollution tax” has to be paid. The penalty amounts to 1200 €/1000 litres that have not fulfilled the quota.

There is no differentiation according to fuel types or technologies. There is no specific support for biofuels produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material.

Tax deduction

In addition to the quota, biofuels can benefit from a tax deduction which can be obtained regardless of the fulfilment of the quota. This tax deduction only applies when the share of biofuels adds up to at least 2.93% vol in petrol and 2.17% vol. in diesel. The deduction may not exceed 23€/1000 litres for unleaded petrol and 10€/1000 litres for diesel.

The budget law is revised annually; in the last three years, the quota has not changed.

Premium for low-emission vehicles (PRIMe CARe)

A once-only premium is in place for low-emission vehicles; the height of the premium varies between 750€ and 3000€ and depends on the emissions of the car.

750€ are granted if the car:



- is registered until 31 December 2011
- does not emit more than 5mg/km of particulate matter
- does not emit more than
 - o 110gCO₂/km (registered until 31 July 2011)
 - o 100 gCO₂/km (registered from 1 August 2011 on)

1500 € are granted if:

- As above, but stronger limits for CO₂ emissions:
 - o 100 g CO₂/km (registered until 31 July 2011)
 - o 90 g CO₂/km (registered from 1 August 2011 on)

3000 € are granted if the car

- fulfils conditions as above, but in addition:
- is registered between 1 January and 31 December 2011
- does not emit more than 60 gCO₂/km or
- is a fully electric vehicle, but only, if the owner of the car has at the latest 6 months prior to the application for the premium signed a contract for **fully renewable electricity**.

5 RES-E Grid Integration

RES-E projects do not have priority in grid connection. The access to the grid is intended to be objective, transparent and non-discriminatory towards all types of electricity production. Generally, there is no grid priority for RES-E. However, in case of a discrepancy between supply and demand, the transmission grid operator is required to preferentially use RES-E, electricity from waste and CHP. At the moment, Luxembourg has a deep connection charging: costs for the grid expansion are carried by the producer of electricity, who requests connection to the grid. Law 01.08.2007 on the organisation of the electricity market includes the possibility for further regulation to be introduced on the allocation of grid expansion costs. So far, however, no further regulation is in place.

According to the same law, all producers, including RES-E, when connected to the grid for the first time or after a change in the installation, are required to indicate their foreseen annual production. However, no payment for balancing costs is foreseen.

6 RES Production, Potential and Market Development

RES-E

The share of RES-E in the total electricity demand amounted to about 3.6% in 2007 compared to 2.1% in 1997.



The largest amount of RES-E is produced using hydropower. The highest annual growth rate, 36%, can be observed in the use of onshore wind: from 3 GWh in 1997 to 64 GWh in 2007. Electricity produced from biogas did not exist in 1997, but accounted for 37 GWh in 2007. Although support is high, progress of PV is limited so far.

RES-H&C

RES-H in Luxembourg originates mainly from biomass (186 TJ in 2006) and to a very small extent from solar thermal (8 TJ in 2007). The support for RES-H changed several times in the past. In some years, only households were supported. Currently non-profit companies and private and public building promoters can also apply. This might have caused uncertainty and an unstable investment climate in the past. If the support scheme stabilises, the deployment of RES-H might grow.

RES-T

Biofuels deployed in Luxembourg are mainly biodiesel (35 ktoe in 2007) and, very in very small quantities, bioethanol, with 1 ktoe in 2007. The use of biofuels did not start before 2006. In Luxembourg, biofuels encounter quite strong resentment from the general public and from environmental organisations. However, in summer 2007, the government signed a contract to support a biofuels factory in Luxembourg which is intended to start production in 2009.

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<http://www.energieagence.lu/fr>

Rapport en execution de l'article 4, paragraphe 1, de la directive 2003/30/CE visant à promouvoir l'utilisation de biocarburants ou autres carburants renouvelables dans les transports:

http://ec.europa.eu/energy/renewables/biofuels/ms_reports_dir_2003_30_en.htm

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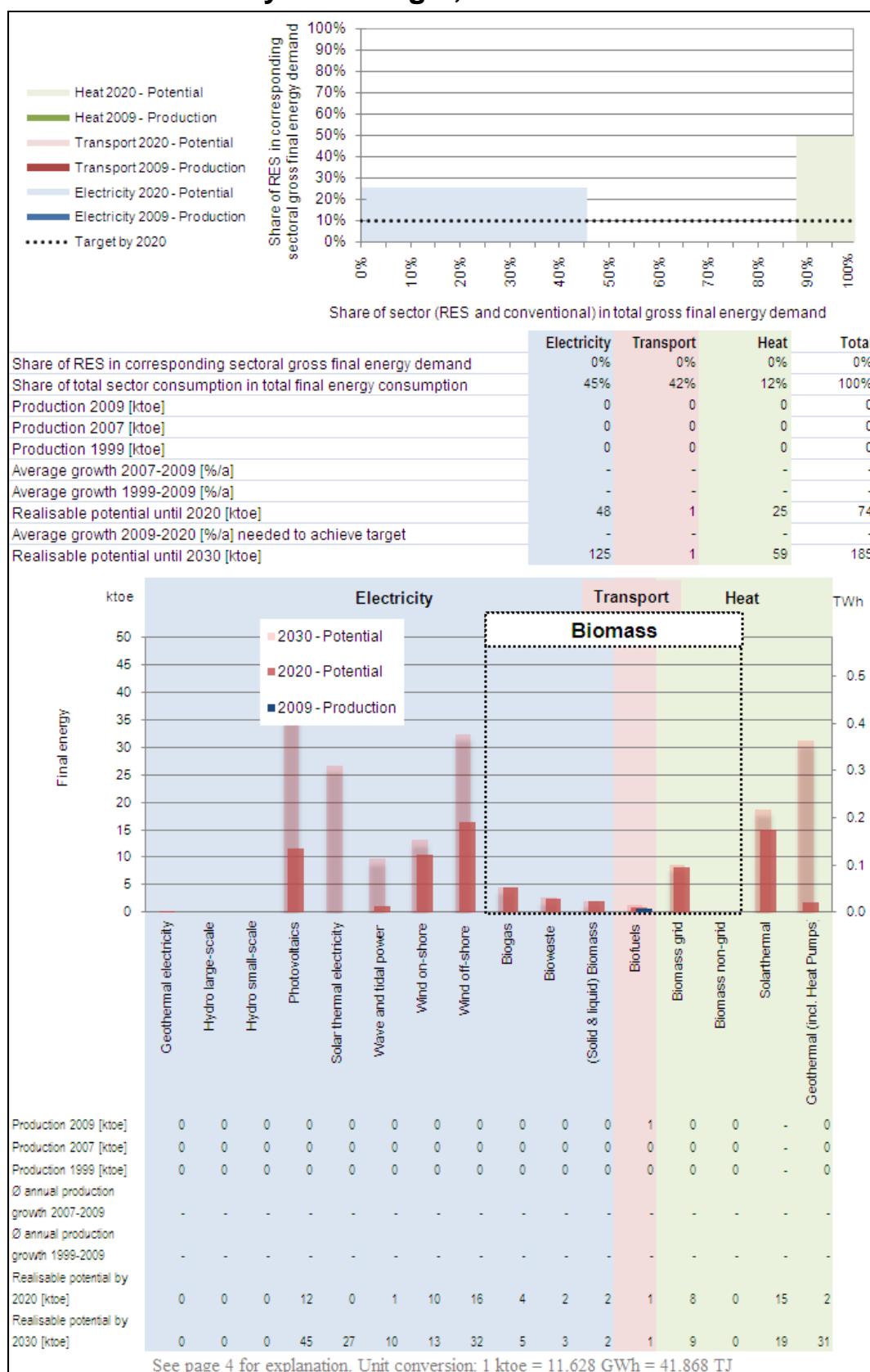
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<http://www.legilux.public.lu/leg/a/archives/2010/0044/a044.pdf#page=2>

MALTA - Summary RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

The energy policy of Malta is mainly focusing on stimulating PV solar power and wind energy. For PV existing policies have been extended. Wind energy is promoted on both small (domestic scale) onshore and offshore. Three possible locations for wind parks have been indicated. The feed-in-tariff has been increased to 25-28 €ct/kWh for small scale domestic PV.

Policies on RES H/C and RES-T have remained almost unchanged. The grant scheme for solar water heaters is prolonged and the once-only grant for electrical vehicles has been increased.

1 Summary: RES Support Policy

RES-E

Support for RES-E is primarily aimed at households. Key support instruments for RES-E are grants for PV and small-scale wind for households. Small PV installations also receive a guaranteed tariff based on net metering for every kWh of solar electricity that is fed back into the grid. In 2010 this tariff has been fixed to 25-28 €ct/kWh and is guaranteed for 8 years. Non-domestic use of RES has a feed-in-tariff of 20 €ct/kWh and is guaranteed for 7 years. New plans for large-scale RES-production have lead to the proposal of three offshore wind parks. Because the schemes may be terminated at any time, the investment climate in Malta for both households and private investors (including suppliers of installations) is highly insecure and therefore risky.

RES-H&C

Key policy instruments for RES-H are grants for domestic solar water heaters and soft loans. Support schemes for non-domestic investors/producers are not in place.

RES-T

The key support policy for RES-T is a tax exemption on the biomass content in biodiesel and a biofuels quota obligation: The compulsory target for 2010 was set at 5.75%. In accordance with the new Renewable Energy Directive 2009/28/EC, the government has set a binding target of 10 % renewable energy in road transport by 2020.

The once-only grant for electric cars has been increased to 20% of the purchase price of the car and the maximum grant has almost been doubled.

2 Details RES-Electricity Support Policy

Capital Grants (Once-Only Grant) for PV and Wind

The Maltese Ministry of Finance grants once-only investment subsidies for small wind and solar photovoltaic (PV) systems to domestic investors within Malta¹³². The grants on capital investment aim at promoting an increase in domestic electricity generation from small-scale solar and wind energy. The instrument is managed by the Ministry of Resources and Rural Affairs. It is implemented and administered by the Malta Resource and Infrastructure Authority (Directorate for Energy Resources Regulation).

- <http://www.mra.org.mt/Support%20Schemes.shtml>
- Telephone: +356 2295 5143

The party entitled to subsidies for wind and solar energy systems are land owners who have installed a wind or solar power system for domestic use that is connected to the grid. A development permit is required prior to application.

PV

50% of eligible costs are funded up to a maximum of Euro 3,000 per family / installation¹³³. There is a cap on the budget and up to 200 families can benefit from the scheme.

For PV, the old scheme that ran from 2006 until 2009 has been terminated with effect from 15 February 2009, in accordance with Government Notice 81 of 2009¹³⁴. From 16 February 2009 until 28 February 2009, new applications for PV systems with an installed capacity of more than 0.5kW were received. On July 22, 2010 a new scheme for domestic PV was placed in the Government Gazette. Applicants could apply between July 28 to August 10 2010. Applicants that received a grant in 2008 or 2009 were exempted from this scheme¹³⁵.

The scheme can be modified or terminated at any time by means of a Notice in the official government Gazette. The scheme may be renewed as deemed necessary by the Minister responsible for Resources and Rural Affairs upon consultation with the Minister of Finance, Economy and Investment by means of a notice in the Gazette. There are no start or end dates set for a follow-up of the scheme.

132A communal home (e.g. a convent) may be considered as a residence and hence are eligible under the scheme. http://www.interpv.net/wsr/wsr_view.asp?idx=356&part_code=02&page=1

133 The old scheme: Solar power. The grant for solar energy systems amounts to 20% of the purchase price of a photovoltaic system (panels, inverters, cabling) with a minimum installed size of 1 kWp (+/- 5%), with a maximum grant of 1160 €. Furthermore, the state grants an additional 580€ for every additional kilowatt above the minimum capacity up to a maximum capacity of 3.7 kWp. Fractions of an additionally installed kWp are treated pro rata (par. 5 OGPS).

134 http://www.mra.org.mt/Downloads/Grants/2009%20Schemes/GN_81-2009.pdf

135Government notice No. 18,622, available at:
<http://www.mra.org.mt/Downloads/Grants/2010%20Schemes/GG2022.7.pdf>

The scheme is regulated through Government notice No. 81 – ‘A Grant on the Purchase of Systems for Domestic Use that Reduce the Use of Energy, or Use Renewable Sources of Energy’¹³⁶. The former regulation GN_135_2006 can be found here:

http://www.mra.org.mt/Downloads/Grants/GN2006_135%20pv%20and%20roof%20insulation%20grant.pdf.

http://www.mra.org.mt/Downloads/Grants/2009%20Schemes/GN_81-2009.pdf

The support is conditional to certified equipment and installers that have to be registered with the Malta Resources Authority (MRA). The list of participating retailers and qualified models can be found on the website of the MRA.¹³⁷

Wind

Micro wind turbines installed on domestic premises may qualify for a grant of 25% on the purchase price of micro wind systems (with a maximum generation capacity of 3.7 kW) and are eligible to a maximum of € 232.94 (100 Maltese Liri)¹³⁸. The Once-only grant scheme has been effective since 2006. It is renewed for further periods of one year unless a Notice to the contrary is published in the Gazette. The scheme may be terminated at any time by a Notice in the Government Gazette. The overall budget is not capped.

The scheme is regulated through GN_136_2006 – ‘A Once-Only Grant on the Purchase of Wind Energy Systems for Domestic Use’¹³⁹. The support is not conditional to certified equipment and installers.

To meet their 20% target in 2020, Malta is also considering an offshore wind farm at three locations in the Mediterranean Sea. The Sikka L-Bajda will be the largest farm with an installed capacity 65 – 87 MW¹⁴⁰, depending on the type of turbines and the available area. The wind farm would be set up through private investments totalling €300 million¹⁴¹. Wied Rini (maximum capacity of 10 MW¹⁴²) and Hal Far (maximum capacity of 4.25 MW¹⁴³) are a lot smaller.

In February a monitoring post nearby the proposed site for the Sikka L-Bajda wind farm showed that enough wind was generated to make an offshore wind park economically viable¹⁴⁴. Studies on environmental impact and the suitability of the site are still pending.

136 Government notice No 81 (GN_81_2009). Ministry of Resources and Rural Affairs. http://www.mra.org.mt/Downloads/Grants/2009%20Schemes/GN_81-2009.pdf

137 <http://www.mra.org.mt/Downloads/Grants/2009%20Schemes/Eligible%20Products-Photovoltaics-110909.pdf>

138 <http://www.mra.org.mt/microwind.shtml>

139 Promotion directive of the Ministry of Finance. Government notice No. 136. http://www.mra.org.mt/Downloads/Grants/GN2006_136%20wind%20grant.pdf

140 <http://www.mrra.gov.mt/htdocs/docs/renewableenergycredentialsjan2009.pdf>

141 <http://www.offshorewind.biz/2011/02/02/malta-offshore-wind-farm-economically-viable/>

142 <http://www.mrra.gov.mt/htdocs/docs/wiedriniprojectdescription.pdf>

143 <http://www.mrra.gov.mt/htdocs/docs/halfarprojectdescription.pdf>

144 <http://www.offshorewind.biz/2011/02/02/malta-offshore-wind-farm-economically-viable/>

The projects will proceed depending on the outcome of such studies. An international call will eventually be issued for investors who would be interested in investing in these projects.

Feed-in Tariff (net metering)

Since 2004, Malta has promoted the generation of electricity by domestic PV systems through a net-metering system¹⁴⁵. A metering device measures the electricity consumed by the plant operator and the amount that is fed into the grid. If the production exceeds the customer's total electricity consumption, the grid operator (Enemalta) pays a feed-in tariff for every kWh of solar electricity that is fed back into the grid. In 2010 the feed-in tariff for domestic premises was 25 (Malta) or 28 (Gozo) EURct/kWh, guaranteed for 8 years, with a maximum of 4.8 MWh per year. For non-residential and institutional premises this was 20 EURct/kWh, guaranteed for 7 years with a maximum of 160 MWh per year¹⁴⁶.

The instrument is controlled by the Ministry of Resources and Rural Affairs. It is implemented and administered by the Malta Resource and Infrastructure Authority (Directorate for Energy Resources Regulation) in cooperation with Enemalta.

Malta Resource and Infrastructure Authority

- <http://www.mra.org.mt/Support%20Schemes.shtml>
- Telephone: +356 2295 5143

Enemalta

- <http://www.enemalta.com.mt>
- Telephone: +356 21 224600

The scheme is regulated through 'Subsidiary Legislation 423.46. Feed in Tariffs (electricity generated from solar photovoltaic installations) regulations, 10th September, 2010, Legal Notice 422 of 2010.¹⁴⁷

It is not specified by the government that the policy of net metering is changed to a feed-in tariff, and they are in favour of having tariffs relative to the technology used to generate the electrical power¹⁴⁸. To date, this only applies to PV.

The tariff may be combined with the once-only grant.

¹⁴⁵ Reg. 7 (7) Promotion of Electricity produced from Renewable Energy Sources (PRESR).

<http://docs.justice.gov.mt/lom/Legislation/English/SubLeg/423/19.pdf>

¹⁴⁶ Subsidiary Legislation 423.46 – Feed in Tariffs (electricity generated from solar photovoltaic installations) regulations

<http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=11430&l=1>

¹⁴⁷ <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=11430&l=1>

¹⁴⁸ <http://www.mra.org.mt/Downloads/Publications/Analysis%20of%20Cogeneration%20Potential%20Report.pdf> June 2009.

Soft Loans

For hotel and restaurant establishments soft loan schemes are available to encourage the use of renewable energy¹⁴⁹.

3 Details RES-Heating and Cooling

Capital Grant (Once-only grant) for Solar Water Heaters

This scheme, also valid for and described in the RES-E section (wind and PV) also applies for RES-H&C.

The Maltese Ministry of Finance grants once-only investment subsidies for solar water heaters (SWH) for domestic use. 40% of eligible costs are funded up to a maximum of Euro 560 per family/installation¹⁵⁰. There is no more than one grant available per technology, but families are eligible to receive subsidy for more than one technology¹⁵¹. Persons that have already benefited from a rebate in 2008 or 2009 or from other schemes that are not managed by MRA are not eligible¹⁵². There is no cap on the budget.

The instrument is controlled by the Ministry of Resources and Rural Affairs. It is implemented and administered by the Malta Resource and Infrastructure Authority (Directorate for Energy Resources Regulation).

- <http://www.mra.org.mt/Support%20Schemes.shtml>
- Telephone: +356 2295 5143

The previous scheme that ran from 2006 until 2009 has been terminated with effect from 15 February 2009 in accordance with Government Notice 81 of 2009¹⁵³. From 16 February 2009 until 28 February 2009, new applications for solar water heaters were received. On July 22 2010 again a new scheme for solar water heaters was published. Applicants could apply between July 28 to August 10 2010¹⁵⁴. The scheme can be modified or terminated at any time by means of a Notice in the official government Gazette. The scheme may be renewed as deemed necessary by the Minister responsible for Resources and Rural Affairs upon consultation with the Minister of Finance, Economy and Investment by means of a notice in the Gazette. There are no start or end dates set for a follow-up of the scheme.

¹⁴⁹ <http://www.miscomalta.com/pdfs/budget-2011-highlights.pdf>

¹⁵⁰ http://www.mra.org.mt/Downloads/Grants/2010%20Schemes/Application_Guidelines_SWH_2010.pdf

¹⁵¹ See previous section, there are also grants for small wind turbines and solar PV.

¹⁵² http://www.mra.org.mt/Downloads/Grants/2010%20Schemes/Application_Guidelines_SWH_2010.pdf

¹⁵³ http://www.mra.org.mt/Downloads/Grants/2009%20Schemes/GN_81-2009.pdf

¹⁵⁴ Government notice No. 18,622, available at:

<http://www.mra.org.mt/Downloads/Grants/2010%20Schemes/GG2022.7.pdf>



The scheme is regulated through Government notice No. 18,622 published on 22 July 2010 in the Government Gazette¹⁵⁵.

The support is conditional to certified equipment and installers that have to be registered with the Malta Resources Authority (MRA). The list of participating retailers and qualified models can be found on the website of the MRA.

Building Obligations

There are no building obligations regarding heating and cooling in Malta.

4 Details RES-Transport Support Policy

In line with the EU Biofuels Directive 2003/30/EC (promotion of the use of biofuels or other renewable fuels for transport), the Maltese Government has set an *indicative* target for the use of biofuels in 2005 of 0.3% of all fuel sold for road transport. In 2010 the *compulsory* target is set at 5.75%. The expectation is that this target will be easily met¹⁵⁶.

In accordance with the new Renewable Energy Directive 2009/28/EG, the government has set a binding target of 10 percent renewable energy in road transport by 2020.

There is no other specific support for biofuels produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material except that biofuels from these sources count double towards the target.

Since 2005, excise taxes no longer apply to the biomass content in biodiesel.

Capital Grant (Once-only grant) for Electric Cars

Since 2005, the Maltese Ministry of Finance grants once-only investment subsidies for electric cars. The instrument was previously controlled by the Ministry of Finance, but since 1 January 2008, it has been controlled by the Ministry of Resources and Rural Affairs. It is implemented and administered by the Malta Resource and Infrastructure Authority (Directorate for Energy Resources Regulation) ¹⁵⁷.

Electric-powered cars may qualify for a once-only grant of 20% on the purchase price of the car, and is eligible for a maximum grant of € 2,329. This Scheme shall remain in implementation for a period of one year from the effective date, unless terminated beforehand by a Government Notice in the Gazette, and shall be renewed for further periods of one year unless a Government Notice to the contrary is published in the Gazette.

155 Government notice No. 18,622, available at:

<http://www.mra.org.mt/Downloads/Grants/2010%20Schemes/GG2022.7.pdf>

156 A proposal for an Energy Policy for Malta. April 2009

. <http://www.mrra.gov.mt/htdocs/docs/Energy%20Policy%20for%20Malta.pdf>

157 <http://www.mra.org.mt/Support%20Schemes.shtml>

The most recent scheme was announced on 15 July 2008¹⁵⁸. In this scheme only the level of the grant has changed. The rest of the scheme is regulated through Government notice No. 203 2005¹⁵⁹. There is no cap on the budget.

5 RES-E Grid Integration

Plants generating electricity from renewable energy sources are entitled to preferential connection to the grid (Reg. 7 (1) PRESR). The plant operator is contractually entitled to the conclusion of an agreement of connection with the grid operator Enemalta. The contractual terms shall comply with the network code¹⁶⁰.

RES-E sources are also granted priority in dispatch¹⁶¹.

The costs of a connection to the grid are borne by the plant operator, but some authorities may require the grid operator to bear the full or partial costs for grid extensions and upstream grid reinforcements¹⁶². There is a relatively shallow level of connection sharing. Due to the low penetration of RES-E, the legal framework does not currently provide for special regulations on the distribution of the costs arising from the promotion system. The plant operator is entitled to the expansion of the upstream grid as specified by the agreement of connection¹⁶³. All other costs arising from the preferential treatment of RES-E (e.g. forecast of production and balancing) are borne by the grid operator.

158 <http://www.mra.org.mt/Downloads/Grants/GG%202008-607.pdf>

159 http://www.mra.org.mt/Downloads/Grants/GN2005_0203%20grant%20for%20energy-friendly%20measures.pdf.

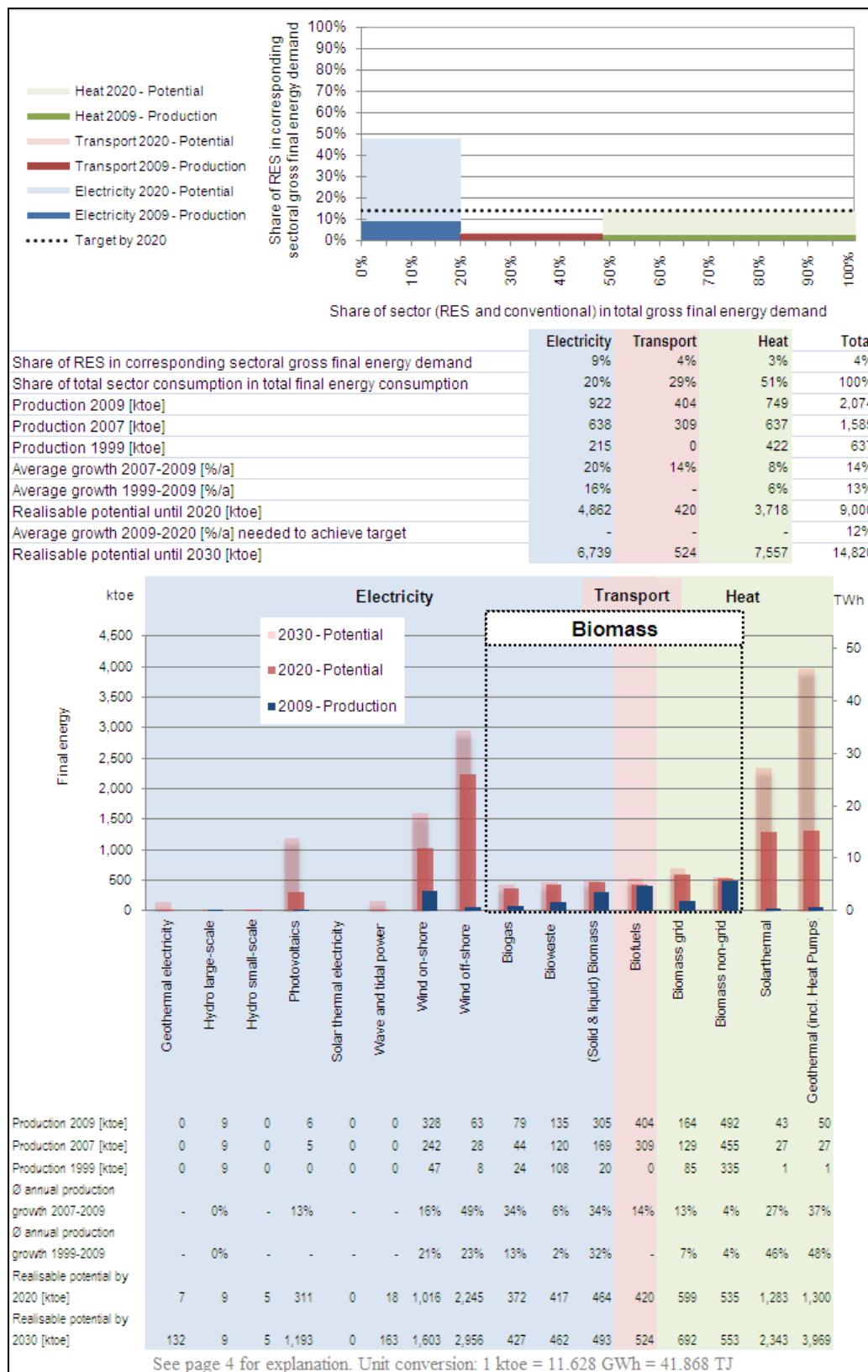
160 Reg. 17 (1) ER in connection with. NC. Subsidiary Legislation 423.22, Electricity Regulations (ER), 16th December, 2004, Legal Notice 511 of 2004, as amended by Legal Notice 17 of 2007. [http://res-legal.de/index.php?id=170&L=1&bmu\[show\]=3&bmu\[land\]=14&bmu\[lastPid\]=318&bmu\[lastShow\]=6&bmu\[uid\]=132](http://res-legal.de/index.php?id=170&L=1&bmu[show]=3&bmu[land]=14&bmu[lastPid]=318&bmu[lastShow]=6&bmu[uid]=132)

161 Reg 7 (1), (2) Promotion of Electricity produced from Renewable Energy Sources (PRESR). [http://res-legal.de/index.php?id=170&L=1&bmu\[show\]=3&bmu\[land\]=14&bmu\[lastPid\]=318&bmu\[lastShow\]=6&bmu\[uid\]=132](http://res-legal.de/index.php?id=170&L=1&bmu[show]=3&bmu[land]=14&bmu[lastPid]=318&bmu[lastShow]=6&bmu[uid]=132)

162 Reg 7 (6) PRESR [http://res-legal.de/index.php?id=170&L=1&bmu\[show\]=3&bmu\[land\]=14&bmu\[lastPid\]=318&bmu\[lastShow\]=6&bmu\[uid\]=132](http://res-legal.de/index.php?id=170&L=1&bmu[show]=3&bmu[land]=14&bmu[lastPid]=318&bmu[lastShow]=6&bmu[uid]=132)

163 Reg. 13 (2), (7) ER in conjunction with. Reg. 14 ESR in conjunction with GR 1.2, DCC 1.4, DPC 2.1 NC. Subsidiary Legislation 423.22, Electricity Regulations (ER) 16th December, 2004, Legal Notice 511 of 2004, as amended by Legal Notice 17 of 2007. [http://res-legal.de/index.php?id=170&L=1&bmu\[show\]=3&bmu\[land\]=14&bmu\[lastPid\]=318&bmu\[lastShow\]=6&bmu\[uid\]=132](http://res-legal.de/index.php?id=170&L=1&bmu[show]=3&bmu[land]=14&bmu[lastPid]=318&bmu[lastShow]=6&bmu[uid]=132)

NETHERLANDS - Summary RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

The Dutch subsidy scheme to stimulate RES in Electricity and Heating and Cooling (SDE) has been changed since 1 January 2011. The new scheme (SDE+) is focusing on short term implementation of RES technologies, by subsidizing less costly options first. More expensive options that need to be developed first are being subsidized by other policy instruments. The SDE+ scheme will become effective on July 2011. Furthermore, as of 1 April 2011, electricity from renewable sources is granted priority in times of grid congestion, over electricity from energy sources other than renewable.

1 Summary: RES Support Policy

RES-E

The key support instrument for RES-E the feed-in premium scheme SDE has been replaced with the feed-in premium scheme SDE+. In SDE+ four sequential subsidy rounds are used to encourage competition among technologies. In each round a maximum reference price is determined, starting in the first round with a call for the technologies that require least subsidy (maximum base price during Round I: 9ct/kWh, Round II: 11ct/kWh, Round 3: 13ct/kWh and Round IV: 15ct/kWh). The main differences with the former SDE scheme are:

- SDE+ is focusing on the short term implementation of renewable energy. The old scheme was also focusing on the deployment of longer term options (e.g. offshore wind) and innovation.
- SDE+ introduces a 'free category' that can be used by producers that expect to realise their projects with less subsidy than implied by the reference prices of the scheme. This category can also be used for non-defined longer term and innovative technologies.
- The SDE+ is to be financed through a levy on the electricity bills of consumers and not through the state budget as at present.

The scheme will become effective as of July 2011.

For companies investing in RES-E, a tax relief (EIA) exists, which contributes substantially to the project's economic viability. Annual budgets are limited and regularly exploited before the end of the year.

As of 1 April 2011, electricity from renewable sources is granted priority in times of grid congestion, over electricity from energy sources other than renewable.

RES-H&C

RES-H&C is included in the SDE+ scheme as described above. Subsidies for CHP have been terminated. Apart from the 'Subsidieregeling Duurzame warmte' (Subsidy programme renewable heat), that subsidizes the investment of solar thermal heat, heat pumps and micro-CHP installations; there is also the possibility to deduct investments from taxable income (EIA). Continuation of the other subsidy programmes "UKR" and "renewable heat for households and housing corporations" is currently uncertain.

RES-T

The key support instrument for RES-T is the quota obligation for biofuels. Targets for the years 2010 and 2011 are 4% and 4.5% respectively. To stimulate electric vehicles the subsidy scheme Electro-mobility+ has been launched. This programme focuses on sustainable conditions for electric vehicles in 2025.

2 Details RES-Electricity Support Policy

Feed-in Premium – SDE

In September 2007, the feed-in premium for RES-E, the SDE (Stimulering Duurzame Energieproductie - Stimulating Renewable Energy Production) was announced¹⁶⁴. The legal basis for the SDE is the Order Incentivising Sustainable Energy Production¹⁶⁵ which entered into force in January 2008. In 2010 the new Dutch government announced that the SDE will be replaced by a new scheme called SDE+ from January 1st 2011 onwards¹⁶⁶.

The instrument is controlled by the ministry of Economic Affairs, Agriculture and Innovation (Ministerie EL&I), but is administered and monitored by the ministry's agency Agentschap NL (formerly known as SenterNovem).

- SDE+ website: <http://regelingen.agentschapnl.nl/content/stimulering-duurzame-energieproductie-sde>
- Agentschap NL SDE+ Helpdesk: +31 (0)88 602 3450.

The main difference with the SDE is that SDE+ is focusing on the short term implementation of renewable energy (up to 2020). The old scheme was also focusing on longer term options and innovation. For technologies that are currently expensive but may become important on the mid-term, other policy instruments will be used¹⁶⁷.

In SDE+ four sequential subsidy rounds are used to encourage competition among technologies. In each round a maximum reference price is determined, starting in the first round with a call for the technologies that have the lowest subsidy (maximum base price during Round I: 9ct/kWh). This is followed by three rounds for technologies that require higher levels of subsidy (maximum base price during Round II: 11 ct/kWh; III: 13ct/kWh; IV: 15 ct/kWh). The table below shows an overview of the price scheme¹⁶⁸:

164 Initial decision - AMvB 30 October 2007 (Regeling aanwijzing categorieën duurzame energieproductie 2008).

http://www.ez.nl/Onderwerpen/Voldoende_energie/Duurzame_energie/SDE/Introductie/Algemene_Maatregel_van_Bestuur_SDE

165 The latest amendment was introduced in 27.03.2009. BWBR0022735 Besluit van 16 oktober 2007, houdende regels inzake de verstrekking van subsidies ten behoeve van de productie van hernieuwbare elektriciteit, hernieuwbaar gas en elektriciteit opgewekt door middel van warmtekrachtkoppeling (Besluit stimulering duurzame energieproductie). http://wetten.overheid.nl/BWBR0022735/geldigheidsdatum_08-04-2009

166 <http://regelingen.agentschapnl.nl/sites/default/files/bijlagen/kamerbrief-stimulering-duurzame-energie%2030-11-2010.pdf>

167 <http://www.rijksoverheid.nl/onderwerpen/duurzame-energie/subsidieregeling-duurzame-energie-sde>

168 <http://regelingen.agentschapnl.nl/sites/default/files/bijlagen/kamerbrief-stimulering-duurzame-energie%2030-11-2010.pdf>

Phase	I	II	III	IV
<u>Electricity:</u> Maximum base price per phase	9 €ct/kWh	11 €ct/kWh	13 €ct/kWh	15 €ct/kWh
<u>Biogas:</u> Maximum base price per phase	79 €ct/Nm ³	97 €ct/Nm ³	114 €ct/Nm ³	132 €ct/Nm ³
Base price per technology	Sewage treatment plants, electricity from landfill gas or bio gas (6.0 €ct/kWh and 28.7 €ct/Nm ³)			
	Waste incineration plants (6.2 €ct/kWh)			
	Hydro power > 5m (7.2 €ct/kWh)			
	Sewage treatment plants and landfill biogas (28.7 €ct/Nm ³)			
	Biogas fermentation (78.3 €ct/Nm ³)			
	Free category (9 €ct/kWh or 79 €ct/Nm ³)	Onshore wind (9.6 €ct/kWh)		
		Manure co-digestion biogas (83.1 €ct/Nm ³)		
		Free category (11 €ct/kWh or 97 €ct/Nm ³)	Biomass >10 MW (12.1 €ct/kWh)	
			Hydro power < 5m (12.3 €ct/kWh)	
			Free category (13 €ct/kWh or 114 €ct/Nm ³)	All fermentation electricity (13.4 €ct/kWh)
				Free category (15 €ct/kWh or 132 €ct/Nm ³)

The SDE+ works as follows:

- SDE+ has one capped budget for all eligible technologies. For 2011 this cap is €1.5 billion, which is equivalent to approximately €100 million per year. After 2015 the annual spending for new and existing feed-in premium (including old MEP and SDE obligations) is capped at €1.4 billion each year;
- Less costly RES-options that apply for the first phases have a higher chance of receiving subsidy. They will be served on a 'first come first serve' basis;
- For onshore wind, the Secretary intends to introduce a differentiation of the level of support for wind investments depending on the average wind speed at the location;
- Co-firing of biomass remains a technology which is not eligible for support. There has been discussion about a possible co-generation obligation but no decision has been made to-date.

- SDE+ introduces a ‘free category’ that can be used by producers that expect to realise their projects with less subsidy than implied by the reference prices for that technology;
- The free category is also open for innovative projects such as manure digestion, thermal conversion of biomass (<10 MW), PV (>15 kWp), wave and tidal, geothermal and osmotic energy generation. They can also apply for this category, subject to the maximum price of 15 ct/kWh, and;
- Offshore wind is not mentioned specifically in the SDE+ proposal, although the NREAP and ECN reference projections¹⁶⁹ shows that over 5,000 MW is to be added by 2020. Offshore wind developers can apply for support in the ‘free category’ with a maximum price of 15 €ct/kWh. Currently, there are no plans for a separate or additional budget for offshore wind, nor regarding the timing of a new tender-round.

SDE+ is intended to start in July 2011.

The SDE+ is to be financed through a levy on the electricity bills of consumers and not through the state budget as at present. This levy will be shared over companies and citizens in line with the division of the yields of the energy tax: 50% companies and 50% citizens. However, according to the Ministry, there are no plans to use a levy to recover the cost of projects which have already been funded via the budget under MEP and SDE. From 2015 the budget will be €1.4 billion for all instruments (including SDE and MEP obligations) and will be fully financed through the levy. Possibilities to use coal- and natural gas taxes to finance part of the SDE+ are said to be investigated later in 2011.

The level of the feed-in premium depends on the technology (base price) and the wholesale price for electricity (price adjustment): **Feed-in premium = Base price - price adjustment**. Base prices are guaranteed over the full support period of a project, but the feed-in premium will vary annually depending on wholesale electricity price of developments¹⁷⁰. As the subsidy depends on the energy price, it will fluctuate annually. When energy prices are high, less subsidy is required. The other way around: when energy prices are low, additional funding is needed.

Below, the conditions to become eligible for the tariff/premium are shown. It is expected that these conditions will not change under the SDE+:

- The premium is for households, and profit as well as non-profit organizations that produce electricity within the technology categories as in the table below.
- Except for PV, all the required permits (e.g. environmental and building permits) as well as an agreement of the grid operator, have to be in place, before applying.
- The installation can start operating only after receiving the grant.
- The installation has to be taken into operation within 4 years after the subsidy has been granted for all eligible technology categories, except for solar-PV which is 18 months.

¹⁶⁹ ECN/PBL project that offshore wind will contribute about 40% of total renewable electricity in 2020.
Source: ECN/PBL Referentieraming 2010-2020. VV scenario.

¹⁷⁰ <http://www.rijksoverheid.nl/onderwerpen/duurzame-energie/subsidieregeling-duurzame-energie-sde>

- A certified meter has to be placed.
- Registration must be made with CertiQ in order to obtain renewable certificates (RECS certificates). The SDE subsidy is paid out on the basis of these certificates.

Under the SDE, the period for receiving the premium is different for each technology: 15 years for onshore wind, solar PV, hydro and electricity from waste incineration plants, and 12 years from other biomass sources, biogas included. It is expected that this will remain valid under the SDE+.

Detailed information on the SDE+ (technology categories, feed-in premiums, criteria etc.) can be found here:

<http://www.rijksoverheid.nl/onderwerpen/duurzame-energie/subsidieregeling-duurzame-energie-sde>

<http://www.rijksoverheid.nl/bestanden/documenten-en-publicaties/kamerstukken/2010/11/30/stimulering-duurzame-energie/kamerbrief-stimulering-duurzame-energie.pdf>

Tax Deduction Scheme EIA

The scheme is intended for tax-paying entrepreneurs who are required to pay income tax or corporate taxes. Renewable energy projects can deduct 41.5% of the total investment costs from annual profit in the year of installation considered by the corporate tax up to a maximum of 116 million € per installation¹⁷¹. Roughly 10% of the total investment costs can be subsidized in this way¹⁷². The EIA can be seen as a reduction in investment costs. It runs from 1997 to date¹⁷³.

The EIA is controlled by the ministry of Economic Affairs, Agriculture and Innovation (Ministerie van EL&I), but it is administered and monitored by the ministry's agency Agentschap NL

- EIA website: <http://regelingen.agentschapnl.nl/content/energie-investeringsaftrek-eia>
- Agentschap NL EIA Helpdesk: Phone: +31 (088) 602 34 30.

The government budget for the EIA is revised annually. The total budget in 2011 is €151 million, €6 million more than in 2009. If the available EIA budget threatens to be insufficient, the Minister of Finance can limit the scheme or stop it temporarily.

Applications are continuously received. Applications have to be submitted no later than three months after the investment has been made.

For wind turbines (>25 kW), the maximum investment amount eligible under the EIA scheme (2011) is 600 €/kW for onshore wind and 1,000 €/kW for offshore wind. For wind

¹⁷¹ <http://regelingen.agentschapnl.nl/content/berekenen-eia-voordeel>.

¹⁷² <http://regelingen.agentschapnl.nl/content/energie-investeringsaftrek-eia>

¹⁷³ This is included in the Wet Inkomstenbelasting 2001 (Law income tax 2001)

turbines (<25 kW), the maximum amount is 3,000 €/kW. For solar-PV of at least 90 Wp, the maximum amount is 3,000 €/kWp.

The EIA may be combined with the SDE premium. In some cases investments are eligible to apply for the EIA as well as VAMIL (liquidity and interest tax benefits)¹⁷⁴.

The regulation does not make support conditional to the use of certified equipment and/or certified installers.

More information on the EIA can be found here:

<http://regelingen.agentschapnl.nl/sites/default/files/bijlagen/Brochure%20Energie%20en%20bedrijven%202011.pdf>

Low Interest Loans

There are several low-interest loans available through green funds, which are exempt from income tax. In 2010 and 2011 the scheme has been revised. From 2011 on, tax advantages are reduced every year until one part of the scheme is terminated in 2014¹⁷⁵.

Projects are eligible for a green fund only if they have received a *green statement* from the responsible authority. The minimum loan sum is €25,000 and the maximum is €35 million. The maximum loan period is 10 years. Per 1 January 2011 the tax advantage decreases from 2.5% in 2010 to 2.2%. Plans are to reduce the scheme stepwise to 1.3% in 2014¹⁷⁶. Most renewable energy projects are eligible, amongst others PV and onshore wind, but not offshore wind. Biomass is restricted to clean wood and energy crops. Information about green funds is provided by Agentschap NL: <http://regelingen.agentschapnl.nl/content/groen-beleggen-en-financieren>

Interest or dividends derived from funds investing for more than 70% in renewable energy or other 'green' projects are exempt from income tax and are thus attractive for investors. This results in loans to consumers at interest rates which are on average 1% below usual market interest rates. The funds are established and managed by banks and various conditions apply.

3 Details RES-Heating and Cooling Support Policy

Feed-in Premium – SDE

The production of gas is included in the feed-in premium SDE. See details of the SDE above in the electricity section. Biogas quality needs to be enhanced, as it has to meet the quality standards of the natural gas network. Production of gas from the following sources is eligible:

- bio degradable waste and manure co-fermentation;

¹⁷⁴<http://regelingen.agentschapnl.nl/content/mia-milieu-investeringsaftrek-en-vamil-willekeurige-afschrijving-milieu-investeringen>

¹⁷⁵ <http://regelingen.agentschapnl.nl/content/stand-van-zaken-rond-regeling-groenprojecten>

¹⁷⁶ <http://regelingen.agentschapnl.nl/content/belastingvoordelen>

- landfills and sewage treatment.
- fermentation of (liquid) biomass from the food, drink and tobacco industry.

Due to sustainability concerns related to biomass and the non-existence of an established certification system, liquid biomass is not (yet) eligible. However, liquid biomass from the food, drink and tobacco industry is eligible. For details on the RES-H technologies see SDE+ overview table in electricity section.

There is a CHP bonus within the SDE. The use of waste-heat from digestion and combustion of biomass (cogeneration) is rewarded with a higher feed-in premium. Under the new SDE+ scheme, CHP will no longer be eligible for subsidies¹⁷⁷.

Building Obligations

Building obligations do not require the use of RES-H&C.

Tax Deduction Scheme EIA

The tax deduction scheme, EIA (introduced in electricity section) applies also for RES-H&C:

Corporate assets that reduce energy consumption and meet the required energy-performance criteria are eligible for EIA support. An energy-performance criterion may, for example, be a savings norm for each euro invested, a specific efficiency criterion, an improved energy label, etc. There are five application areas, of which four offer possibilities for RES-H/C. Each of the options comes with its own energy-performance requirement¹⁷⁸:

- Corporate buildings;
- Processes;
- Renewable energy;
- Energy advice.

There are no maximum or minimum sizes of plants that are eligible. All investments that meet the energy performance criteria are eligible for EIA support.

Subsidy Programme Renewable Heat

The subsidieregeling Duurzame warmte (Subsidy programme renewable heat), subsidizes the investment of solar thermal heat, heat pumps and micro-CHP installations for existing dwellings (built before 1 January 2008) for households and housing corporations.

It is controlled by the ministry of Economic Affairs, Agriculture and Innovation (Ministerie van EL&I), but administered and monitored by the ministry's agency Agentschap NL :

¹⁷⁷<http://regelingen.agentschapnl.nl/sites/default/files/bijlagen/kamerbrief-stimulering-duurzame-energie%2030-11-2010.pdf>

¹⁷⁸<http://regelingen.agentschapnl.nl/sites/default/files/bijlagen/Brochure%20Energie%20en%20bedrijven%202011.pdf>

- Agentschap NL website: <http://regelingen.agentschapnl.nl/content/duurzame-warmte-voor-bestaaende-woningen>,
- Agentschap NL Helpdesk: + 31 (088) 602 33 22.

The instrument is periodically revised. There is an overall budget of 60 million euro for the years 2008–2011 which are split into several rounds of calls. The programme is regulated by the national legislation: ‘tijdelijke energieregeling markt en innovatie’ (temporary energy measure market and innovation)¹⁷⁹. Until 2010, almost €40 million of the total budget was used¹⁸⁰: €32 million was for solar thermal heat and heat pumps (ground sourced), € 4 million for heat pumps (air or water sourced) and € 4 million for micro-CHP. The budget for 2011 is not available yet. Until that moment, Agentschap NL will collect applications, but subsidies will not be granted. It is uncertain whether this scheme will be continued after 2011.

Applications are granted continuously, and the instrument is not limited to certain project volumes.

There is a list of typical installations that contains an indication of the maximum or minimum sizes of plants, but this list is not exhaustive and is reviewed annually. <http://regelingen.agentschapnl.nl/content/productenlijst-duurzame-warmte-voor-bestaaende-woningen>

No special incentives are given for combined heat and power production based on biomass and accordingly, this combination is only rarely realized in the Netherlands. Some biomass power plants use a small part of heat production for treatment of the biomass feedstock. 'Regular' CHP is however covered via the SDE. Small-scale heating is encouraged by the 'subsidieregeling Duurzame Warmte (above).

The support schemes in place to stimulate the use of district heating are EIA and tax exemptions¹⁸¹. The SDE feed-in premiums are linked to the electricity production and do not have incentives for optimal use of (RES) heat.

Heating and cooling from RES in industrial applications is not stimulated in a continuous manner. In 2009, a call for tenders has been published that aims to support research and development, feasibility studies for novel technologies or control techniques for decreasing heat or cold demand from industrial processes, as well as the production of heat and cooling from RES using near-to-market technologies. In 2010 two new calls for tenders have been open, one for feasibility studies (budget of €2.5 million) and one for investment projects (budget of €8 million)¹⁸². In total 57 feasibility studies and 10

¹⁷⁹ Regeling van de Minister van Economische Zaken van 2 september 2008, nr. WJZ / 8123674, houdende regels inzake de verstreking van subsidies ten behoeve van verduurzaming van de energiehuishouding

¹⁸⁰ <http://regelingen.agentschapnl.nl/content/duurzame-warmte-voor-bestaaende-woningen>

¹⁸¹ Installations that produce electricity do not have to pay energy tax on their fuel consumption if the power efficiency is higher than 30% and the power capacity is higher than 60 kilowatts

¹⁸² <http://regelingen.agentschapnl.nl/content/subsidieregeling-industri%C3%A9-warmtebenutting>

investment projects were granted, using the total 2010 budget¹⁸³. It is unsure whether the scheme is being continued in 2011.

UKR (Unieke Kansen Regeling) Subsidy

As part of the EOS subsidy programme, the UKR (Unieke Kansen Regeling) aimed at stimulating cooperation projects between private and non-private parties. The emphasis is on speeding up the market introduction of technologies that contribute to the transition towards a sustainable energy supply. This scheme has been terminated since 2008.

UKP (Unieke Kansen Programma)

The UKP focuses on innovative investment projects, projects regarded to become important in the future. Examples of these projects are novel renewable heating and cooling technologies, novel non-technological aspects (i.e. non-technological barriers, novel approaches and demonstration). The last round of calls was open until December 2009. According to Agentschap NL new rounds of calls are expected, but it is unsure when they will be announced and in what form.

The UKP is controlled by the ministry of Economic Affairs (Ministerie van EZ), but it is administered and monitored by the ministry's agency Agentschap NL

- UKP website: <http://regelingen.agentschapnl.nl/content/unieke-kansen-programma-naar-energieneutrale-scholen-en-kantoren-ukp-nesk>
- AgentschapNL UKR: Peter van der Hoeven + 31 (0) 88 602 9200

4 Details RES-Transport Support Policy

Following the old EU Biofuels Directive 2003/30/EG, from 1 January 2007, parties that supply the Dutch market with diesel or gasoline are obliged to deliver a certain percentage of their supply in the form of biofuels (i.e. a quota obligation)¹⁸⁴. The target for 2009 is 3.75 percent biofuels use in road transport and this target is increased by 0.25% each year. For 2011 the target is 4.25%, for 2012 4.5%¹⁸⁵. The target is split: A minimum share of biofuels in both gasoline and diesel has to be achieved, but beyond that minimum share obliged parties are free to choose whether they blend biofuels with gasoline or diesel.

In accordance with the new Renewable Energy Directive 2009/28/EG, the Dutch government has set a binding target of 10% renewable energy in road transport by 2020. Intermediate targets have not yet been set.

Electric vehicles are exempted from vehicle tax, whether they use RES-E or not.

¹⁸³<http://regelingen.agentschapnl.nl/content/subsidie-industri%C3%A9le-warmtebenutting-volleldig-toegekend>

¹⁸⁴ Besluitvorming biobrandstoffen wegverkeer, Staatsblad 2006 (p.542 & Aanpassing biobrandstoffendoelstelling DGM 2008099192).

¹⁸⁵ <http://www.rijksoverheid.nl/onderwerpen/biobrandstoffen/wegverkeer-over-op-biobrandstof>

Subsidy Electro-mobility+

For electrical vehicles the subsidy scheme “Electromobiliteit +” has been launched. This is part of the European transnational call Electro-mobility +, financing joint research to sustainable conditions for electric vehicles in 2025. The Dutch budget is €2.15 million for two key themes¹⁸⁶:

- Technical aspects of charge and distribution systems (III)
- Testing, experimenting and development of standards (IV)

The call is open until 31 March 2011¹⁸⁷.

5 RES-E Grid Integration

As of 1 April 2011, electricity from renewable sources is granted priority in times of grid congestion, over electricity from energy sources other than renewable¹⁸⁸.

The new regulation does not yet include proposed changes in the allocation of costs, of which the exact details remain uncertain to-date. Until then, costs are carried by electricity users (via grid transportation tariffs).

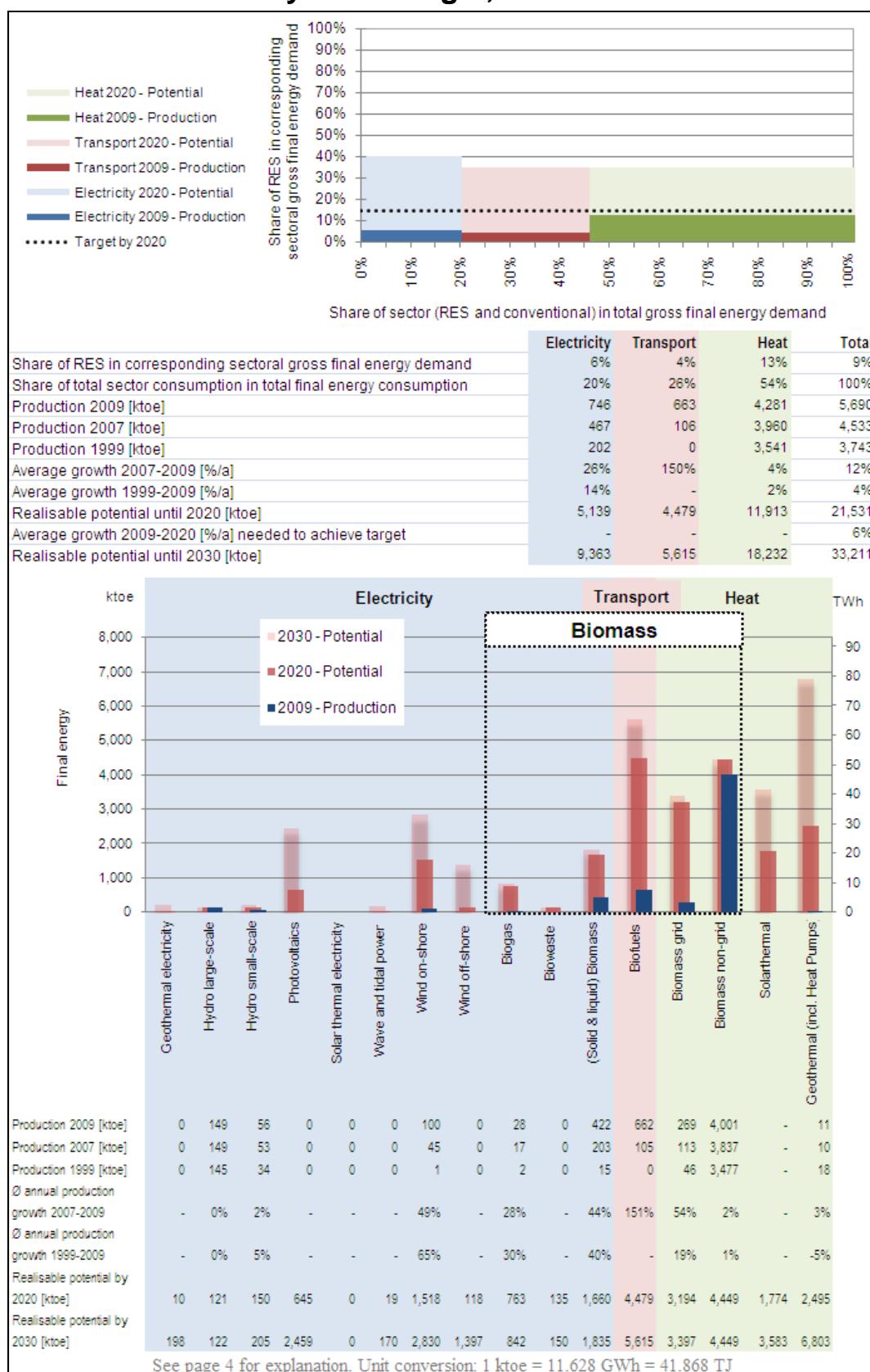
Connection to the grid has to be granted according to non-discriminative criteria. There is no connection priority for plants generating electricity from renewable sources.

¹⁸⁶http://www.senternovem.nl/proeftuinen/nieuws/publicatie_subsidieprogramma_electromobiliteit.asp

¹⁸⁷ http://www.senternovem.nl/egl/nieuws/electromobiliteit_plus.asp

¹⁸⁸ Besluit van 27 december 2010, houdende vaststelling van het tijdstip van inwerkingtreding van enkele onderdelen van de wet tot wijziging van de Gaswet en de Elektriciteitswet 1998 tot versterking van de werking van de gasmarkt, verbetering van de voorzieningszekerheid en houdende regels met betrekking tot de voorrang voor duurzame elektriciteit, alsmede enkele andere wijzigingen van deze wetten (Stb. 2010, 810)

POLAND - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

There were no important RES policy changes in Poland since 2009. However, there are plans to prepare the Act on Energy from Renewable Sources in 2011. Like in the present case, the RES support system would be based on the mechanism of so-called certificates of origin. In addition, the new act on RES should reduce currently existing barriers for investors. The issue of stability and long-term character of the support scheme will be of particular importance from the point of view of the development of RES, in order to ensure investment security for entities interested in construction of generating units.

1 Summary: RES Support Policy

RES-E

RES-E is promoted primarily through a quota system. Electricity suppliers are obliged to fulfil a specified quota of origin/green certificates, issued for the generation of RES-E. Besides, an obligation is established to purchase the whole amount of RES-E at an average market price of “conventional electricity” from the previous year. This obligation shall be satisfied by those electricity suppliers that supply households with low-voltage electricity (main providers). Accordingly, producers of RES-E have two kinds of income: from sales of electricity at the market price and from sales of property rights from the certificates of origin (quota obligation) at the power exchange.

Additionally, RES-E is also promoted through loans and fiscal privileges.

No change of the support scheme occurred since 2008. Talking about the relevant potential upcoming policy changes, Poland considers some changes in the support scheme for wind power: Currently wind farm developers receive one green certificate for each MWh of wind electricity, but it could be reduced from 1 to 0.8 per MWh. Also the government is now considering limiting green certificates to the 6650 MW of wind power stipulated in the NREAP. So developers who build farms after the national wind target is achieved may not benefit from the support.

RES-H&C

There is still no effective support scheme for RES-H in Poland. Special funding is available for RES-H projects (thermal power generation using biomass, CHP). However, the implementation programme of Poland's Energy Policy until 2030 foresees to introduce additional support mechanisms that promote the generation of renewable heating and cooling at a larger scale.

RES-T

Polish authorities apply three financial instruments to support biofuel production: excise duty reduction, reduction in fuel charges and reduction in company income taxes.

The new excise tax rebates for biofuels used in a blend with petrol and diesel and used as pure fuels were introduced in 2009. The new reduced rate for biofuels used as pure fuels is 10 PLN (2.5 €) per 1000 litre. Each litre of biofuels added to fossil fuels is fully exempted from excise duty. However, the minimum excise rate of the final product is 10 PLN (2.5 €) per 1000 litre.

2 Details RES-Electricity Support Policy

Quota/Obligation System

In Poland, the main means of RES-E promotion is a quota system with a certificate trading system. The Energy Law obliges electricity generators and suppliers that provide electricity to customers within Poland to fulfil a specified quota of certificates of origin/green certificates [1]. These certificates are awarded to the producers of RES-E.

This instrument is regulated by the Energy Law and the Order of the Polish Minister of Economy as of 14th August 2008 [2]. This order provides detailed provisions on the obligation to acquire certificates of origin/green certificates and submit them for collection. There is also the obligation to pay a compensation fee, the obligation to purchase electricity and heat generated from RES and the obligation to prove that the amount of energy generated from the respective source of energy stated is accurate.

The Energy Regulatory Office (URE <http://www.ure.gov.pl/portal/en>) is responsible for supervising compliance with the quota system. The energy companies are obliged to provide all necessary information to assist URE in carrying out these supervising tasks. Companies may take legal action over the URE's decisions.

There is no cap on available budget or the volume of new installations, only the quota of RES-E, which should be purchased that year.

Quota per Year

The amount of the quota does not depend on the technology used. In pursuance of Order of 14/08/2008 [2], the quota is as follows (% of the annual amount of energy sold by the obligated party):

- 10.4% in 2011 and 2012
- 10.9% in 2013
- 11.4% in 2014
- 11.9% in 2015
- 12.4% in 2016
- 12.9% in 2017.

A new draft version of this regulation gives the following obligations for green certificates for years 2018-2020: 2018 – 13.4%, 2019 – 13.9%, 2020 – 14.4%.

All technologies used in the generation of RES-E are promoted through price regulation. All energy companies that sell electricity to final consumers connected to the Polish grid are obliged to obtain the certificates of origin.

As an alternative to the certificates, the companies may pay a substitution fee or penalty. The amount of the substitution fee is calculated according to a statutorily set formula and published every year. If a company fails to present certificates of origin/green certificates or does not pay the fee, the Energy Regulatory Office (URE) charges a penalty of 130% of the substitution fee. Funds from substitution fees constitute a revenue for the National Fund for Environmental Protection and Water Management that

only supports RES development. Green certificates can be traded on the Warsaw Commodity Exchange since 1 October 2005.

Electricity supply companies that are licensed to supply electricity to those domestic customers that have not exercised their right to choose a supplier, are obliged to purchase all RES-E from electricity generators within their area of responsibility at a guaranteed price. The guaranteed price corresponds to the average electricity price of the previous year, which is calculated by the regulatory authority (table 1).

Producers of RES-E have two kinds of income: from sales of electricity at the market price and from sales of property rights from the certificates of origin (quota obligation) at the power exchange.

Table 1. The prices of electricity and green certificates during the last years.

	2006	2007	2008	2009	2010	2011
Electricity price PLN/MWh (€/MWh)	117,49 (30,12)	119,70 (31,6)	128,80 (36,6)	155,4 (35,9)	197,2 (49,3)	
Max. TGC price (substitution fee)	240 (61,5)	242,4 (64,2)	248,46 (70,6)	258,89 (59,8)	267,95 (69,4)	274,92
Penalty	130% of substitution fee					
Penalty (€ / MWh)	92	96	107	77,2	90,2	
Exchange rate	3,9	3,78	3,52	4,33	3,99	

Subsidies

Financial resources for supporting investments in renewable energy are guaranteed within systems financed from funds of the European Union. Support can be provided to initiatives on highly efficient cogeneration and production of energy from renewable sources.

Loans (National Fund for Environmental Protection and Water Management)

In September 2009, the Act on the System to Manage the Emissions of Greenhouse Gases and Other Substances came into force. According to the Act, the operating entity for the National Green Investment Scheme (GIS) is the National Fund for Environmental Protection and Water Management (NFEP&WM).

GIS Part 2. Agricultural biogasworks. Objective - construction, development and reconstruction of facilities for production of electricity with the use of biogas at the level of 40 MW. Production of electricity in electricity production facilities with the use of biogas - 300 000 MWh/year. Limiting or avoiding emission of carbon dioxide by 250 000 tons/year. Budget (2010 – 2012) is set to:

- 1) Subsidies – PLN 200 million (50 mln €) – funds from the National Green Investments Scheme (GIS) or other NFEP&WM funds. Amount of subsidy: up to 30% of eligible costs of the project.
- 2) Investment loans – PLN 300 million (75 mln €) – from NFEP&WM funds. Amount of loan: up to 45% of eligible costs of the project.

GIS Part 3. Biomass heat and power plants. Construction, reconstruction or development of facilities producing electricity or thermal energy with the exclusive use of biomass at the level of the installed target thermal power 50 MW_t. Production of thermal energy 400 000 MWh/year. Limiting or avoiding emissions of carbon dioxide by 150 000 tons/year. Budget (2010 – 2012) is set to:

- 1) Subsidies – PLN 50 million (12.5 mln €) – from the National Green Investments Scheme (GIS) or other NFEP&WM funds. Amount of subsidy: up to 30% of eligible costs of the project.
- 2) Investment loans – PLN 75 million (18.7 mln €) – from NFEP&WM funds. Amount of loan: up to 45% of eligible costs of the project.

The National Fund for Environmental Protection and Water Management (NFOSiGW) awards low interest loans to environmentally sustainable projects. The legal basis for fund activities is constituted by the Environmental Protection Law [3]. This definition also covers projects that involve the generation of RES-E (in this case, the RES-E is additionally supported through quota/obligation system). More information about this instrument is available on the fund website: <http://www.nfosigw.gov.pl>. The loans are awarded through calls for proposals from January 2009 to December 2012. The calls are published on the website of the Fund. Recently, investments using renewable sources of energy have been given special priority. The loan programme may not be received on top of other incentives granted by the Fund. According to the current Priority Programme, the following technologies are eligible for the soft loan scheme.

- Heat production using biomass (<20 MW)
- Electricity production in CHP using biomass (<3 MW),
- Electricity/heat production using biogas,
- Wind power (<10 MW),
- Geothermal energy,
- Hydropower (<5 MW),
- High efficiency CHP.

The fund classifies projects according to categories. 40% of the budget is reserved for biomass projects, 25% of the budget will be allocated to wind power projects, 20% for geothermal projects or hydroelectric projects and the remaining 15% for high efficiency CHP.

The total budget (2009-2012) for the support programme for renewable energy and combined heat and power is 1400 mln PLN (350 mln €). The programme will offer low interest loans for projects with a minimum total cost of 10 million PLN (2.5 mln €). Loan amounts can range from 4 to 50 million PLN (1-12.5 mln €), up to 75% of the project's eligible costs, with a fixed 6% interest rate. Funding can be offered for up to 15 months following the first disbursement amount. A grace period up to 18 months following project completion can be provided under certain circumstances. Under certain conditions, portions of the loan can be provided as grants.

Exemption from Consumption Tax

In Poland, electricity consumption is subject to a tax. The tax is collected from the electricity producer as soon as he provides the electricity. Registered producers of RES-E are exempt from the tax. This is regulated by the Tax Act [4]. All technologies used for the generation of RES-E are eligible for tax exemption. The amount of subsidy equals the amount of taxes that entitled persons are exempt from. Currently, the consumption tax on electricity amounts to 20 PLN (ca. 5 €) per MWh.

Other measures

Additionally, in accordance with the Energy Act, producers of electricity from RES with total power not exceeding 5 MW are exempt from:

- fee for issuing the license;
- fee for issuing the certificate of origin;
- the duty to pay an annual fee to the state budget for obtaining the licence for energy production from RES.

3 Details RES-Heating and Cooling Support Policy

Currently there is no effective support scheme for RES-H in Poland. In theory, heat companies are obliged to purchase all RES-H fed into the heat grid (unless RES-H production exceeds heat demand), but under the assumption that it will not cause a big increase in the heat price (the regulator will not accept much higher heat costs). In practice this mechanism is usually useless. However, the implementation programme of Poland's Energy Policy to 2030 predicts the introduction of additional support mechanisms that promote the generation of renewable heat and cold on a larger scale.

The National Fund for Environmental Protection and Water Management (NFOSiGW) presented above for RES-E has made available special funding for renewable energy projects, including biomass projects (thermal power generation using biomass (below 20 MW thermal), CHP production under 3 MWe, CHP using sewage or other waste sources, as well as for high efficiency CHP. The programme will offer low interest loans for such projects. More information about this fund is presented in chapter 2 (RES-E support).

The RES 3 program from NFOSiGW includes support for purchase and installation of solar panels for hot water heating in buildings assigned or used for residential purposes. This program supports projects only for natural persons and housing cooperatives. Only projects not exceeding PLN 1 million (250 000 €) are supported. Co-financing can be obtained through selected commercial banks cooperating with NFOSiGW. It is expected that as a result of the programme, solar panels of about 200,000 m² will be installed.

Since January 2009, every new building with a use area of more than 1000 m² needs to have an energy certificate. However, there is no national legislation that requires installing a minimum level of RES in newly built or modernized buildings. Main incentives in this area include the thermo-modernisation premium and the renovation premium that the investor can obtain. These premiums are available to an investor for reducing an annual demand for energy, reducing annual energy losses, reducing annual costs of

heat production, replacement of an energy source with a renewable energy source or using highly efficient co-generation. In addition, the installation of standalone solar panels does not require obtaining a building permit or submitting a notification to the responsible authority.

Yellow and red types of certificates promote the combined generation of heat and power. The yellow certificates (price about 34 €/MWh) can be granted to operators of CHP plants <1 MW, red (price about 8 €/MWh) to CHP > 1MW of installed capacity. Poland also has a quota obligation for electricity from high efficiency co-generation. This obligation has a general character (all cogeneration units excluding small (< 1MW) gas units) and requires that electricity sold to the end-user has to consist of a certain proportion of electricity from cogeneration: 22,2% - 2011, 23,2% - 2012. For small gas units it is: 3,3% in 2011 and 3,5% in 2012. The current regulations guarantee the functioning of the red and yellow certificates just until the end of 2012. In order to prolong the functioning of the certificates beyond 2012, new regulations must come into force.

4 Details RES-Transport Support Policy

Polish authorities apply three financial support mechanisms to support biofuel production: excise duty reduction, reduction in fuel charges and reduction in company income taxes.

In 2007, the Polish government established indicative targets for biofuels as a portion of energy content of total transportation fuels. Based on the availability of raw materials and production capacity, the potential of the fuel industry and the relevant European Union regulations, the Regulation on National Indicative Targets for 2008-2013 was adopted by the Council of Ministers in June 2007. The targets have been set as follows:

- 3.45% in 2008,
- 4.60% in 2009,
- 5.75% in 2010,
- 6.20% in 2011,
- 6.65% in 2012,
- 7.10% in 2013.

According to the Act on the Biocomponents and Liquid Biofuels (2006), targets should be reviewed and set every three years [5]. At the moment new regulation on national indicative targets is under preparation. The new targets for the years 2014-2016 are expected to be: 2014 – 7.55%, 2015 – 8%, 2016 – 8.45%.

Excise Duty Rebate

Since 1 January 2007, biofuels blended with petrol and diesel as well as those used as pure fuels for transport benefit from excise tax reductions in the form of rebates. Blended end products comprise petrol blends with ethanol, bioethanol derivatives ETBE (ethyl-tertio-butyl-ether) and TAAE (tertiary-amyl-ethyl-ether), and diesel blends with esters. Petrol and diesel blends must contain at least 2% biofuel to benefit from the excise tax

rebate. Biofuels sold to producers of biofuel blends are fully exempt from excise tax. The excise tax rebates for petrol and diesel blended with biofuels and for biofuels used as pure fuels are as follows:

Table 2. Excise tax rebates

Fuels	Normal rate	Rebate per litre of bio-part
Biofuels blends with:	PLN/1000 litre (€/1000 l)	
Petrol	1565 (391)	1565 (391)*
Diesel zero sulphur ($\leq 0.001\%$)	1048 (262)	1048 (262)*
Biofuels used as pure fuels	10 (2.5)	-

*The new reduced rate for biofuels used as pure fuels is 10 PLN (2.5 €) per 1000 litre.

Each litre of biofuels added to fossil fuels is fully exempt from excise duty. However, the minimum excise rate of the final product is 10 PLN (2.5 €) per 1000 litres [4].

The rebates are granted per litre of biofuel added to the blend. For bioethanol derivates ETBE and TAAE, only for the amounts derived from biomass are considered (47% and 40% respectively).

Exemption from the Fuel Charge

Under the current scheme, Poland notified full exemption of the fuel charge for biofuels, which constitute pure fuels.

Rebate in Company Income Tax

The Act of 23 August 2007 amending the Corporate Income Tax Act allows producers of biofuels to deduct from their income tax an amount no greater than 19% of the difference between the value of the biofuels produced and the value of the liquid fossil fuels produced with the same calorific value, calculated according to the average prices. This deduction may be effected in monthly or quarterly installments, depending on the arrangements for paying income tax installments applied by the taxpayer [6].

5 RES-E Grid Integration

Grid operators are obligated to connect systems that generate RES-E to their grids without discriminating against certain plant operators. In contrast to this, grid operators are obligated to transfer electricity generated from RES at a priority.

Deep connection charging is applied in Poland. The cost of connecting a system to the grid shall be borne by the plant operator. Plants that generate electricity from RES and whose capacity does not exceed 5 MW and cogeneration units with power not exceeding 1 MW are subject to reduced connection charges (50% of the cost)..

In 2010 the Polish Energy Regulatory Office introduced relatively high and obligatory deposit fees for reserving wind farm grid connections. The main reason for this fee is to eliminate speculators from the wind energy market.

6 RES Production, Potential and Market Development

RES-E

The average price of electricity from renewable energy sources which the producer sold in 2009 amounted to 155.44 PLN/MWh plus 258.89 PLN/MWh replacement fee. Therefore, the total selling price of wind electricity was on the Polish market about 100 €/MWh. This is a high support level even compared with wealthier western European countries, and as the result such support system for renewables attracts significant interest of foreign investors.

So after several years of trials, uncertainties and changes in regulations, wind power started to develop intensively since 2006. At the end of 2010, wind power sources with a capacity of 1180 MW were installed (table 3). The production of electricity from wind power was 1029 GWh in 2009. However, the convenient wind conditions in Poland are still far from being fully exploited. The development of wind energy is also inhibited by the lack of developed network infrastructure in areas with good wind conditions that occur mainly in northern and western Poland, where the power network is weak. Thus, a further increase of wind power is likely to occur with the expansion of HV transmission networks (mainly 110 kV and 220 kV) [7]. Also, investors point at the increasing difficulties with connecting wind farms to the grid.

Table 3. Capacity of RES-E power plants

Source	Capacity, MW
Wind	1180
Biomass	254
Biogas	80
Hydro	948

The Green Certificates system applied in Poland is not that favourable to small capital intensive installations, such as PV, because it does not make any differentiation between the sizes of different technologies.

The proposed draft obligation for green certificates until the year 2020 of 14.4% RES-E of electricity supplied to the grid is lower than the national target of the electricity sector specified in the NREAP. The national target for RES-E specified in the NREAP is 19.13% in gross final consumption of electricity in 2020. In addition, the methodologies applied for RES-E share calculation differ between the NREAP and the regulation on the amount of the RES-E quota. In the regulation the quota of RES-E is given as % of the annual amount of electricity sold to the net. So according to the methodology used in the quota regulation, the foreseen total share of RES-E is even lower in the final gross electricity consumption.

RES-H&C

There is no effective support scheme for RES-H in Poland.

Poland has a significant share of heat supplied from existing district heating. It is estimated that about 52% of energy for heating is supplied by district heating systems.

Annual heat production equals about 111 TWh and the amount of heat supplied to consumers achieves 83 TWh. The use of renewable energy in district heating systems is at present on a very low level (4% of total fuel).

RES-T

In 2007, the Polish Parliament approved a program which was intended to encourage biofuel use. The excise tax rebates in place since 2009 for petrol and diesel blended with biofuels supported an increase in biofuel production.

Until 2007, the penetration of biofuels in the market was much lower than adopted indicative targets. Starting from 2008 the consumption as well as production of bioethanol and biodiesel have increased. The quantity of transport fuels and percentage share of biofuels placed on the market is presented in the table 4. The legal provisions concerning the functioning of the market for bio-components and liquid biofuels have generated a significant increase in the use of bio-components in transport. This is demonstrated by the fact that the share of bio-components in the market for fuel used for transport in 2008-2009 was above the expected level (in 2008 3.66% - target 3.45%; in 2009 4.63% - target 4.6%).

Table 4. Fuel consumption in transport, kt [8].

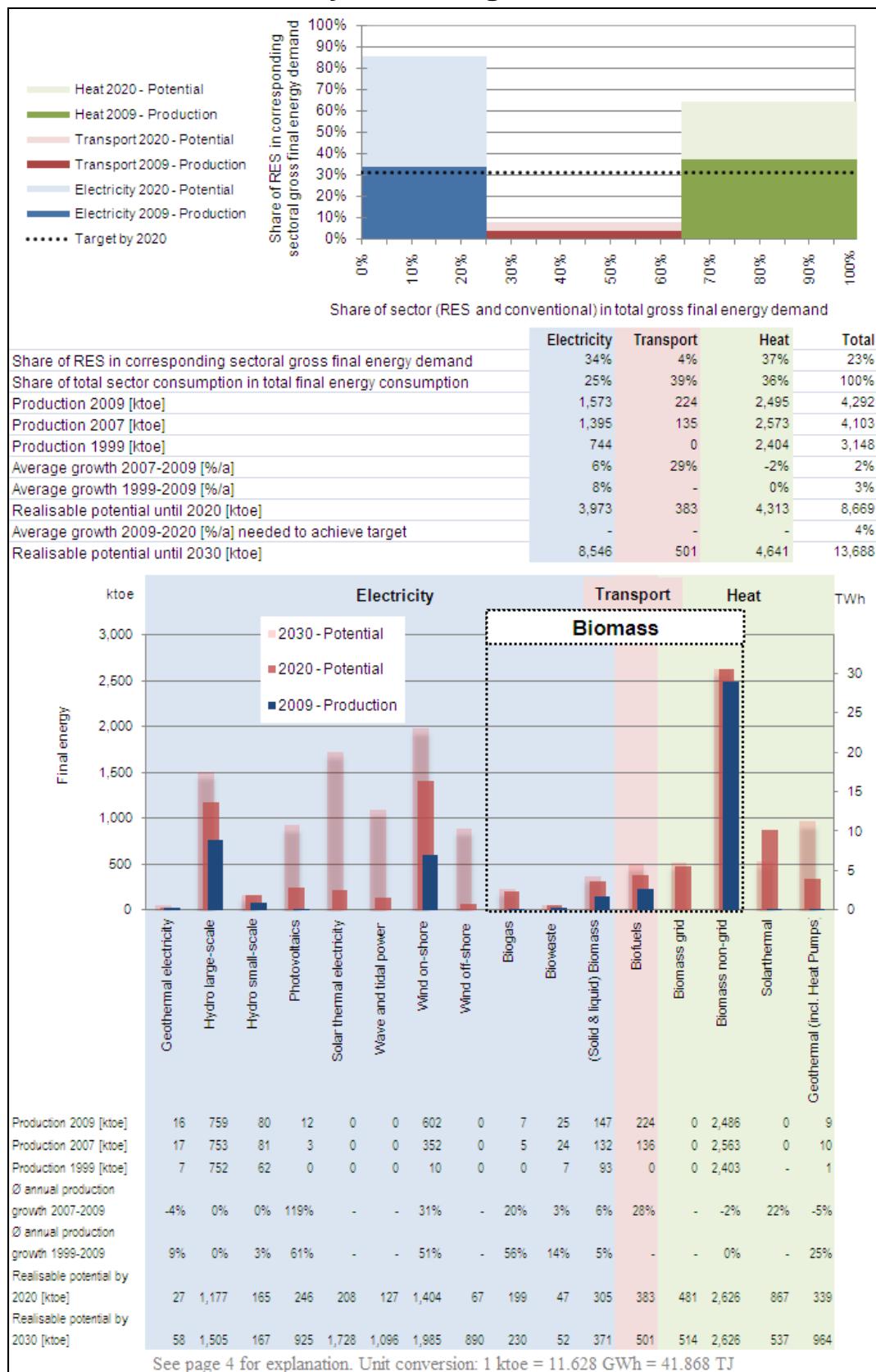
Year	Petrol	Diesel	Bioethanol	Esters	Percentage share of bio-components based on energy content
2006	4048	6042	84.3	44.9	0.92%
2007	3997	7212	70.8	37.3	0.68%
2008	4109	10069	185.6	479.9	3.66%
2009	4125	10387	232.2	635.8	4.63%

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PORUGAL - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

In 2010, the National Energy Strategy (Estratégia Nacional para Energia 2020 – NES 2020) was published. The NES 2020 is a very important element of the Portuguese overall policy with the Energy Strategy being one of the key axes of the 18th Constitutional Government (2009-2013). The Government plans the publication of other important addressing documents: Low Carbon National Roadmap 2020: 31st December 2011; Sectoral low carbon plans: 31st December 2012; Climate Change National Plan 2020: 31st December 2012.

However, Portuguese debt over GDP is very high, and in the recent months, Portugal had to deal with severe judgments by international rating agencies, concerned about the risk of Portugal needing to make use of the European Fund to save its economy.

Portuguese bonds have therefore been downgraded again, together with the rating of some of the major Portuguese bank's titles. On March 23 the Prime Minister resigned but guaranteed to continue his function until new elections planned for early June. However, if he will not be confirmed, also the leader of the Social Democrats is strongly committed to RES.

As in other many countries, most of the criticism and discussions about RES are, again, dealing with the level of expenditure related to subsidies and tax exemptions. In a period of financial crisis, any subsidy is obviously subject to easy criticisms, but in this case the support for the 'Energy Revolution' is really strong, and actually part of the re-launch and development of Portuguese economy. This should not change in the future.

A communication campaign based on the National Energy Strategy and leveraging on the slogan "Re.New.Able. New Energies Inspiring Portugal" has been enforced, and a specific dedicated website with up to date information on ongoing events and actions has been created: www.renewable.pt

The current Portuguese government aims at positioning its country among the first three to five leading countries in Europe for RES and related technology and export.

1 Summary: RES Support Policy

RES-E

Feed-in tariffs are available for almost all RES-E producers and have, in combination with tendering schemes for wind and biomass, proved to be very effective. They have lead to a very steep growth of both installed capacity and produced electricity over the last five to six years.

Both the scheme and the tariffs are continuously monitored against results and level of maturity of the market.

The scheme is used in combination with periodic tenders to assign grid connection lots.

Specific micro-production (up to 5.78 kW) and a quite new (upcoming) mini-production (up to 250 kW) subsidy scheme are available for households and SMEs.

RES-H&C

After the successful conclusion of a solar thermal subsidy campaign for domestic water heating in 2009, a new campaign has been launched and concluded during 2010, this time dedicated to SMEs and public utility buildings such as social entities and sporting associations. A support scheme for SMEs to invest in all renewable energy technologies, gives quite a good coverage for RES-H&C support. No specific initiatives are currently being enforced for RES-C.

RES-T

Portugal has transposed the directive European Directive 30/2003, and supports the ambitious target of 10% of biofuels with tax exemptions.

The new Energy Strategy aims at positioning Portugal as a leader in the field of electric transport. This ambitious goal is sought through a specific National Programme called MOBI.E (www.mobi-e.pt) which is also a consortium of automotive companies, and which will contribute to the creation of distributed electricity storage to optimize consumption of RES-E.

2 Details RES-Electricity Support Policy

Feed-in Tariff

With decree 189/88 (Decreto-Lei n.º 189/88 de 27 de Maio), Portugal introduced a legislative framework to regulate the production of renewable electricity. The scheme has been reviewed several times since then, following the evolution of the electricity market and its liberalization. The scheme is commonly known as “Tarifa Verde”, or green tariff. The scheme applies to all production of renewable electricity, except hydropower plants larger than 10 MW. The production of electricity from renewable energy sources is included in the regulation PRE, Produçao en Regime Especial (Special Regime).

One of the most important changes has been the differentiation of the rewarding tariff by technology, introduced by decree 339-C/2001 (Decreto-Lei n.º 339-C/2001 de 29 de Dezembro). Decree 33-A/2005 (Decreto-Lei nº 33-A/2005, de 16 de Fevereiro) established a cap to the maximum energy production per installation which can receive the feed-in tariff for certain technologies (see column ‘Notes’ on Table 1). The most recent amendment of the decree, with a complete republication of its Annex II, where tariffs are re-defined, is decree 225/2007 (Decreto-Lei n.º 225/2007 de 31 de Maio).

The scheme is controlled, monitored and reviewed by the DGEG (Direcção Geral de Energia e Geologia), the official governmental entity for Energy and Geology, a general directorate from the Ministry of Economics, Innovation and Development.

The feed-in tariffs, comprehensive of both the physical electricity and the green value together, are defined on a monthly basis for both existing and new installations, according to a rather complicated formula, introduced first in 1999 and then more recently modified, which currently depends on:

- peak/off-peak production factor: for each month it reflects how much the plant has produced during the day or during the night;
- capacity of the plant;
- cost of conventional production;
- cost of avoided CO₂ emissions, weighted by a technology factor, called factor “Z”;
- inflation;
- cost of avoided losses on the grid.

On the DGEG website¹⁸⁹, detailed information about the average value of the tariffs since the last changes of 225/2007 is available. ERSE, the Energy Services Regulatory Authority, also publishes monthly reports on the electricity produced within the special regime¹⁹⁰.

189 www.dgge.pt

190 <http://www.erne.pt/pt/electricidade/factosnumeros/Paginas/DivulgacaoMensaldeInformacaosobrePRE.aspx>

Table 1: Indicative average tariffs and support periods.

Technology	Indicative average tariffs (€/MWh)	Coefficient Z	Notes
Wind	74-75	4,6	Paid for 33 GWh/MW or 15 years
PV microgeneration <= 5 kW	470	55	When installed in residential, commercial, services or industrial buildings.
PV microgeneration > 5 kW <=150 kW	355	40	15 years
PV > 5 kW	310-317	35	
PV <= 5 kW	450	52	21 GWh/MW or 15 years
Solar thermoelectric <= 10 MW	267-273	29,3	
Biogas anaerobic digestion RSU, ETAR etc.	115-117	9,2	When limits on power installed at National level are achieved, Z becomes 3,8. 15 years
Landfill gas	102-104	7,5	
Unsorted urban waste (RSU)	53-54	1	15 years
Sorted/prepared urban waste (CdR)	74-76	3,8	
Waves (Demonstration up to 4 MW)	260	28,4	15 years
Waves (Pre-commercial up to 20 MW)	191	16-22	Factor Z is fixed through a decision of the government between 16 and 22 depending on the project value.
Waves (Commercial)			
first 100 MW	131	8-16	Factor Z is fixed through a decision of the government between lower and upper limit depending on the project value.
next 150 MW	101	6-10	
next	76	4,6	15 years

Technology	Indicative average tariffs (€/MWh)	Coefficient Z	Notes
Geothermal energy (high deepness and high enthalpy) ¹⁹¹ up to 3 MW, per project and per entity and up to National limit of 6 MW	270	29,4	12 years for both types Factor "Z" is fixed through a 'portaria' of the member of the Government responsible for energy, considering the 'added value' of the project
Remaining projects up to 3 MW, per project and per entity and up to National limit of 10 MW	170 - 246	16,3 - 26,2	
Concentrated photovoltaics (CPV) <= 1 MW, up to National limit of 5 MW installed power ¹⁹²	380	43	12 years
Hydro ¹⁹³ up to 10 MW	95	6,6	25 years
Hydro > 10 MW up to 20 MW	91 - 94	91 - 94	Specific auction for 150MW of grid capacity to connect hydro power plants up to 20MW; a total of 10 lots for a sum of 78MW was already assigned
Photovoltaics Power Plants (PV) ¹⁹⁴	257	27,2	34 GWh/MW or 20 years Specific auction for 150MW of grid capacity to connect PV plants; auction was launched end 2010, results published beginning 2011
Forestry Biomass ¹⁹⁵	119	9,6	25 years

Statistics on new capacity, electricity produced by each technology are available on a specific section of the DGEG website¹⁹⁶, and are updated every month.

The scheme is monitored, and changes to the legislative framework are evaluated based on the evolution of the expected results.

In order to make sure that the promotion of renewable energies fulfils the government's expectations, tendering schemes were launched additionally to support wind and biomass power plants. The tenders launched for new wind and forestry biomass power sites successfully resulted in a price for wind and forestry biomass that was lower than the previous equivalent tariff. On the other hand, the tariff could even now be too low for

191 Portaria 865/2009, 13 of August

192 Portaria nº 1057/2010, 15th of October

193 Portaria 126/2010, 23 of November

194 Portaria 132-A/2010, 21 of December

195 Portaria 5/2011, 10 of January

196 www.dgge.pt --> Áreas Sectoriais -->Energia Eléctrica -->Produção em regime especial -->Remuneração das Energias Renováveis

those technologies, to a point that most of the latest contracted power has not been built yet because similar projects are not showing good pay-back figures at those tariffs.

Offshore wind energy is granted the same feed-in tariff as wind onshore, which means that no offshore project has been developed so far (due to the higher investment needed). For this reason, project developers are currently putting pressure on the Government to define a new specific tariff for wind offshore.

Tendering Scheme for PV and mini-hydro

In October 2010, a tender for the allocation of 150 MW of slots for the connection of PV plants to the National Grid was launched. The government is basically selling the rights to connect to the grid to the participants through an auction. At the same time, prices for the remuneration of the produced power are fixed (see tables above) by means of the feed-in tariff formula already defined by Decree Law 189/88 as modified by Decree Law 225/2007.

The first 52 lots were first assigned for a total income of 86.5 mio €, whereas the last 23 lots were only assigned at the end of February, resulting in a total amount of an additional 20 mio €

A tendering scheme for mini-hydro was also published with a similar functioning method.

Some criticism is growing among market operators against this approach of the government, which in a way transfers the financial risk onto the shoulders of investors. The tenders in fact define a minimum price for obtaining the rights to connect to the grid; in order to maintain the attractiveness of the investment, the government establishes levels of the feed-in tariffs which are said to be higher than necessary.

The latest tenders for PV and mini-hydro as examples: industry was ready to invest with a feed-in tariff of 230 €/MWh, whereas the government fixed a level of 269 €/MWh, asking at the same time more or less 700 000 €/MW for the right to connect.

Tendering Scheme for Wind and Biomass

Portugal has strongly supported the development of new wind energy capacity with a tendering scheme, organized in three phases (A, B and C) for a total of 1800 MW new power, from 2005 till 2008 (Phase A – 1200 MW, Phase B – 400 MW, Phase C – 200 MW). The responsible organization is DGEG (www.dgge.pt). The tendering procedure was on price and on implementation timing. Companies had to match pre-requirements. Tendering schemes had a very positive impact on the licensing of new RES-E capacity in Portugal. But there was also a positive impact on the number of new jobs and the industrial development resulting from the construction of the new parks, mostly as a direct consequence of characteristics of the tendering procedures.

Note on NIMBY

Such a steep growth on the installation of new wind parks initially caused an increasing amount of opposition by people living in the areas where wind parks were to be installed.

To limit this opposition, the Portuguese government introduced a very smart rule: 2,5% of the monthly payment by the entity which receives the electricity, goes to the municipality hosting the wind park. When the wind park overlaps more than one municipality, this 2,5% is divided in proportion to the power quota installed over the

different municipalities. In detail, the provision is included in number 27 of annex II to Decree 189/88, as republished in Art. 13 and Annex I to Decree 225/2007.

There is also criticism on the scheme from the market. Much of the biomass tendering and the last phase of the wind tendering, was based on a minimum discount of 4% compared to feed-in tariffs. The discount was so big that a biomass power plant now cannot be built because it is not economically viable.

Almost all the biomass with Portuguese origin used for energetic purposes is now exported to countries where the tariff is higher (e.g. UK). Project owners are putting pressure on the government to change tariffs to correct this market distortion. Running plants are those authorized with a higher tariff or plants like pulp mills which burn bark or the by-products of other processes.

A similar situation happened for wind, where other problems are reported on the financial viability not only because of the tariff which was discounted in order to win the tenders, but also because of the direct link between the project owner and the industry supplying wind turbines (requirement of the tender to create business coalitions to have new jobs created), which gave the turbine producers a monopoly.

National Plan for High Potential Large Hydro (PNBEPH)

Portugal has a large potential still to be developed in terms of large-hydro capacity. In past years, hydro-electric production has grown less than in the other European Countries. At the end of 2007, a National Plan for High Potential Large Hydro was published, aiming at bringing hydro capacity up to 7.000 MW in 2020.

With two upgrades of existing plants (Picote II +231MW, Bemposta II +178 MW), the installed power increased from 4.945 MW to 5.354 MW at the end of 2007.

Three other large projects are going to enter into force in the period 2011-2013:

- Alqueva II (reversible plant, 260 MW for 30 GWh/year)
- Baixo Sabor (170 MW, 250 GWh/year)
- Ribeiradio (70 MW, 110 GWh/year)

This will bring total power up to 5.850 MW in 2013.

The remaining 1.150 MW (1630 GWh/year) will derive from another list of 10 plants to add up to smaller plants (mini-hydro) assigned through specific tenders.

The large hydro plants have been assigned to EDP, Iberdrola and Endesa.

Obviously those projects have a relevant environmental impact, and several cases of opposition to the different projects have been reported.

Hydro and in particular the opportunity to make use of pumped storage is very important for the correct development of the other RES in Portugal.

Small-scale RES-E: Mini-production

With a Decree-Law ready to be published (probably by the end of Q2 2011), the Government will licence a new important regime for a subsidy scheme for the so-called 'mini-generation', introduced already in the National Energy Strategy NES 2020 and then licenced by the Government for the first time in summer 2010, with a resolution, and then approved in December 2010 (Council of Ministries approved the Decree-Law on 9th of December 2010).

This scheme, adding up to the existing micro-generation scheme (up to 5.75 kW, see next section), defines incentives for renewable energy plants up to 250kW, aimed for distributed generation.

As in the micro-generation scheme, mini-generation is only possible when there is a concurrent production and use of energy, to obtain both a favourable energy efficiency result (less grid losses) and achieve the RES production target. The amount of energy consumption of the applicant entity needs to be equal to or greater than 50% of the energy produced by the plant.

To facilitate investments, a third party as an ESCO is allowed to install the plant at the energy user premises, if this is regulated through a transparent contract between the two parties.

An on-line registry will be made available to handle all application procedures. The on-line platform is the same used for the micro-generation programme.

In terms of tariffs, there will be two regimes, as in the micro-production scheme:

- Regime General (regulated by the market)
- Regime Bonificado (subsidised regime)

Subsidies will be defined with a smart rule: there will be a base tariff of 250 €/MWh, and permits will be granted starting from those entities which offer a better discount on the tariff. The following year, the base tariff will be discounted by 7% for new installations. The limit of installed capacity for each year for the subsidised regime is fixed at 50 MW. The tariff is granted for 15 years.

The access to the tariff is only possible after the performance of an energy audit and the adoption of the identified measures.

More information will be available once the Decree-law will be publicly notified.

Small-scale RES-E: Micro-production

In addition to the special regime production defined by the feed-in tariff, a specific legislation defines the support incentives for small-scale generation of electricity (Decreto-Lei n.º 363/2007 de 2 Novembro, recently updated with Decreto-Lei n.º 118-A/2010 of October 25). The scheme defines two different regimes for small production plants:

- "Regime General": for connected power up to 5,75 kW;
- "Regime Bonificado", subsidised regime: for connected power up to 3,68 kW.

- connected power can grow to 11,04 kW in case of buildings with at least 6 flats (units).

Considering the recent changes introduced by DL 118-2010, the scheme works as follows:

- for General Regime scheme, the tariff is the same as the regulated tariff;
- plants which can access the subsidised regime can benefit from a base tariff for 15 years, consisting of €400/MWh for the first 8 years and €240/MWh in the following 7 years; those two tariffs are reduced every year by 20€/MWh for new installations;
 - o a specific ratio of this amount is applied depending on the technology:
 - o Solar Energy Systems: 100%
 - o Wind Power Stations: 80%
 - o Hydro: 40%
 - o Biomass Fuelled CHP: 70%
 - o Non-renewable CHP: 40%
 - o Fuel Cells Hydrogen coming from one of the above: same as above
 - o In order to access the Bonificado regime, private consumer's systems need to be installed in combination with a solar water heater with a total surface of at least 2 m², or a biomass fired boiler, producing the same amount of energy; in case of blocks of flats, the building needs to be subject to an energy audit, and identified measures must be adopted to access the subsidised regime.
 - o The registered projects for the subsidised regime is now limited to 25 MW per year (it was 10 MW in the first years of application) of applications (applied for the first year and the following 5 years). After the first 10 MW, the tariff is reduced by 5% for each of the following 10 MW of capacity.
 - o the cap on the maximum amount of electricity from RES-E:
- 2.4 MWh/year per (kW installed) for solar and wind
- 4 MWh/year per kW installed for other technologies

For 2010 the allocated amount of 25 MW was not reached, so timing for payment of registry taxes has been postponed.

The application to install the 3.68 kW plants can be obtained on-line by signing in to a dedicated register.

Micro-production is sustained also with the following further incentives:

- VAT at 12% (instead of 20%) on renewable energy equipment
- Tax deduction of 30% of the investment for the equipment, up to a limit of 777€
- Exclusion from tax declaration of incomes from micro-production up to 5.000 €/year.

For more information see <http://www.renovaveisnahora.pt/> (in Portuguese). The on-line registry prepared to manage applications and procedures also hosts the list of accredited installers of equipment.

Transparency and accessibility to the on-line registry have been improved. It is now necessary to pay a tax in order to start the granting procedure. This should increase the percentage of success of the procedures, meaning the ration between the verified projects and those initially registered.

3 Details RES-Heating and Cooling Support Policy

Small-scale RES-H Generation

Solar water heating and biomass heating are supported through the law on small-scale generation, which obliges micro-producers of electricity to use a solar water heater or biomass in order to get access to the subsidised scheme tariffs.

Solar thermal: Investment Support, Low Interest Loan & Building Obligation

For 2009, the Portuguese government launched a special programme to promote the installation of solar thermal panels on homes and buildings. The programme applied to the purchase of a solar thermal "kit", comprising panels and ancillary equipment, installation, yearly maintenance for six years, and a six year guarantee. The programme expired on 31st December 2009, and the results encompassed some 50.658 applications, for a total 207.044 m² installed panel surface and 55 supplier brands taking part in the scheme, close to the initial Government target of 65.000 applications and 250.000 m². There is still the chance for the granted beneficiaries to access their procedures (in order to check guarantees status and so) on the dedicated scheme's web site (in Portuguese): www.paineissolares.gov.pt

In addition, a reduced VAT rate of 12 % for the purchased equipment applicable to all renewable energy products, according to the specific decree (Decreto-Lei nº 109-B/2001, de 27 de Dezembro) is applicable.

Solar thermal: Special loans, technical support for SME, social entities and sporting associations

On 1st of June 2010 the National Strategy Framework (QREN, actuation of European Funds for Competition of Enterprises) published a support plan to subsidise investments on solar thermal installations, insulation and measures for reduction of the solar factor by SMEs. They had time until 30th November 2010 to present requests. Investments from 10k up to 500k€ could be financed by up to 40% for medium enterprises, and 45% for small enterprises. The total available value was 9.5 mio €.

In July 2010, another scheme was launched, targeting social entities and sporting associations, and directed to investments in insulation and other passive measures, as well as solar thermal plants, renewable electricity generation and biomass thermal energy generation.

The total amount available is 21,5 mio €, and northern regions can receive benefits of up to 70% coverage, wheras Lisbon and Algarve can get up to 50%.

Subsidies and Loans for SMEs

Portaria 1463/2007 of November 15th defines incentives applicable to SMEs for investments to buy equipment for energy efficiency or sustainable energy production.

The Portaria includes a broad range of potentially financeable solutions.

Access to this financing is made available via the publication of specific tenders (like solar thermal for SMEs, see above).

Due to the particular situation caused by the global financial crisis and its national consequences, the initial framework has been temporarily modified (Portaria nº 353-A/2009). According to the last version, valid until the end of 2010, all renewable energy equipment, but more broadly sustainable solutions, could be financed with up to 40% of the eligible expenses, with an upper limit of € 400.000,00 per project in case of a single SME.

Solar Cooling

Solar cooling is still an expensive technology. In Portugal, very few installations exist, and the only activity is a training activity in the framework of the 'Solarit' IEE project. Diffusion of those systems, despite the very convenient irradiation of the country, is scarce.

The only support for private persons to finance solar cooling plants in Portugal at the moment is a tax reduction of 30% of the investment or up to a limit of €766 (valid in general for all renewable energy investments).

Building Obligations

EPBD directive has been transposed into Portuguese legislation through decree 80/2009 (Decreto-Lei n.º 80/2006 de 4 de Abril). The implementation of the directive is the overall responsibility of the Ministry of Economy together with the Ministry of Environment.

In July 2007, Portugal adopted a certification of energy efficiency for buildings. The responsible entity is ADENE (Agency for Energy) which also coordinates the training of qualified experts and is responsible for the Energy Certification module in all training courses related to the Directive on Energy Performance of Buildings. The Portuguese Environmental Agency (APA) is responsible for monitoring energy efficiency and interior air quality under the System for Energy Certification in Buildings.

Decree 80/2006 revises Regulations on the Characteristics of the Thermal Performance of Buildings (RCCTE).

The decree is applicable to all buildings which are:

- new buildings for residential use
- new office buildings without central air conditioning system
- not new but subject to major refurbishments or changes on the structures or on the sanitary hot water systems (major refurbishments: changes to structures or system costing > 25% of the building value)
- all enlargements of existing buildings, with respect to the new portion.

Exceptions are made for:

- buildings which for their nature or have frequently managed open-air and are not heated or conditioned
- churches or cultural buildings

- industrial buildings dedicated to production processes
- garages, warehouses, workshops, agricultural buildings not for residential use
- refurbishment of buildings in historical sites where there is a demonstrable incompatibility with the regulation
- classified or security buildings, military buildings

Art. 7 of Decree 80/2006 introduces the obligation for buildings under the RCCTE to install at least 1m² of solar thermal panels for each conventional inhabitant of the building (limited to 50% of total available top surface) for the production of sanitary hot water.

The obligation is only applicable when the following conditions persist:

- there is availability of inclined surface in the range of 90° between South-East and South-West,
- the surface is not affected by shadowing effect between two hours after sunrise and two hours before sunset.

As an alternative to solar thermal panels, any other renewable energy source producing the same amount of thermal energy on an annual basis is accepted.

CHP

In general, legislation encourages the use of CHP in Portugal, and electricity produced by high-efficiency co-generation is subject to the Special Remuneration Regime as well as electricity produced from renewable energy sources (see RES-E support schemes).

Small-scale generation of electricity from renewable energy obliges the use of the heat produced for co-generation installations.

For more information about co-generation in Portugal, see:
http://www.cogenportugal.com/general_content/showInformation.aspx?mt=1&ml=2&type=2

4 Details RES-Transport Support Policy

Quota Obligation

With Decree 62/2006, Portugal transposed the European Directive 30/2003, on the promotion of the use of biofuels or other renewable fuels for transport, into its legislation, establishing a target for the share of biofuels in total fuel consumption in the transport sector of 5.75% until 31st December 2010.

In September 2008, the Council of Ministers approved a rule extending the existing tax exemptions for small biofuel producers to municipalities. The rule will allow municipalities and companies to produce biofuels with the final product to be used exclusively for the producers' own transport fleets or in the fleets of non-profit entities.

A further decree (Decreto-Lei n.º 49/2009 de 26 de Fevreiro) establishes a minimum quota for the incorporation of biofuels into diesel for road transport. According to this decree, oil companies are obliged to include 6% of biodiesel into diesel in 2009, and 10% in 2010.

Nevertheless, road diesel must comply with European standard EN 590 and until such time as this standard is altered, the maximum percentage of diesel that may be added is only 5%.

The new rules, approved by the Council of Ministry day 23rd of December 2008, are addressed to producers of bio-fuels for road transport and to whatever entity is commercializing diesel for road transport. Small producers are excluded from these provisions. Sanctions between €500 and €3.470 for 'single persons' and between €2.500 and €44.891 for 'collective persons' are established in case of violation of minimum percentages.

Voluntary agreements are set to adopt biofuels with 10% minimum amount of biodiesel vs diesel for public fleets for transport of passengers or goods.

The entity responsible for the implementation and monitoring of the scheme is DEGE¹⁹⁷ (Direcção Geral de Energia e Geologia).

Tax Exemptions

Through decree 66 of 2006, Portugal introduced a tax exemption for 5 years for small producers up to maximum 15000 tons, and in a range of 0.38 and 0.30 €/litre for larger producers.

Electric Transport

Portugal is developing a framework policy to promote electric transport and related infrastructure; the theme is connected with the over-production of electricity from renewables during the night, compared to a strong decrease of energy demand. Batteries of electric vehicles connected to the grid could work as an efficient distributed buffer for renewable electricity, but there is no direct link of support to the use of RES-E.

A consortium of nine companies called MOBI.E is creating an infrastructure in Portugal in 25 cities, and will deliver another 1300 normal charging points and 50 fast charging points by summer 2011.

Portugal was the first country in Europe to establish a direct electric vehicle partnership with the Renault-Nissan Alliance in November 2008, signing an agreement to build a widespread recharging network in Portugal and to promote the benefits of zero emission mobility.

An incentive of 5.000 € was granted with Decree Law nº 39/2010 of 16 April 2010 to the first 5.000 buyers of 'accredited' electric vehicles. The buyer does not need to apply for this incentive, the subsidy is immediately deducted at the car-shop. If an old car is dismissed, the incentive can grow to 6.500 €.

5 RES-E Grid Integration

Smart grids

As integral part of the National Energy Strategy, smart grids are currently promoted and deployed throughout Portugal: "Portugal's objective is to promote the coverage of the majority of the national territory by intelligent networks, combining it with more efficient management of the existing networks.

By 2009, 600,000 new energy boxes had been installed in the distribution of electricity which include intelligent metering systems, modules relating to demand management, the technical management of microgeneration and controllable loads and interfaces with users, with a view to covering 10% of domestic consumers.

With an investment of 1000 mio €, intelligent networks shall be responsible for creating 3000 jobs and will allow the integration of the charging of the electric vehicle and decentralised micro-production".

Furthermore, Northern Portugal hosts one of the first examples of "Smart Cities". Located near Paredes, in northern Portugal, the city, spearheaded by LivingPlanIT, is designed to have interconnected water, energy, waste management and climate control systems and can sustain about 150,000 people.

The city will be full of sensors, monitoring temperature, occupancy, energy usage and other similar data. A central system will collect data and then potentially perfectly balance demand, storage and production of energy.

Grid Connection and management of RES-E

The last resort supplier (the supplier obliged to provide public service in case no private supplier is available) has the obligation to buy all electricity generated in special regimes (all renewable energy sources, CHP, etc.).

Sites for new wind and forestry biomass power plants are tendered and located where they allow an efficient and consistent development of the grid.

Priority in grid connection is established according to the National Energy Strategy Plan.

Independent small producers have more difficulties, due to the low capacity of the grid to absorb all requests for new connections.

Limited capacity of the grid, in some areas (although this apparently is manageable) together with limited electricity storage capacity (depending on authorization of some large hydro plants) are two of the most important obstacles that Portugal needs to resolve, in order to manage the ambitious targets of renewable energy penetration.

There is only one single operator for the national grid. Distribution at high and medium voltage is operated by EDP Distribuição in exclusive concession. Transmission activity is carried out by REN Rede Eléctrica. Connection processes are normally completed in an acceptable time.

In the case of grid extensions / upstream grid reinforcements when new capacity for renewable energy is installed, the "shallow" mode applies, meaning that costs for the physical connection to the nearest grid connection point are paid by the project owner,

while the upstream reinforcement costs are paid by the network operator and split among all network users. Costs for connections are reported (unofficial sources) to be quite high when compared to those in other European countries.

As explained before, in Portugal generation is divided in two blocks:

1. PRO - Ordinary Regime Production, which makes offers on the market; includes plants like fuel/coal fired conventional thermal, combined cycle gas turbines and hydro;
2. PRE - Special Regime Production, with feed-in-tariffs; this group includes all the RES-E (wind, hydro, renewable cogeneration, waste, biogas, biomass, solar) plus some non-renewable fuel fired cogeneration plants

PRE has priority in case of grid congestions. PRE production cannot be restricted except when only that specific production can solve those congestions. Currently, in Portugal the project owner has no obligation or responsibility to forecast its production.

6 RES Production, Potential and Market Development

Total installed capacity of renewable energy reached, 9,453 MW at the end of November 2010, according to DGEG. Total licensed capacity on the same date was 10,547 MW.

Tendering schemes and feed-in tariffs allowed steep growth rates for Wind, Biomass, Biogas and PV.

At the end of November 2010, the total wind power installed was 3.902 MW (August 2009: 3,430 MW), distributed between 206 wind parks and 2,046 wind turbines. Until November 2010, total licensed power was 4,513 MW.

Given the high rate of equivalent hours for wind (in 2009 average continental Portugal was of 2,231 hours for wind energy), this immediately resulted in a strong increase of the penetration of RES-E,

Wind energy production alone is primarily responsible for the high growth rate since 2002 till today. PV energy starts to be apparent in 2009-2010, after the construction of the new large PV parks.

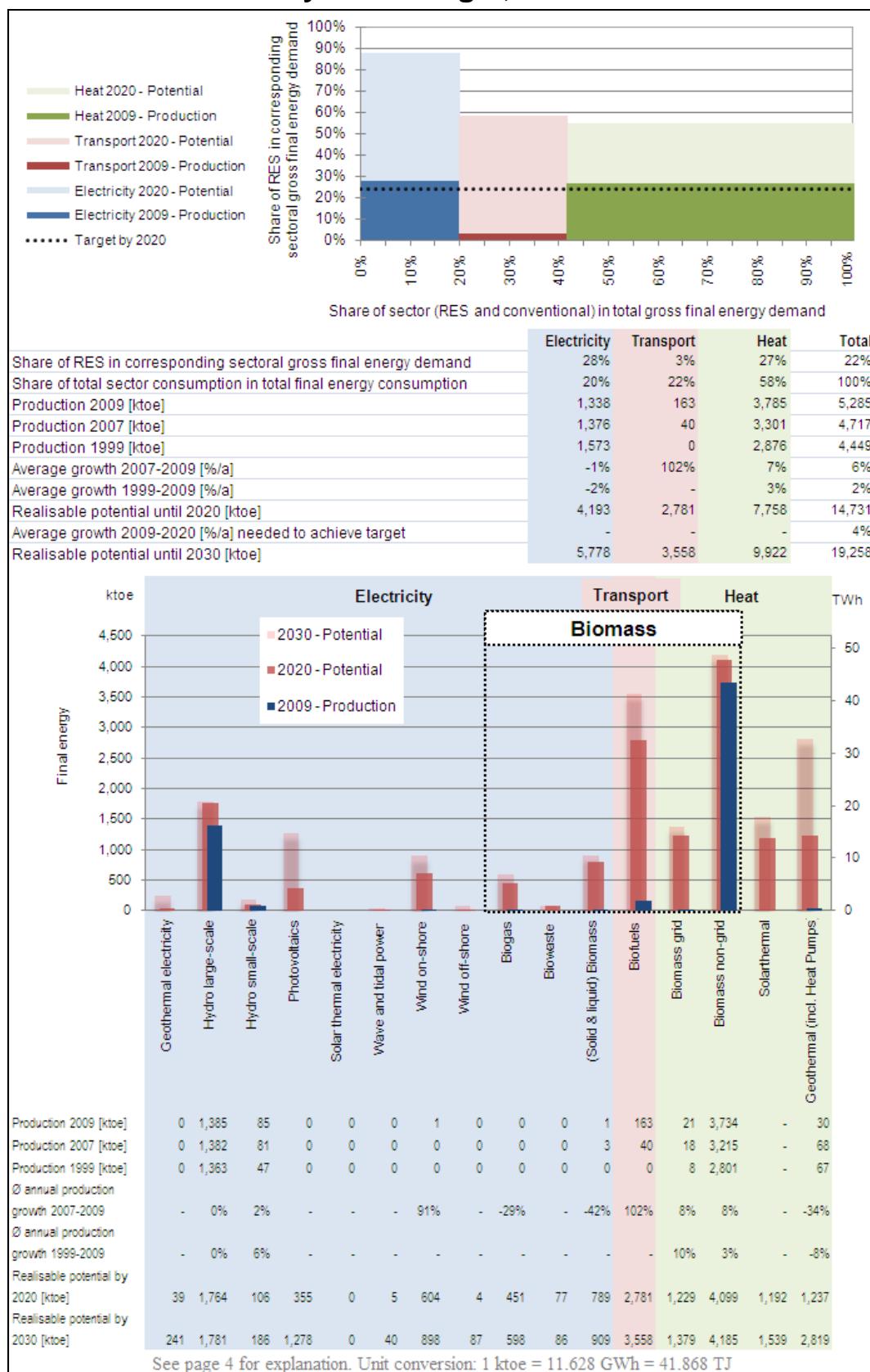
We can see in any case very favourable results of last year's developments, resulting in a harmonized increase of all significant contributions, with priority given to sources with larger production potentials.

In 2010 electricity produced by hydro increased significantly compared to previous years, resulting in a strong increase of total energy from RES, bringing the contribution to level of 55% (according to the definition of the Directive).

In the first months of 2011, levels of 70% of contribution of RES were reached, thanks to the favourable conditions of both hydro and wind resources.

Gas fired power plants are starting to be seen as a 'support technology' for RES plants. The economy has grown much less than foreseen, and 2010 was a high production year for hydro, but for dryer years gas still remains a fundamental energy source.

ROMANIA - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

By Law 139/2010 and the Governmental Ordinance 29/August 2010, the existing Law no.220 on the RES support mechanism was modified mainly in order to include provisions of the RES Directive 2009/28. In addition, the new law no.139 comes with a more generous number of Green Certificates per MWh from PV (6) and from small hydro (3). The system of Quota obligation based on Trade of Green Certificates is to be applied for 15 years for the RES-E units commissioned before 2017. Increased RES-E quotas, in comparison to the previous, were declared for the period 2011-2020.

But, as it predecessor the Law no.220, some provisions of the Law 139 regarding the number of GCs to be granted for each RES resource did not yet enter into force, as the procedures to be approved by the Competition Council and the EC are not finalized. So Law 139, even though not operational yet regarding the level of incentives, is an important and promising change. But in practice regarding the GCs mechanism and trade, the 2010 year brought no change, as currently still only 1 GC is granted for 1 MWh

1 Summary: RES Support Policy

RES-E

The key support policy instrument at the national level is the quota obligation based on Trade of Green Certificates (GCs). The Law no.220 is stating since 2008 the minimum and maximum values of GCs at 27 €/MWh and 55 €/MWh respectively, a penalty level for non compliance of the RES target to 70 Euro/MWh. In 2010, Law 220 was amended by Law 139, which “updated” some provisions of the Law 220, mainly to answer to the RES Directive 2009/28. Also the number and conditions of GCs given for 1 MWh were improved. E.g. the number of GCs given for 1 MWh from PV rose from 4 to 6. The penalty level for non compliance with the targeted RES quota was set to 110 Euro/MWh. But the provisions on the number of GC granted for each RES resource did not yet enter into force, waiting for EC approval.

The instrument, as it is operational today, with only 1 GC per MWh whatever the RES technology, is correctly organized but not sufficiently attractive: too low support and no guarantee on long term stability. The long time that is obviously needed to put into practice the provisions on differentiated amounts of GC/MWh according to technologies is generating indecisiveness with investors.

The NREAP prepared in 2010 states that hydro, wind and CHP biomass are expected to be the main contributors as electricity to the RES target for 2020. 4,000 MW of wind power projects are said to be in the pipeline.

RES-H&C

There is no specific mechanism to promote RES-H&C, except for the existence of co-financing of some projects within programs such as European Structural Funds or the Environment Fund. The biomass potential is large, relying on forestry and agricultural waste but also on the use of available land (2-3 millions ha) for energy crops.

Despite the fact that biomass for heating is expected to be the main contributor to the 24% quota in 2020, the NREAP issued mid 2010 did not sufficiently address biomass utilization.

RES-T

The support mechanisms to promote biofuels are a quota system and the exemption of excise tax for biofuels. Romania is a country with a large agriculture sector and available agricultural land will probably produce sufficient biofuels to meet its target and also to export biofuels, or at least the raw materials for it.

2 Details RES-Electricity Support Policy

RES-E Quota with Tradable Green Certificates

Romania adopted a quota system based on Green Certificates (GC) trading in 2005. According to the Governmental Decisions 1892/2004 modified by GD 958/2005, RES projects benefit from one GC per 1MWh delivered to the grid. The Law 220/2008 was adopted by the Romanian parliament, but its provisions regarding a higher number of GCs per MWh according to the RES resource, did not enter into force yet. In 2010, Law 220 was replaced by the Law 139/2010, a kind of updated version of Law 220. But also the implementation of the Law 139 provisions regarding the level of incentives is delayed due to the EC competition approval procedure.

Below the present general GC mechanism conditions are described, but also the new conditions foreseen by Law 139.

The instrument states mandatory RES-E quotas combined with tradable green certificates.

The instrument is managed by:

- the National Energy Regulatory Authority ANRE - controls quota fulfilment and applies penalties
- RES-E Producers -sell GC
- Electricity Suppliers -buy GC
- Electricity Market Operator OPCOM, trades GC
- the Transport and System Operator TRANSELECTRICA (and Distribution Operators) – issues GC, collects and redistributes to the producers the amount of money from the penalties

More information about the instrument is available on: www.opcom.ro and OPCOM GC department: Constantin VASILEVSCHI , tel. : 021 3071.448, constantin.vasilevschi@opcom.ro, Gherghina Dida VLADESCU, tel. :021 3071.456, gherghina.vladescu@opcom.ro

A report on the GC market operation in 2009 is available on (www.anre.ro/download.php?id=3217).

The primary legislation on the instrument is:

- GD (Governmental Decision) 443 / 2004 on promoting renewable energy sources
- GD 1535 / 2003 on approving the Strategy for using renewable energy sources
- GD 1892 / 2004 on establishing the promotion system for electricity produced from renewable energy sources
- GD 958 / 2005 in order to modify GD no 443 / 2003 and to modify and complete GD no. 1892 / 2004
- GD no. 1429 / 2004 regarding the approval of the Regulation for guaranteeing the origin of electricity produced from renewable energy sources

As second regulation, ANRE Ordinance 40 /2005 for the RES market - Regulation for Green Certificates Market Organization and Functioning is relevant.

The instrument has been operational since 2005. In August 2005, the first GCs were issued and in November 2005 the first transaction on the centralized GC market took place. No end date has been set.

Because there is a large imbalance between demand and supply of GCs, the quota is reduced yearly (at the end of year) by ANRE to the amount of offered GCs. Therefore almost no penalties are given. This design of the procedure shall ensure that no one who wants to buy GCs but cannot due to insufficient supply is penalised. E.g. the quota for 2009 was modified from 6.28% to 0.589% (www.anre.ro/download.php?id=874). Obviously this reduces the effectiveness of the penalty and the complete quota system. Hence, a much higher investment risk is caused, hampering the overall RES development in Romania.

There are no maximum or minimum sizes of plants which are eligible, except hydro plants which are rated maximal 10 MW if they are new or refurbished after 2004. Neither a cap on the annually available budget for new installation exists.

RES-E projects may receive additional other grants, besides the GC mechanism, as co-financing by European structural funds (see Governmental Decision 750 dated 9 July 2008) or by the national Environment Fund (www.afm.ro). These facilities are given on a selection basis, not as general scheme for all RES-E and RES-H projects, and may supply a small part of the investments needs in RES by 2020 to cover the quota.

The regulation does not make the support conditional to the use of certified equipment and/or certified installers.

Law 139 guarantees that the system will remain in place for the next 15 years. The new foreseen quotas are:

Year	Annual binding quota , %
2010	8.3%
2011	10%
2012	12%
2013	14%
2014	15%
2015	16%
2016	17%
2017	18%
2018	19%
2019	19,5%
2020	20%

The energy supply companies are obliged to respect the quota. Some DSOs are also energy supply companies.

The present GC trade mechanism does not make a difference between the technologies.

The Law 139 foresees the following certificates distribution for the next 15 years, if not stated otherwise:

- 2 GC/ 1 MWh for re-furbished small hydro (under 10 MW capacity)
- 3 GC / 1 MWh for new small hydro
- 1 GC / 2 MWh for old small hydro
- 2 GC / 1 MWh for wind power – until 2017
- 1 GC / 1 MWh for wind power – from 2018 on
- 3 GC / 1 MWh for power from bioenergy or geothermal
- 6 GC / 1 MWh for PV

Biomass cofiring plants do not receive any GCs unless the “green” fuel share is at least 75%.

The scheme covers the following technologies:

- small hydro up to 10 MW capacity
- wind power
- bioenergy
- geothermal
- PV

The trade of GCs is allowed on a centralized market organized by OPCOM. For the period until 2025 the value of GC transactions are set to min. 27 €/GC and max. 55 €/GC. Minimum value after 2025 may be no less than the minimum GC price stated for 2025.

110 €/MWh are the penalty in case of quota non-fulfilment. By ANRE Order, the penalties are allocated to Grid Operators, DSO and TSO. The corresponding methodology was approved by Order 62/2009 (www.anre.ro/download.php?id=2629).

Because supply was lower than demand, the prices of GCs were in general up to now close to the maximal value of 55 €/GC. No futures are traded. The prices are public, on the OPCOM web site (<http://www.opcom.ro/portal/content.aspx?lang=RO&item=2165>)

The certificates may be kept unlimited. The support scheme for RES-E may be applied also to High Efficient Cogeneration using biomass. The Governmental Decision 1215/October 2009 states the conditions and criteria to implement the support mechanism for the promotion of high efficiency cogeneration (www.anre.ro/download.php?id=2930).

The Regional state aid scheme on the use of renewable energy resources

The financing of projects in the fields of RES-E and RES-H from structural funds is carried out within the Sectoral Operational Programme “Increase of Economic Competitiveness” (SOP IEC) - Axis 4 “Increasing energy efficiency and security of supply, in the context of combating climate change, MIF 2 “Use of renewable energy resources for the green energy production” (see <http://oie.minind.ro/>).

The scheme is managed by the Ministry of Economy, Commerce and Business.

The maximum value of the non-refundable support which can be granted for a project as percentage of the eligible expenses is the following:

- for small enterprises and micro-enterprises: 70%, except for projects located in the Bucharest - Ilfov region where the maximum value is 60%;

- for medium enterprises: 60%, except for projects located in the Bucharest - Ilfov region where the maximum value is 50%;
- for large enterprises: 50%, except for projects located in the Bucharest - Ilfov region where the maximum value is 40%.

During the current programming period (2007-2013), two calls for projects have taken place so far: the first one in August – September 2008 and the second call in January – April 2010. The budget is 200 millions Euro until 2013, a small part (c.a. 5-6%) of the investments needs to be in RES projects.

The National Environment Fund programme for RES development

This Fund, managed by the Environment Fund Administration, co-finances RES-E and RES-H projects. The guide of the programme was approved by the Environment Ministry Order no. 714/6 May 2010

(http://www.afm.ro/main/info_stuf/energii_regenerabile/ghid_finantare_program_energii_regenerabile.doc.)

50% but not more than 30 millions RON (7.15 millions Euro) is the maximal contribution of the Fund for a RES project.

In 2009 85 million Euro were granted for selected projects while in 2010 another 180 millions Euro were granted. The budget varies from year to year according to the resources.

One or more financing session may be annually organised within the limit of the amount granted from the Environment Fund. No end date has been established for the programme.

3 Details RES-Heating and Cooling Support Policy

Capital grants

The Regional state aid scheme on the use of renewable energy resources and the National Environment Fund programme for RES development, described as support instruments for RES-E, are also applicable for RES-H projects.

An additional support mechanism is the so called CASA VERDE (Green House) program, focusing on building heating and hot water systems using RES. It was announced in 2008, modified and postponed several times since then. It became operational and significant in Summer 2010.

The program provides capital grants for individuals or public buildings for RES heating and hot water systems replacing conventional heating systems. Hereby several RES options like solar, geothermal, wind energy or other systems which bring improvements to the air, water and soil quality are eligible for grants.

The Ministry of Environment and the national Environment Fund manage the instrument. Details are given on: http://www.mmediu.ro/casa_verde.htm, and http://www.afm.ro/program_casa_verde-pf.php.

The instrument was introduced by the Ministry Order no.1339/2008. The instrument guide, approved by the Order no. 950/17 June 2010, is available on



http://www.afm.ro/main/info_stuf/casa_verde/ordinul_950_17.06.2010_aprobare_ghid_casa_verde.pdf

There are periodical calls with specific budget. In 2010 the budget for public buildings was 100 millions RON (23.8 millions Euro), granted for applications forwarded in the period 15 December 2010 to 30 January 2011, while for private buildings the budget is 110 millions RON (26.2 millions Euro), granted for applications forwarded in the period 1 July 2010 to 30 January 2011. The next 2011 call and corresponding available budget will be announced in April 2011.

Initially, the support was conditional to employ certified installers from an approved list, but now there is no conditionality.

There are no additional instruments to promote RES-H to the regional/local level

There is not yet any RES support schemes specifically related to district heating, small scale heating or industrial applications.

4 Details RES-Transport Support Policy

Quota obligation

The central instrument is a quota obligation. Biofuels are also exempted from excise tax

Romania should ensure the introduction on the market for transport purposes, of a minimum percentage for biofuels and other renewable fuels of 5.75% until 2010, calculated on the basis of energy content of all petrol and diesel consumption in the transport sector.

The instrument is managed by:

- the Ministry of Economy, Directorate of Infrastructure Quality and Environment is monitoring the biofuels policy
- the licensed laboratories ROMPETROL and ROMCONTROL develops fuel analysis to certify the biofuel content
- the Ministry of Agriculture is monitoring the development of energy crops

More information about the instrument is available from the Ministry of Economy:
<http://www.minind.ro/>

Mrs. Cristian Ion, Director of the Directorate of Infrastructure Quality and Environment,
cristiana_ion@minind.ro

The quota of biofuels is monitored and reported annually.

The primary legislation is: the “Government Decision, no. 1844/2005” which was amended according to the “Government Decision, no. 456/2007”. The fuel suppliers are obliged to fulfil the quota. The technologies covered by the scheme should produce as final products bioethanol or biodiesel. For energy crops there is an additional support to farmers of 45 €/ha, according the Governmental Urgency Ordinance 125/2006, art.10.

There is a gradual introduction of a minimum percentage of biofuels in conventional fuels. Despite the fact that the GD 1844 stated a minimum bio quota of 5.75% from fuels

as energy content, the GD 456 and more recently the GD 829/August 2010, ask for the following quotas, as volume:

- from 1 July 2009, diesel and petrol with a minimum biofuel content of 4% in volume;
- from 1 January 2011, diesel and petrol with a minimum biofuel content of 5% in volume;
- from 1 January 2013, diesel and petrol with a minimum biofuel content of 7% in volume;
- from 1 January 2017 2008, petrol with a minimum biofuel content of 9% in volume;
- from 1 January 2018 petrol with a minimum biofuel content of 10% in volume;
- until 31 December 2020, diesel and petrol with a minimum biofuel content of 10% as energy content;

The European 5.75% quota (energy content) in 2010 was not reached as only 5% quota (as volume - some 4.4% quota as energy content) is set by the present regulation at the end of 2010.

The regulation does not make the support conditional to the use of certified equipment and/or certified installers. There is no specific support for electric vehicles that use renewable electricity.

5 RES-E Grid Integration

Grid operators are obliged to connect renewable energy systems to their grids as a priority, unless this poses a risk to the secure operation of the national energy system (art. 20 Law no. 220/2008).

The priority to absorb and dispatch RES-Electricity is to be confirmed in practice, as up to now no significant amounts of intermittent RES-E (wind) have been injected into the grid and thus has not been relevant so far.

Regarding the grid extensions / upstream grid reinforcement costs, the system is close to a "shallowish" connection charging: only the costs of the physical connection to the nearest grid connection point including new transformer stations or necessary upgrades of existing transformer stations have to be carried by the RES-E project; upstream reinforcement costs are paid by the network operator/ split among all network users

The new Law 220 and the Grid operator's norms make project developers partially responsible to pay for the required balancing energy. Therefore the project should forecast its production and should pay for balancing energy in case actual production and forecasted production deviate from each other. The support instrument does not include an extra remuneration for these balancing costs. The balancing costs are the same as for any other electricity producers on the market.

Regarding wind farms, the ANRE Order no. 51/2009 approves the technical regulations for the grid connection.

6 RES Production, Potential and Market Development

RES-E

Key technologies in terms of potential are hydro power, biomass (agricultural waste, forestry waste, biogas), wind energy and Photovoltaic. However, in the near future apart from hydro power mainly wind and biomass energy will be exploited.

Due to the size of the additional not yet used agricultural land (3 millions ha) and the huge potential for CHP biomass plants, biomass is expected to be one of the most promising RES-E technology.

In recent years wind energy projects became very attractive for investors as there are 20,000 MW intended to be installed, and about 4,000 MW approved to be connected to the grid.

RES-H&C

Key technologies in terms of future potential, deployment and growth rates are the biomass technologies based on agricultural waste, forestry waste and biogas both in CHP and District Heating plants but even more in the individual non-grid connected heat sector.

Nowadays, only biomass in the individual, non-grid connected heat sector is partly exploited, in form of log wood and mostly used in inefficient rural stoves. A switch towards more efficient residential heating systems and to DH systems supplied by modern boilers or CHP units is expected.

RES-T

Key technologies in terms of deployment and growth rates are the ones producing biodiesel from rape and bioethanol from cork, sweet sorghum etc.

Due to the size of exploited agricultural land and the additional not used agricultural land (3 millions ha), biofuels have a large potential for development, in order to fulfil national quotas and also for export.

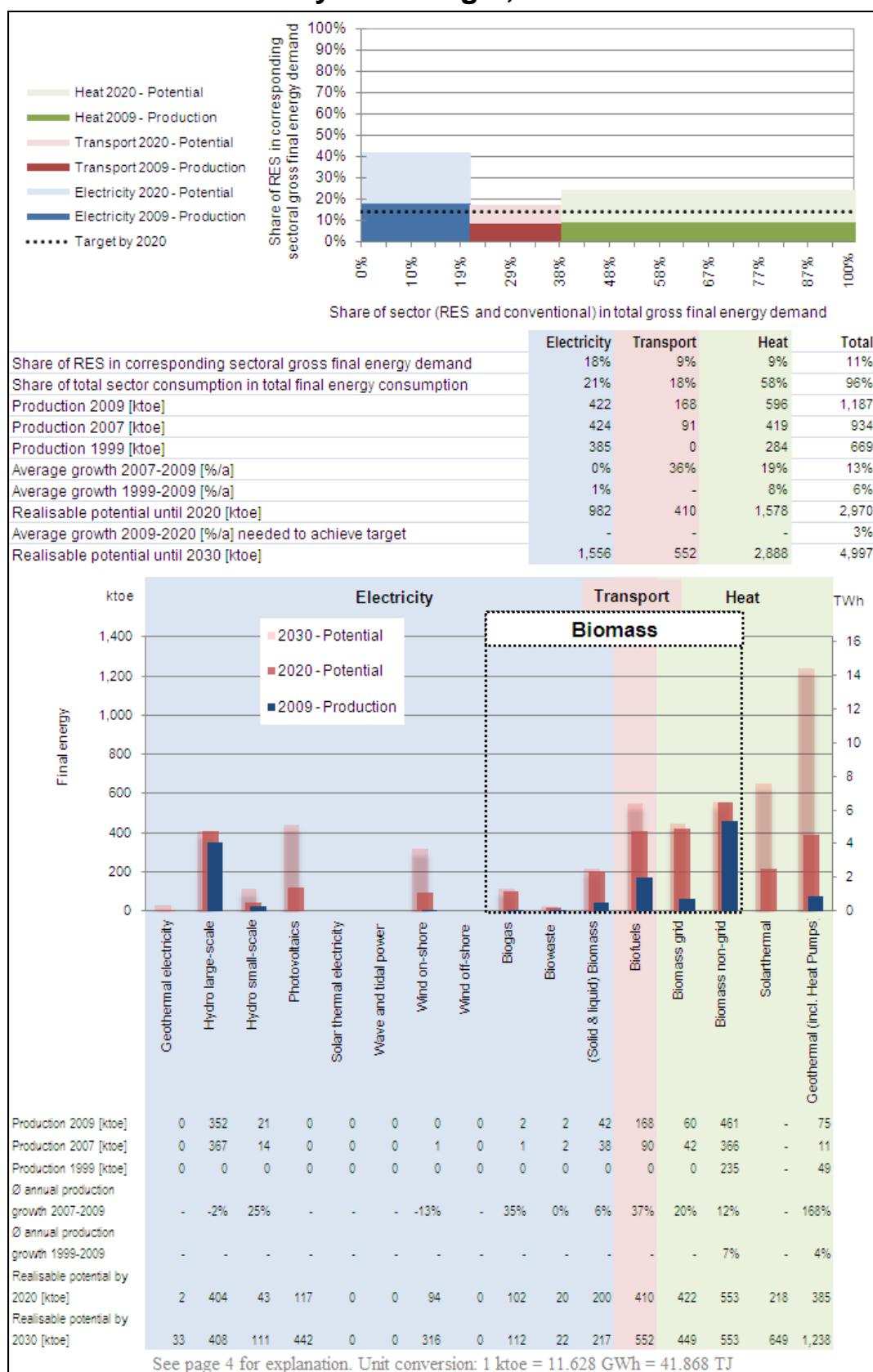
In the last 4 years there was a constant growth of biodiesel production capacities.

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SLOVAKIA - Summary: RES target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

The new Law on the Promotion of RES and High-Efficiency Cogeneration entered into force on 1 January 2010. From this last revision of the legislative framework of the Slovak Republic there were no major changes, but there were some legislative amendments limiting new installations by putting in place regulative barriers (limiting issuance of permits for new power plants) and reducing the amount of support by increasing the maximum yearly tariff decrease.

In June 2010 the Slovak Transmission System Operator (SEPS) stopped issuing affirmative statements for connecting newly built energy facilities to the transmission system. Without an affirmative statement from SEPS, no Certificate of Compliance is issued by the Ministry of Economy, which is a regulatory requirement for constructing energy facilities. New statements will not be issued until the end of 2011.

1 Summary: RES Support Policy

RES-E

Currently, the key support instrument of RES-E in Slovakia is a feed-in premium. The Regulatory Office for Network Industries sets feed-in premium rates annually, taking into account the type of RES, the technology used, the installed capacity, technology development status, index of national core inflation and other factors. The revision of feed-in premium every year brings some uncertainty into the RES-E market although the new annual feed-in premium will not be applied to existing plants.

This support instrument is based on the Law on the Promotion of RES and High-Efficiency Cogeneration adopted on 19 June 2009. This new Law was adopted in order to foster the attractiveness of investments in RES technologies and to meet the country's EU targets. The new RES-E support schemes entered into effect on 1 January 2010. Under this new support scheme, a feed-in premium is available for RES-E producers with guaranteed prices for 15 years.

In June 2010 the Slovak Transmission System Operator (SEPS) stopped issuing affirmative statements for connecting newly built energy facilities to the transmission system. Without an affirmative statement from SEPS, no Certificate of Compliance is issued by the Ministry of Economy, which is a regulatory requirement for constructing energy facilities. New statements will not be issued until the end of 2011.

Slovakia also promotes RES-E through fiscal measures: exemption from consumption tax and State aid under the Competitiveness and Economic Growth Operational Programme.

RES-H&C

The generation of RES-H is supported by investment subsidies under the Governmental Programme for Promotion of Biomass and Solar Energy Use in Households. Based on this programme, households that install a biomass boiler or solar panels are eligible for a subsidy under specified criteria.

RES-T

Since May 2004, pure biofuels used for transport purposes have been fully exempt from excise tax. Quota obligations were valid up to 31 December 2009. Producers and vendors were obliged to blend a minimum 2% of biofuels in fuels for transport. The main target was 5.75% for energy from RES in transport by 2010 which was however not implemented as a formal obligation.

2 Details RES-Electricity Support Policy

In June 2010 the Slovak Transmission System Operator (SEPS) stopped issuing affirmative statements on connecting newly built energy facilities to the transmission system. Without an affirmative statement from SEPS, no Certificate of Compliance is issued by the Ministry of Economy, which is a regulatory requirement for constructing energy facilities. New statements will not be issued until the end of 2011. After evaluating the influence of all RES types on the electricity grid of the Slovak Republic, at the beginning of 2012 the situation will be revised by SEPS again and new rules for the issuance of affirmative statements will be introduced.

However, old plants and plants that received their affirmative statement before June 2010 can profit from the following support.

Feed-in Tariffs

Since 2005, Slovakia had a feed-in tariff in place, based on the Law on Energy [1]. The Regulatory Office for Network Industries (<http://www.ursko.gov.sk/en/site-map>) determined feed-in tariff rates annually, taking into consideration the index of national core inflation.

The fixed tariff was determined for different types of RES technologies on the basis of installed capacity and the date of commissioning the plant (before or after 1 January 2005). The feed-in tariff was determined in such way that the pay-back period is 12 years. The feed-in tariffs are still valid for old plants.

New Feed-in Premium

On 19 June 2009, the Slovak Republic, in an attempt to foster the attractiveness of investments in RES technologies and to meet the country's EU targets, adopted the Law on the Promotion of RES and High-Efficiency Cogeneration [2]. This Law revised the rules for RES-E support and introduced new support rules for electricity produced at high-efficiency cogeneration plants. This Law also introduced new rules on biomethane production.

The new RES-E support scheme entered into effect on 1 January 2010. The new support scheme is available for the following RES technologies: hydropower, solar, wind, geothermal, biomass (including all products derived from biomass processing), biogas, sewage gas and biomethane.

Under this new support scheme, a feed-in premium is available for RES-E producers. The feed-in premium scheme is based on a premium payment on top of the average electricity price. The feed-in premium is set by the Regulatory Office for Network Industries (RONI) for a certain type of RES. A producer of RES-E is entitled to a premium for 15 years after the initial operation, reconstruction or modernization of a power plant. The premium is determined taking into account the type of RES, technology used, the date of the installation, the size of the installation. The premium reflects also the reconstruction and upgrading of installation or core inflation. If RES-E producer received State aid by national budget or EU funds for procurement of installation, the premium is reduced.

The ranges of RES-E support prices (total remuneration level) for 2011 are as follows:

- solar energy: 382.61-387.65 EUR/MWh,
- wind energy: 80.91 EUR/MWh,
- geothermal energy: 195.84 EUR/MWh,
- biomass: 113.10-144.88 EUR/MWh,
- hydropower: 61.72-109.08 EUR /MWh.

RES-E producers have the right to a premium if the total installed capacity is up to 10 MW. If the installed capacity exceeds 10 MW, the right to the premium applies to a proportional part of produced electricity calculated as a ratio of 10 MW to the total installed capacity. In the case of wind energy, producers have right to a premium if the total installed capacity is up to 15 MW. In December 2010, the Amendment to the Law on the Promotion of RES and High-Efficiency Cogeneration was adopted. This amendment changed a maximum possible yearly tariff decrease, abandoning 10% margin [3]. By approval this legislative change the State is trying to regulate the construction of photovoltaic and wind energy facilities. According to this amendment, effective from 1 February 2011 (apart from some provisions effective from 1 April 2011), only solar rooftop facilities or solar facilities on the exterior wall of buildings with capacity not exceeding 100 kW are promoted in the form of premium.

According to the legislation prior to constructing energy facilities, a constructor has to obtain the Certificate of Compliance issued by the Ministry of Economy. From this requirement were exempted photovoltaic energy installation with an intended total installed capacity of less than 1 MW, and energy facilities for electricity distribution to be operated by a distribution system operator. The cap of 1 MW installed capacity per PV installation was reduced to 100 kW in May 2010. Moreover, photovoltaic facilities have to be located on a building roof or outer wall. Tighter rules have been adopted to prevent investors avoiding the obligation to apply for the Certificate of Compliance required for the installation of photovoltaic facilities with installed capacity over 1MW by way of dividing their project into several smaller parts.

The Regulatory Office for Network Industries upon request of RES-E producer are issuing a guarantee of origin for the preceding year. The Slovak Republic accepts guarantees of origin issued in other EU countries for disclosure purpose, but not within the feed-in support system.

Biomethane producers have the right for a priority connection to the natural gas pipeline and priority distribution based on the Law on promotion of RES and high-efficiency cogeneration [2].

The Ministry of Economy (<http://www.economy.gov.sk/>) and the Regulatory Office for Network Industries are responsible for implementation of this Law.

Exemption from consumption tax

In Slovakia, electricity is subject to a consumption tax [4]. Renewable energy is promoted through the exemption of the consumption of RES-E from tax. All technologies used in the RES-E generation are eligible for this exemption. The amount of subsidy equals the amount of tax entitled persons are exempt from. The amount of tax is calculated on the basis of the amount of electricity in kWh and the corresponding tariff.

From 01/01/2010 onwards, the amount of tax will amount to 0.04 SKK/kWh (0.13 €ct/kWh).

Funds under Competitiveness and Economic Growth Operation Programme for 2007-2013

Under this programme support is available for activities that lead to increased use of RES as well as activities focused on energy savings and efficiency in industry etc. The use of biomass, hydro, geothermal and solar energy is supported. The State aid beneficiary is the private sector. Aid is granted as a non repayable subsidy to investment cost. The minimum aid amount is 60,000 €, the maximum 5 million €. The total eligible project expenditure should not exceed 25 million €. During 2007-2013 period, two calls for State aid have been foreseen.

3 Details RES-Heating and Cooling Support Policy

Subsidy

The generation of RES-H is supported by subsidies. In 2007, the Government of the Slovak Republic adopted the Programme for Promotion of Biomass and Solar Energy Use in Households, which is financed from the state budget [5]. Based on this Programme, households that install a biomass boiler or solar panels are eligible for a subsidy under specified criteria. Only new installation of biomass boilers and solar collectors can claim a subsidy. The subsidy can be granted to the owner of the house or the legal administrator of house.

The total budget of this programme is 8 million €. It is foreseen to fund approximately 5000 units (solar collectors, biomass boilers or combination thereof).

Requirements for supported solar collectors are the following:

- efficiency should be at least 525 kWh/m² per year for installations completed as of 2010;
- certificate of Solar Keymark (issued in EU) is necessary.

Requirements for supported biomass boilers are the following:

- boilers for burning wood pellets, wood briquettes, wood chips, wood logs;
- efficiency should be at least 84% (certified by EU laboratory);
- emissions should be less than 1500 mg/m³ for carbon monoxide and 100 mg/m³ for solid particles;
- some additional safety equipment is necessary.

Amount of subsidy for solar collectors:

- 200 € per 1 m² for up to maximum 8 m²;
- 50 € per 1 m² for installations above 8 m²;
- 300 € per 1 m² for apartment houses, if area of solar collectors for one apartment is less than 3 m².

The amount of subsidies for biomass boilers can reach up to 30% of the installation price, but not more than 1,000 €

Building Obligation

An obligation to evaluate the possibility of RES utilisation in new large buildings is adopted by the Act on Energy Efficiency of Buildings No 555/2005 [6]. According to this Act it is necessary for new large buildings to perform the technical, economical and environmental evaluation of utilization of alternative energy systems but no minimum share of RES-H is requested.

CHP Support

Slovakia supports electricity produced at high efficiency CHP depending on capacity of CHP, on used technology and on data of power plant put into operation.

4 Details RES-Transport Support Policy

Quota Obligation

The Government Regulation on the Minimum Amount of Motor Fuels Produced from RES No 246/2006 determined the mandates on the minimum quantity of renewable fuels in the petrol and diesel fuels marketed in the Slovak Republic [7]. This regulation entered into effect on 1 May 2006. Producers and vendors were obliged to blend a minimum 2% of biofuels in fuels for transport, based on the energy content of the total quantity of petrol and diesel fuel placed on the market until 31 December 2009. The primary target was 5.75% for energy from RES in transport by 2010 which is no formal obligation however. There was no penalty for non fulfilment of quota obligation.

The whole system of sustainability criteria for biofuels and bioliquids, as well as specific rules, conditions and procedures for their certification, is planned to be implemented in the form of a law or governmental regulation by the end of 2011; during the period up to 31 December 2011, biofuel producers will be able to submit and use certificates issued by other certification bodies certified for such activities by another Member State of the EU under the rules of Directive No 2009/28/EC.

Excise Tax Exemption

Since May 2004, pure biofuels used for transport purposes have been fully exempt from excise tax [8]. In July 2007, a scheme for offering reduced excise tax on biofuel blends has been introduced. Diesel blends with esters and petrol blends with a bioethanol derivate, ETBE, receive excise tax exemptions proportional to the content of biofuel in the blend. The exemptions are limited to 7.2% for petrol blend with ETBE and to 5 % for diesel blend with esters.

There is no specific support for electric vehicles that use renewable electricity and no specific support for biofuel produced from waste or residues.

5 RES-E Grid Integration

According to the Law on Energy 656/2004, the producer generating RES-E has the preferential right for transmission, distribution and supply of electricity if the technical

conditions are satisfied [1]. The supplier is obliged to purchase power generated from RES and CHP units.

Based on the Law on the promotion of RES and high-efficiency cogeneration No. 309/2009, RES-E producers have priority for connection, transmission, distribution and supply of electricity [2]. The priority right is not subject to any time limit.

Slovakia applies the deep connection charges approach in case of necessary grid reinforcement. The cost for grid connection (according to the capacity) is to be covered by the applicant for connection (RES-E generator) in the form of the fee for connection [9]. The connection fees are calculated according to transparent rules presented in the business conditions of individual TSO or DSOs. The size of fees for the connection corresponds to the size of costs required for essential technical modifications and a fee for reserve capacity.

Transmission and distribution system operators are responsible for the balancing of RES-E generation.

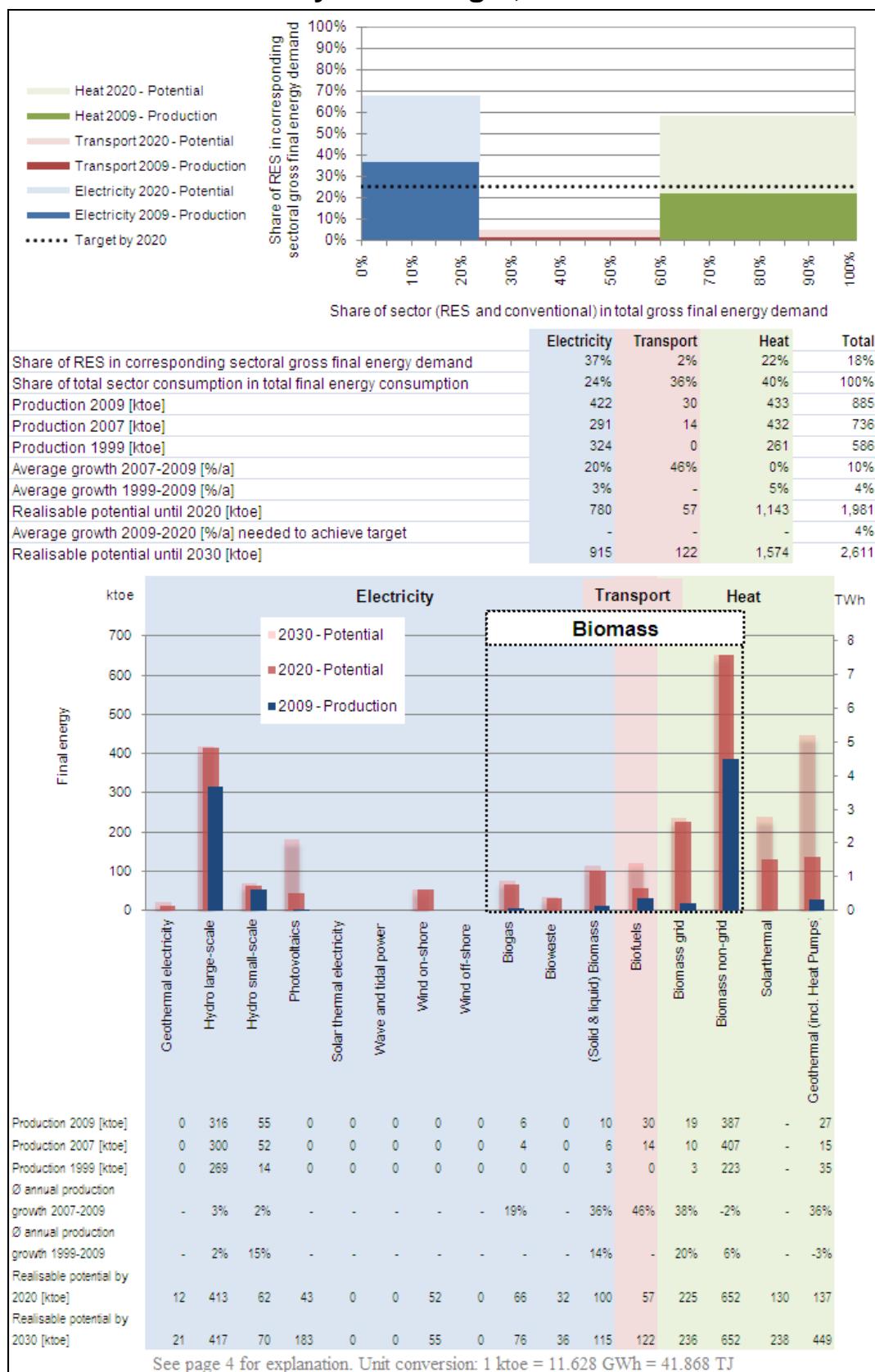
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SLOVENIA - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

There were no important policy changes during 2010 to the support system existing since 2009, except a legislative amendment, which provides a 10% annual decrease of support for PV installations until 2014.

1 Summary: RES Support Policy

RES-E

The current RES-E support scheme entered into force on 12th July 2009. Producers may choose between a

- feed-in tariff (guaranteed purchase);
- feed-in premium (on top of power price) only for RES plants above 5 MW and CHP plants above 1 MW.

Slovenia also promotes RES-E through fiscal measures: subsidies and low interest loans.

RES-H&C

A building obligation requires the installation of RES systems in new buildings and those undergoing major renovation. A minimum of 25% of the total power demand must be covered by the installation of RES systems.

The generation of RES-H is supported by subsidies and low interest loans under various programmes, which are managed by Eco Fund.

RES-T

A quota obligation on fuel distributors until 2015 is in place to promote biofuels in Slovenia. There are a few financial measures for RES-T production: excise tax exemption, aids for growing energy crops and motor vehicles tax.

2 Details RES-Electricity Support Policy

Feed-in tariff and feed-in premium

The current RES-E support scheme in Slovenia entered into force on 12th July 2009 by the adopted amendment of the Law on Energy [1].

Since 2004, Slovenia has had a feed-in scheme in place. Under this old system, RES-E producers were able to receive either a fixed feed-in tariff or a feed-in premium from the network operators. Producers of RES-E were eligible only if they hold the status of "qualified producer". In general, this principle was applicable to all RES-E producers.

Under the current RES-E support system two instruments are available [2]:

- Feed-in tariff (guaranteed purchase) for RES plants up to 5 MW and CHP plants up to 1 MW. RES plants up to 5 MW may choose between feed-in tariff and feed-in premium.
- Feed-in premium (operation support) only for RES plants above 5 MW and CHP plants above 1 MW.

Eligible technologies are biomass, biogas, wind, solar, geothermal, hydro, biodegradable waste plants up to 125 MW capacity. Support will be provided for 15 years. There is no cap on the total volume of electricity produced in a year or a cap on installed capacity.

The level of support is based on the Reference Cost of Electricity (RCE), which represents the overall annual costs of operation of specific typical RES/CHP generating plants, minus all revenues and benefits of operation. RCE is divided into 2 parts: fixed and variable (Fixed part=Investment cost + O&M cost; Variable part=Fuel cost-revenues). The fixed part of RCE will be adjusted every 5 years or more frequently in case of substantial change of conditions. The variable part of RCE will be determined annually or more frequently on the basis of forecast of reference energy market prices.

Table 1. Feed-in tariff (RCE) for RES plants in 2011, €/MWh [3]

Technology	Capacity		
	Up to 50 kW	Up to 1 MW	Up to 10 MW
1. Hydro	105.47	92.61	82.34
2. Wind	95.38	95.38	95.38
3.1. Solar PV – on buildings	332.37	304.02	252.29
3.2. Solar PV – constituent part of building	382.22	349.62	290.13
3.2. Solar PV – independent	312.34	287.77	231.98
4. Geothermal	152.47	152.47	152.47
5.1. Biomass	*	233.79	175.30
6.1. Biogas – biomass	160.56	156.31	141.42
6.2. Biogas – waste	139.23	139.23	129.15
7. Sewage gas	85.84	74.42	66.09
8. Landfill gas	99.33	67.47	61.67
9. Biodegradable waste	*	77.44	74.34

* Determined for each individual case separately.

According to the Regulation on Support of Electricity Produced from RES adopted in May 2009, a 7% annual decrease of RCE till the year 2014 only for solar plants was

foreseen [2]. On 25 November 2010 this regulation was amended. According to this amendment a 10% annual decrease for solar plants till 2014 is determined [4].

Table 2. Feed-in premium (operation support) for RES plants in 2011, €/MWh [3]

Technology	Capacity			
	Up to 50 kW	Up to 1 MW	Up to 10 MW	Up to 125 MW
1. Hydro	59.78	46.92	34.52	28.75
2. Wind	52.88	52.88	52.88	41.05
3.1. Solar PV – on buildings	285.62	257.27	203.94	171.44
3.2. Solar PV – constituent part of building	335.47	302.87	241.78	205.13
3.2. Solar PV – independent	265.59	241.02	183.63	162.25
4. Geothermal	103.59	103.59	103.59	*
5.1. Biomass (>90% of biomass)	*	185.44	126.42	*
5.2. Co-firing biomass (>5% biomass)	63.54	61.94	61.41	*
6.1. Biogas – biomass	113.81	107.96	92.54	-
6.2. Biogas – waste	92.48	90.88	80.27	-
7. Sewage gas	36.96	25.54	17.21	-
8. Landfill gas	50.45	18.59	12.79	-
9. Biodegradable waste	-	28.56	25.46	*

* Determined for each individual case separately.

In order to receive support, an owner of RES or CHP plant first of all has to obtain a declaration for the production facility from the Energy Agency. A declaration is obtained for a specific period: for RES-E producers – up to 5 years, for CHP – for 1 year [5].

A producer that has obtained a declaration for a CHP production facility that is not older than 10 years and for RES-E production facility not older than 15 years are eligible to get support. Refurbished RES power plants, older than 15 years, are eligible for support if the refurbishing costs are higher than 50% of investment costs into such new power plant. In this case the support lasts 15 years as well. Qualified producers whose production facilities do not meet the age requirement for obtaining support under the new system (CHP facilities being older than 10 years and RES facilities being older than 15 years) can receive support until 31 December 2011.

Since 1 January 2009, support is provided by the Centre of Support, organized as one of the services carried out by Borzen, the electricity market operator. Support of RES-E is based on a guarantee of origin [5]. A producer shall make a contract with the Centre of Support. Based on this contract the Slovenian Energy Agency will transfer all the guarantees of origin from certain producers to the Centre of Support.

The instruments are managed by the Slovenian Energy Agency (<http://www.agenrs.si/sl/>) and Centre of Support (<http://www.borzen.si/eng/>). More information is available on the website of the Slovenian Energy Agency.

The support scheme is regulated by the Law on Energy (No. 70/2008) and a set of national regulations: Regulation on Support of Electricity Produced from RES (No. 37/2009, 53/2009, 68/2009, 76/2009, 17/2010, 94/2010), Regulation on the Issue of Declarations of RES-E Production Facilities and Guaranties of Origin for Electricity (No. 8/2009).

Every final consumer of electricity must pay a contribution fee for support of RES-E and high efficiency CHP production [6]. In 2011, the average monthly contribution fee, necessary to ensure financial resources for support of RES-E and high efficiency CHP production, amounts to 0.65581 €cent/kW the same as in 2010. [7].

Subsidies

The Environmental Fund of the Republic of Slovenia (Eko sklad) awards subsidies to RES projects through calls for applications. Since 2010 financial support is mainly provided for the use of RES in heating and cooling (see chapter 3).

3 Details RES-Heating and Cooling Support Policy

CHP

Slovenia supports electricity produced at high efficiency CHP depending on capacity of CHP, fuel used (fossil fuel and biomass) and number on operating hours a year (up to 4,000 and more than 4,000) [8].

Table 3. Feed-in tariff (RCE) and feed-in premium (operation support) for electricity produced from biomass CHP in 2011, €MWh [3]

	Feed-in tariff		Feed-in premium	
	Up to 4000 full load hours	More than 4000 full load hours	Up to 4,000 full load hours	More than 4,000 full load hours
Less than 50 kW	*	*	*	*
Less than 1,000 kW	331.76	225.11	285.01	176.23
1–5 MW	-	-	208.08	127.09
5–25 MW	-	-	141.79	83.35
25–50 MW	-	-	109.04	62.30
50–200 MW	-	-	*	*

* Determined for each individual case separately.

Building Obligations

A regulation on energy efficiency in building No. 93/2008 defines obligatory installation of RES systems in new buildings and those undergoing major renovation. A minimum of 25% of the total energy demand must be covered by the installation of RES systems such as solar hot water, PV, etc [9].

Subsidies

Financial support for use of RES for heating and cooling is provided by the Environmental Fund of the Republic of Slovenia (Eko sklad) since 2010 under the following programmes:

- Promotion of solar collectors in households;
- Promotion of biomass boilers in households;
- Co-financing the construction of biomass district heating systems;
- Co-financing the installation of biomass boiler equipment.

This measure is managed by the Eco Fund (<http://www.ekosklad.si/>). These programmes will continue until 2020. The financial support to projects is provided on the base of public annual tenders.

Promotion of solar collectors in households.

Flat plate systems may receive up to 25% of the recognized investment costs, but no more than 150 €/m²; vacuum systems up to 25% of the recognized investment costs, but no more than 200 €/m². The size of the solar system that receives the subsidies is not capped. This support measure requires the use of certified installers.

Promotion of biomass boilers in households.

The level of support amounts to 25% of eligible cost, including procurement and installation of the biomass boiler, the fuel container, transportation and safety system and etc, but not more than 2,000 € for chip or pellet boiler and not more than 1,500 € for a wood log boiler. The size of biomass boilers that receives the subsidies is not capped.

Co-financing the construction of biomass district heating (DH) systems.

This support programme is implemented under the Operational Programme for Development of Environment and Transport Infrastructure 2007-2013, priority axis – Sustainable use of energy. The financial incentives are allocated for investments in new biomass DH systems and micro biomass DH systems. Support is provided only for boilers up to 20 MW capacity. The first tender under this programme was published on 15 May 2009. The tender is open and the acceptance of applications is performed at two-month intervals. It is required that investment values amounted to at least 400,000 € excluding VAT.

Co-financing the installation of biomass boiler equipment.

This support programme is also implemented under the Operational Programme for Development of Environment and Transport Infrastructure 2007-2013, priority axis – Sustainable use of energy. The financial incentives are allocated for installation of new biomass boilers and for expansion of existing biomass boiler capacities or replacing existing fossil fuel boilers to biomass. Support is provided for boilers from 150 kW to 5,000 kW capacity. The acceptance of applications is performed in two-month intervals. The tenders require that investment value amount to at least 70,000 €

Grants

The Ministry of the Environment and Spatial Planning awards grants for investment projects in the field of energy efficiency; renewable energy; production, distribution and

use of hydrogen [6]. The maximum subsidy amounts to up to 50% of eligible costs of the investment projects in household and public sectors (who are not engaged in gainful activity). The recipient of the grant should contribute by its own resources at least 25% of the eligible costs of the investment project. The maximum value of grant for investment projects is up to 200,000 €. In general, all RES technologies are eligible for promotion. Exact conditions are laid down in every call for applications. Calls for applications are held on a regular basis.

This instrument is regulated by Rules on Promoting Energy Efficiency and Renewable Energy Use No. 89/2008. According to these rules the Ministry of the Environment and Spatial Planning (<http://www.mop.gov.si/en/>) is responsible for implementation of the grant system. The Ministry of Environment and Spatial Planning annually provides information on aid allocated to the Ministry of Finance.

4 Details RES-Transport Support Policy

Obligation on fuel distributors

The regulation on the content of biofuels in motor vehicle fuels (adopted in 2005) and the Decree on the promotion of the use of biofuels and other renewable fuels for motor vehicles adopted in 2007 which extended this obligation until 2015 [10] imposed obligations on fuel distributors: distributors of fuel for transport vehicles must ensure that the annual average content of biofuel in all transport fuel placed in the Slovenian market (in a particular calendar year) as follows [11]:

- 2006 – at least 1.2%;
- 2007 – at least 2%;
- 2008 – at least 3%;
- 2009 – at least 4%;
- 2010 – at least 5%.
- 2011 – at least 5.5%;
- 2012 – at least 6%;
- 2013 – at least 6.5%;
- 2014 – at least 7%;
- 2015 – at least 7.5%.

Distributors may transfer obligations from one year to the next if the price of purchasing biofuel exceeds the sum of the price of fossil fuel and the excise duties on them.

Financial support

According to the Law on Excise Taxes, biofuels used as motor fuel are exempt from excise inspection and payment system when used in their pure form [12]. When biofuels are blended with fossil fuels, a maximum 5% exemption of excise tax can be claimed, or more for standard fuel containing biofuels. The level of exemption from excise tax is proportional to the share of biofuel added. Exemption of excise tax is applicable for bio-ethanol, biodiesel, biogas, bio ETBE or bio-dimethyl ether.

Since 1 January 2009, according to the Regulation on Direct Payments in Agriculture, aid of 45 € per hectare is granted for growing energy crops [13]. The minimum total area, which may receive the aid for energy crops is 0.30 ha.

The amendment of the Law on motor vehicles tax adopted in January 2010 determines the level of motor vehicles tax depending on CO₂ emission and type of fuel used. A lower level of tax is determined for motor vehicles with lower CO₂ emissions [14].

There is no specific support for electric vehicles that use renewable electricity.

5 RES-E Grid Integration

In 2008, the adopted amendment of the Law on Energy supports faster development of RES in regard to grid connection [1].

Connection of RES-E to the grid is the obligation of system operators. According to the Law on Energy the system operator should prepare and publish standard rules for the connection and cost estimation for power plants <10 MW connected to the distribution network. These rules should be objective, transparent and non-discriminatory. At the request of RES-E plant (>10MW) investors, the system operator should prepare a comprehensive and detailed assessment of the connection cost and time table for implementation of grid connection within 60 days.

TSO and DSO must ensure the transfer and distribution of RES-E. TSO and DSO should give priority for RES-E dispatching to the possible extent taking into account technical conditions of the system.

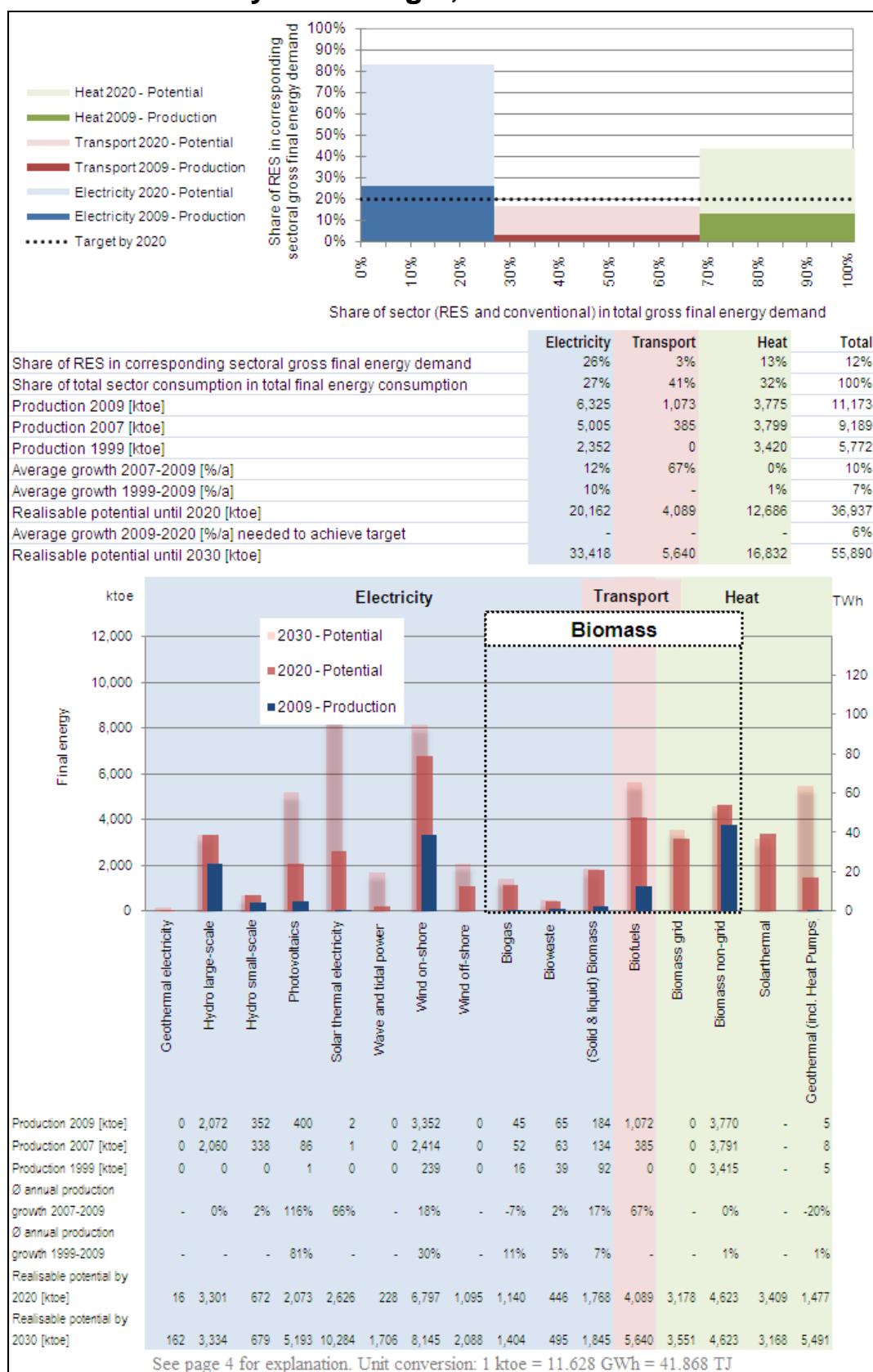
The reinforcements of the grid have to be executed and financed by DSO. The connection of RES-E to the grid has to be financed by the power plant's owner (shallow approach).

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SPAIN - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

The renewable energy market experienced important changes since 2009. The increase in renewable energy projects triggered by the implementation of the feed-in tariff regulation (under Royal Decree 616/2007) has been slowed down as a result of a new legal framework approved during 2010, which has affected feed-in tariff and premium support levels, particularly in the case of solar PV and wind energy.

Spain has submitted in July 2010 its National Action Plan for Renewable Energies 2011-2020, based on the renewable energy targets defined by the RE Directive, which set up a target of renewable energies contribution of 20% to gross final energy consumption, and of 40% to electricity production, by 2020.

1 Summary: RES Support Policy

RES-E

The key policy instrument for the support of RES-E is a scheme in which producers may choose between a feed-in-tariff and a feed-in-premium. Besides the feed-in support, fiscal measures are relevant at the national level and the regional governments have an important role in RES-E promotion policies and legislation. Until 2010, feed-in tariff and premium schemes have promoted particularly electricity production via wind and solar PV power. New regulation put into force in 2010 has severely slowed down the growth rates for both technologies and has also affected negatively other renewable energy sources such as solar thermal electricity. No new regulation has been implemented to increase the development of energy production through biomass¹⁹⁸. Wind offshore projects are not covered by the feed-in scheme, but by a tendering procedure.

RES-H&C

The main support instrument for the promotion of renewable energies for heating and cooling purposes is based on the implementation of the Technical Building Code. Since 2006, any new or renovated building is obliged to integrate a solar thermal energy installation. The mandatory requirement of installing solar thermal systems depends on the climatic zone, the surface (m^2), and type and use of the building. The local and regional governments are allowed to reinforce the national law with regional obligations, increasing therewith the minimum of installed solar systems.

In case of cogeneration units the heating and cooling facilities are also promoted indirectly via the above-mentioned feed-in-scheme. This includes in particular CHP-plants fuelled by either biomass or biogas.

RES-T

Main tools developed for renewable fuels in Spain are based on the biofuels target implementation within the transport sector as well as tax exemption. Law 12/2007 set up mandatory use of biofuels within the transport sector and the ORDER ITC/2877/2008, establishes regulations for the promotion of the use of biofuels and other renewable fuels in the transport sector. The order confirms the goals set up by the Law 34/1998 for the hydrocarbon sector (which set up interim targets of 1.9% of biofuels to be blended into regular fuels in 2008 (not mandatory), which will become mandatory targets of 3.4% in 2009 and 5.83% in 2010. It also defines temporary flexibility mechanisms for counting the amount of biofuels sold or consumed, and establishes a National Energy Commission to manage certification system with related sanctions as set as well as detecting obligated subjects. The law 22/2005 establishes a zero tax rate for biofuels in order to improve their market position compared to fossil fuels. The scheme will remain in effect until 31st December 2012, when it will be revised.

¹⁹⁸ There is public opinion coming from market stakeholders that feed-in tariffs and premiums set up by the RD 661/2007 were not high enough to trigger the development of biomass market in Spain.

2 Details RES-Electricity Support Policy

Price Regulation: Feed-in-tariffs and feed-in-premium (Productores de Electricidad en Régimen Especial).

In Spain renewable electricity is promoted using a special remuneration scheme based on a *feed-in-tariff* and a *feed-in-premium* mechanism.

The payment scheme designed by the regulation 'Special Regime' (implemented through the Royal Decree 661/2007¹⁹⁹, dated May 25th, on the regulation of electricity production through special feed-in tariff) (RD 661/2007) defines two remuneration mechanisms to be used by system operators to claim for the payment of renewable energy introduced in the grid.

The schemes are:

1. Feed-in Tariff (guaranteed payment)

- **Guaranteed feed-in tariff.** Guaranteed tariffs in terms of state-regulated minimum tariffs for all sources of renewable energy²⁰⁰.
- **Variable feed-in tariff.** Operators of hydro-electricity and biomass systems may also opt for a variable, time-dependent tariff, which is set by a statutory law. This tariff is composed of different elements depending on the time of day and the season²⁰¹.

2. Feed-in Premium

Variable premiums are paid on top of the electricity price; minimum and maximum prices for the overall remuneration level corresponding to the sum of electricity prices and premium were established under RD 661/2007. The variable premium is determined on an hourly basis. For PV and geothermal installation no premium tariff is determined.

Eligible plants for the special regime are the following groups²⁰²:

- Plants using either cogeneration or other sources to produce electricity with high energy efficiency performance.
- Plants using renewable energies non feedstock based, biomass, biofuels, etc.
- Plants that use municipal solid waste or other residues.
- Plants for reduction and treatment of agricultural, livestock and services residues.

It is important to point out that not only renewable installations are eligible to be awarded with the special remuneration schemes foreseen by the special regime. In the beginning, all plants were likely to be eligible to be awarded with special remuneration schemes when feeding electricity into the grid. Since 2009, to become eligible to be rewarded, all

199 (art. 19.3, 44.3, DA (Diposición Adicional) Novena).

200 Arts. 35, -43 RD 661/2007.

201 Art. 26 RD 661/2007 in connection with First Final Provision of RD 1578/2008.

202 Detailed information regarding categories comprised under these regulations can be checked at the following link: <http://www.mityc.es/energia/electricidad/RegimenEspecial/Registro/Paginas/RD661.aspx>

plants aiming at being considered as special regime are requested to sign up for an administrative 'pre-register' (as stated in the Royal Decree 6/2009, dated April 30th 2009). The implementation of the previous step involved stricter requisites for projects to be entitled to receive feed-in tariffs and premiums. This pre-register serves as a tool to be used by the central administration to exercise better control of the type of installations likely to be covered under the special regime, avoiding proliferation of fake or low quality projects. However, it also generates a new bureaucratic burden that is slowing down deployment of these technologies.

Currently, not all technologies follow the same structure to define their remuneration tariffs set up by the RD 661/2007 as changes have occurred in the renewable energy scenario in the last years. In particular, solar PV, solar thermal and wind power installations have experienced modifications of the existing regulation. A large extent of technologies considered as special regime are still being regulated under RD 661/2007 while other cases (solar PV, CSP – concentrated solar power and wind power) are ruled under new legislation.

Remuneration tariffs for all technologies considered under this category were initially set up by the RD 661/2007 and determined on issues such as the efficiency of operation of the systems, cost of technology used, technological and economical market development of the RES sector, capital cost in the financial market or the share of the electricity generated by the selected technology compared to the total technology-specific capacity set up by the special regulation. On a regular basis, feed-in tariffs and premiums are updated taking into account different factors designed to help central government to fulfill renewable (and other technologies, such as cogeneration) implementation targets as well as to guarantee profitability for investors²⁰³. The updating process is linked to the fulfillment of a series of capacity targets defined through Renewable Energies Plans. Therefore, once a selected technology considered as 'special regime' has surpassed the cap defined, it is reviewed in order to adapt its remuneration scheme to the new technology situation via new regulation.

Regarding capacity limits the following table shows values defined by technology selected to be rewarded:

Technology	Capacity limit (MW)
Wind energy (both on shore and off shore systems)	20,155 ²⁰⁴
Geothermal energy (excluding hot-dry-rock energy)	Not specified by statutory law.
Biogas (bio-fuel or biogas from anaerobic digestion of agricultural and livestock wastes, bio-degradable industrial waste and sewage sludge or landfill gas)	250 ²⁰⁵ (both biogas and biomass) 206.

²⁰³ Update of tariffs and premiums for special regime can be consulted at the National Energy Commission webpage (www.cne.es).

²⁰⁴ Arts. 2, 38 RD 661/2007.

²⁰⁵ Capacity cap to be reached by 2010 (matching up life period of the Renewable Energies Plan 2005-2010).

Technology	Capacity limit (MW)
Biomass (fuel from manure, energy crops, agricultural and garden wastes, forest management or other activities related to forest and land management)	250 (both biogas and biomass) ²⁰⁷
Hydro-electricity (primary energy supplied by wave energy, tidal energy, ocean thermal energy systems up to 10 MW) as well as traditional hydro-electric systems (not exceeding 50 MW ²⁰⁸ capacity).	2,400 ²⁰⁹

An example is the case of PV: The generation of electricity through solar PV was initially ruled under RD 661/2007. Due to the high value of the feed-in tariff awarded to this technology, a large number of solar PV installations were built up and connected to the grid and the target set up by the Renewable Energies Plan (2005-2010) was rapidly fulfilled. Once the target was achieved, central administration approved new regulation to re-adapt the remuneration scheme and so, RD 1578/2008²¹⁰ came into force, modifying (and in the particular case of solar PV reducing) the feed-in tariff and premium structure for solar PV installations when being considered as special regime.

After the updating process was initially linked to the Renewable Energies Plan 2005-2010, currently this document is on the verge of being substituted by the new Renewable Energies Plan 2011-2020 which will set up new capacity targets for the different renewable technologies in Spain.

The information supplied in the table below shows all values for feed in tariff or market premium (high and low maximums show the maximum and minimum price of energy when being sold and result of adding premium value plus selling value in the market) for renewables on date December 2010. This is the last regulation published in terms of renewables financing.

206 Art. 2 and art. 41 RD 661/2007.

207 Art. 2 RD 661/2007.

208 Arts. 2 b) 3, 45.2 RD 661/2007.

209 Art. 40 RD 661/2007.

210 Royal Decree 1578/2008, 26th September, related to retribution of electricity production using solar photovoltaic technology for installations registered later than limit data for retribution set up by RD 661/2007.

Technology type	Technology sub type	Power		Regulated tariff € cent / kWh	Reference premium € cent / kWh	Higher limit € cent / kWh	Lower limit € cent / kWh
Solar	Solar PV	P < 100 kW	First 28 years	47.5597			
		100 kW < P < 10 MW	First 28 years	45.0886			
		10 MW < P < 50 MW	First 28 years	24.8138			
	Solar termal		First 25 years	29.0916	27.4312	37.1483	27.4353
			After	23.2731	21.9449		
	Wind	On shore		7.9084	2.0142	9.1737	7.6975
			First 20 years				
		Off shore	After	6.6094			
Geothermal			First 20 years	7.4410	4.1519		
			After	7.0306	3.3047		
Hydro		P < 10 MW	First 25 years	8.4237	2.7047	9.2014	7.0414
		P < 10 MW	After	7.5814	1.4519		
Hydro		10 MW < P < 50 MW	First 25 years	**	2.2727	8.6397	6.6094
		10 MW < P < 50 MW	After	***	1.4519		
Biomass	Energy crops	P < 2 MW	First 15 years	17.1596	12.9361	17.9599	16.6423
			After	12.7362			
		2 MW < P	First 15 years	15.8313	11.3885	16.2967	15.4111
			After	13.3344			
	Waste	P < 2	First	13.5736	9.3528	14.3744	13.0568

Technology type	Technology sub type	Power		Regulated tariff € cent / kWh	Reference premium € cent / kWh	Higher limit € cent / kWh	Lower limit € cent / kWh
Biomass/Biofuels or Biogas	(agriculture and garden)	MW	15 years				
			After	9.1530			
		2 MW < P	First 15 years	11.6140	7.1712	12.0849	11.2090
			After	8.7111			
	Waste (forest)	P < 2 MW	First 15 years	13.5763	9.3528	14.3744	13.0568
			After	9.1530			
		2 MW < P	First 15 years	12.7754	8.333	13.2404	12.3548
			After	8.7111			
	Biogas generated by landfill sites		First 15 years	8.6311	4.5652	9.6766	8.0305
			After	7.0306			
Biomass coming from industrial plants	Biogas generated by use of industrial bio-waste, water treatment sludge, urban solid waste, waste coming from livestock and agriculture activity.	P < 500 kW	First 15 years	14.1141	11.0355	16.5559	13.3376
			After	7.0306			
		500 kW > P	First 15 years	10.4541	6.7241	11.9121	10.3137
			After	7.0306			
	Manure to be used to combust or to produce biofuel.		First 15 years	5.7887	3.8158	8.9961	5.5078
			After	5.7887			
	Principal fuel coming from agriculture activity.	P < 2 MW	First 15 years	13.5763	9.3528	14.3744	13.0568
			After	9.1530			
		2 MW < P	First 15 years	11.6140	7.1712	12.0849	11.2090

Technology type	Technology sub type	Power		Regulated tariff € cent / kWh	Reference premium € cent / kWh	Higher limit € cent / kWh	Lower limit € cent / kWh
Energy valorization (waste)	Principal fuel coming from forest activity.	P < 2 MW	After	8.7111			
			First 15 years	10.0221	5.7997	10.8213	9.4929
		2 MW < P	After	7.0306			
			First 15 years	7.0284	2.5856	7.4950	6.6094
	Principal fuel coming from paper industry.	P < 2 MW	After	7.0284			
			First 15 years	10.0221	6.0677	10.8213	9.4929
		2 MW < P	After	7.0306			
			First 15 years	8.6397	3,9621	9.7197	8.0998
			After	7.0284			
	Principal fuel (urban solid waste)			5.8026	2.9758		
	Waste > 50%			4.1463	2.9758		
	Waste coming from mining industry.			7.5669	3.1851		

** Regulated tariff for the first 25 years equals to: $[6.60 + 1.20 \times [(50 - P)/40]] \times 1,0826$, being P the plant's capacity.

*** Regulated tariff from the 26th year on shall equal: $[5.94 + 1,080 \times [(50 - P) / 40]] \times 1.0826$, being P the plant's capacity.

Information about the average level of remuneration received by energy producers registered under special regime in 2010 is provided on the table below.

Table 14: Average level of remuneration for energy produced under the special regime in 2010

Average selling price (Eurocent/kWh) – Participation in the supply market	COGENERATION	6.760
	SOLAR	30.581
	WIND	7.810
	HYDRO	7.567
	BIOMASS	10.606
	WASTE	6.656
	WASTE TREATMENT	n.a.
Average selling price (Eurocent/kWh) – Sales through representative	COGENERATION	9.717
	SOLAR PV	45.652
	SOLAR TE	28.228
	WIND	7.896
	HYDRO	8.470
	BIOMASS	12.045
	WASTE	n.a.
Average selling price (Eurocent/kWh) – Participation in other markets	WASTE TREATMENT	11.875
	COGENERATION	7.497
	WIND	7.916
	HYDRO	7.290
	BIOMASS	9.439
	WASTE	7.108

Source: <http://www.cne.es>

The year 2010 represented an important year within the development of the renewable energies market in Spain. In this sense, in this year key regulation has been approved modifying the remuneration scheme for some renewable energy sources. The main driver of these changes in 2010 have been triggered by the so-called 'deficit of the electricity tariff'. The 'tariff deficit' is the difference between the total revenues collected by tariffs designed by the central administration (and paid by electricity consumers) and real costs related to these tariffs (costs of acquisition, transport, distribution etc.). These differences are normally generated by errors in the estimation of costs as well as to regulatory decisions of the central administration.

Since 2000, the different governments have approved electricity tariffs on an annual (up to 2007) or a quarterly basis (since 2007), considering not only expected costs but also 'desirable costs' (from a regulator's perspective). The difference between these two costs relies on the fears of the administration regarding the effects of the increase of electricity tariffs on the competitiveness of production sectors with intensive energy consumption. Due to this fact, governments preferred to include these 'desirable costs' in the calculation methodology rather than the real expected costs. The resulting deficit has been estimated on 3,000 mio € by 2010 by the Ministry of Industry, Tourism and Trade and the government is designing a road map to reduce the deficit to 2,000 mio € in 2011 and 1,000 mio € in 2012.

Key actions to reduce this deficit are those taken in the renewable energy sector and, especially, on the remuneration schemes set up by the RD 661/2007. A package of temporary regulations has been approved affecting the feed-in tariff and premium remunerations schemes defined for some renewable energy sources, in particular, for

solar PV and wind power (as they are, by far, the two main renewable technologies benefiting from special regime revenues) as well as for the solar thermo electrical (due to its large investments costs). This regulation affects diverse aspects related to energy production likely to be awarded with special remuneration such as eligible remuneration mechanisms (limiting the possibility of choosing either feed-in tariff or premium), maximum amount of operation hours or reducing the value of the feed-in tariff.

It is important to state that RD 661/2007 (in addition to Royal Decree 6/2009) still shapes the basic administrative framework for renewable electricity production Spain. However, the new regulation approved in 2010 modifies some aspects on a temporary basis (up to 2013) and for particular energy sources (solar PV, wind power and CSP) until the tariff deficit has been solved.

The following section provides detailed information about the changes implemented by the regulation approved:

- Royal Decree 1614/2010, dated December 7th, which governs and modifies certain aspects of electricity generation activities using solar thermoelectric and wind power technologies.
- Royal decree 1565/2010, dated November 19th, on the regulation and amendment of certain aspects related to electricity generation under special regime,
- Royal Decree Law 14/2010, dated December 23rd, on the implementation of urgent measures to correct electricity sector tariff deficit.

RD 1614/2010

The implementation of this regulation reduces temporarily the economic rewards to certain wind plants (admitted under RD 661/2007 and exceeding 50 MW). In particular the reference premium is reduced by 35% compared to the values set up by the RD 661/2007 for 2010.

The reduction will not be applied to plants still under regulation provided by RD 436/2004 (former regulation to RD 661/2007), and those registered under the remuneration pre-assignment Registry (RIPRE) prior to May 9th 2009. Reduction will be effective up to December 31st 2012. After this period, all plants affected will recover premium incentives at the values defined for 2009²¹¹, starting from January 1st 2013.

The regulation also limits the amount of equivalent hours of operation for plants entitled with premiums. There was no previous cap for operation hours for wind projects on the previous regulation.

If the wind power plants exceed the allowed amount of operation hours, the producer is obliged to refund all amounts generated by the excess of hours within three months period as from requested by the central administration.

The implementation of this regulation has also set up new calls for the registration in the remuneration pre-assignment Registry:

- Until a capacity of 300 MW is reached, those plants which obtained a start-up certificate (provisional or definitive) prior to May 1st 2010, and which at December 9th 2010 were not yet recorded at the remuneration pre-assignment

211 Values defined through Order ITC/351/2009.

Registry, may choose, by request (if made before February 9th 2011) between these two options:

- sell net energy produced, receiving the pool market price for it until 31 December 2011, and as from 1 January 2012, sell its energy in accordance with option a) of Article 24.1 of Royal Decree 661/2007 (sale at regulated tariff or equivalent premium), receiving the compensation indicated in said Royal Decree for it; or
- Sell the net energy produced, receiving the pool market price for it until 31 December 2012, and as from 1 January 2013, sell its energy in accordance with option b) of Article 24.1 of Royal Decree 661/2007 (pool plus premium), receiving for it: the values of the premiums established in Order ITC/3519/2009, dated 28 December, updated according to Article 44.1 of said Royal Decree.

Within the regulation there is an special reference to the thermo solar plants, which states that energy producers using this technology will not be able to choose between feed-in tariff or premium (as stated in the RD 661/2007 as well as according to the pre-register system) but should operate under the feed-in scheme for the first twelve months after start-up of the plant.

RD 1565/2010

This regulation has been implemented to amend the following previous regulation: RD 661/2007²¹², RD 1110/2007²¹³, and RD 1578/2008²¹⁴. Regarding the amendments to this regulation, the following aspects are worthy to be highlighted:

- For those plants with capacity exceeding 50 MW, this regulation excludes plants using solar thermal technology and wind power technology of receiving premium for the electricity sold in the market. Therefore the possibility of choosing between feed-in tariff or premium (set up by the RD 661/2007 and the pre-register system) remains blocked.
- For experimental and innovative wind farms, and solar thermal facilities particular provisions are included to provide special economic regime. Although there is no reference regarding the type of special economic regime.
- For the first call of projects to be registered under Remuneration Pre-Assignment Registry (filling period starting after November 24th 2010) , the photovoltaic tariff is reduced:
 - By 5% in case of type I.1 installations (less than or equal to 20 kV)
 - By 25% in case of type I.2 installations (more than 20 kV)
 - By 45% in case of type II installations (land location)

212 Regulation of electricity generation under special regime.

213 Approval of unified regulation for electrical system's metering points.

214 Remuneration of electricity generation for solar PV installations (registered after deadline for remuneration set up by the RD 661/2007).

The last amendment changes the remuneration tariffs set up by the previous RD 1578/2008 which established new feed-in tariffs and premiums for solar PV installations after the capacity target was surpassed.

Royal Decree Law 14/2010

This Royal Decree entered into force on December 25th 2010 and it is likely to be a regulation which causes large effects on the development of renewable energy sources in Spain (within the new regulation framework approved in 2010), particularly for the case of solar PV plants.

Among the new developments introduced by this regulation, the following are worthy to be highlighted:

- Obligation for electricity generation companies to pay a toll for access to the transport and distribution networks → tolls to be paid by generation companies (both under ordinary and special regimes), will be regulated according to the amount of energy discharged in the network. Until corresponding regulation was implemented (as of January 1st 2011), transporters and distributors charged electricity generation companies an access toll of 0.50 EUR/MWh. On December 28th, ITC Order 3353/2010 was approved to step up access tolls from 1st January, as well as affect feed-in tariffs and premiums for plants comprised under the special regime.
- Limitation of the equivalent operating hours of photovoltaic installations entitled to a regulated tariff. Related to this amendment, the number of operating hours for solar PV plants (equivalent hours being understood as the quotient of net annual production in KWh and the nominal voltage of the installation in KW), depending on the climatic solar zone where the installation is located (according to the classification of average solar radiation climatic zones comprised within the Royal Decree 314/2006, dated January 17th, which approves Technical Building Code).

The following table contains information regarding climatic zones defined by regulation.

TECHNOLOGY	REFERENCE EQUIVALENT HOURS				
	Zone I	Zone II	Zone III	Zone IV	Zone V
Fixed installation	1,232	1,362	1,492	1,632	1,753
Installation with single – axis trackers	1,602	1,770	1,940	2,122	2,279
Installation with dual - axis trackers	1,664	1,838	2,015	2,204	2,367

However, it is established that, until December 31st 2013, reference equivalent hours for solar PV installations regulated under special regime will be valued at:

- Fixed installation: 1,250 hours
- Installation with single – axis tracker: 1,644 hours
- Installation with dual – axis tracker: 1,707 hours

As the last main aspect to be highlighted, the RD sets up that period for which solar PV installations are entitled to enjoy regulated tariff is extended from 25 to 28 years²¹⁵.

The implications of this regulation on the development of the solar PV industry in Spain will have considerable consequences, particularly a slow-down in the deployment of these technologies within the country. If the implementation of the RD 1578/2008 reduced the remuneration scheme modifying the feed-in tariff scheme and the pre-register increased the bureaucratic burden for this type of installation, the implementation of the RDL 14/2010 generates extra economic burdens to investors and producers (generating extra costs along the whole life span of the installation) and reducing the amount of remuneration perceived as stated by the RD 1578/2008 (limiting the amount of hours to be considered susceptible to be rewarded).

Tax deduction

Up to 10% of unsubsidized investments in RES-E systems may be deducted from the income tax for a period of 10 years.

The application of this scheme is ruled under the Royal Legislative Decree 4/2004, dated March 5th, that approves the revised text of the Law of Corporate Tax²¹⁶. It applies to the following applications:

- Use of solar energy to be transformed into electricity or heat.
- Use, as fuel, of municipal solid waste or biomass proceeding from forest and agricultural industry residues, forest and agricultural residues and energy crops for their transformation into either electricity or heat.
- Treatment of biodegradable residues proceeding from livestock industry, waste water clarification plants, industrial effluents or municipal solid waste to be transformed into biogas.
- Treatment of agricultural and forest products as well as used oils to be transformed into biofuels.

The entitled individuals are commercial and private investors who are subject to income taxes. In 2006, agents comprised in this regulation were allowed to deduct 10% of the investments value from its final tax bill with progressive reduction on the forthcoming years ((2006: 10%; 2007:8%; 2008: 5%; 2009: 4%; 2010: 2% and 2011: 0%).

The implementation of the new Law on Sustainable Economy has brought modification to this regulation. As referred in the text, all investments intended to protect the environment related to the implementation of installations pursuing avoiding atmospheric/acoustic contamination from industrial activities, water contamination, as well as waste reduction, recuperation or treatment are entitled to deduct 8% of the investments performed under agreements/programs performed with the competent environmental administration.

In the particular case of the following investments, different deduction levels apply:

215 The regulation states that for installations comprised under category b.1.1 (installations that use solar energy as primary energy using solar technology), the reference period for

216 Law 35/2006.

- investments in acquisition of vehicles for industrial services or commercial road transport (where reducible deduction corresponds to that part effectively contributing to the reduction of the atmospheric pollution), and
- investments performed on goods related to renewable energies equipment:
 - o to generate heat/electricity from the sun.
 - o To use municipal solid waste, biomass coming from agriculture/forest residues or energy crops as fuel to produce heat/electricity.
 - o To treat biodegradable waste coming from livestock industry, waste water treatment plants, or municipal solid waste to be transformed in biogas.
 - o To treat agriculture/forest products or used oils to be transformed in biofuels (bioethanol or biodiesel).

Deductions will be defined multiplying the established reduction percentages by the following coefficients:

- 0.8 for the tax period starting on date January 1st 2007
- 0.6 for the tax period starting on date January 1st 2008
- 0.4 for the tax period starting on date January 1st 2009
- 0.2 for the tax period starting on date January 1st 2010

In the case of the before mentioned investments performed within the tax year 2011, applicable deduction will be that of: 12% in the case of vehicles acquisition and 10% for renewable energy equipment. The cost of the subsidy is borne by the State and has its own control mechanisms.

Other Considerations

Solar photovoltaic technology is also being promoted on the national level using the building code regulation which defines a minimum solar PV installed power to be integrated in buildings. Royal Decree 314/2006 sets up mandatory requirements of installing solar PV on different types of buildings depending on several parameters: climatic zone, surface as well as use and type of the building.

In addition to the national policy, many autonomous communities (Regional Authorities in Spain) have developed their own Energy Policies, including renewable energy targets. The autonomous communities (Regional Governments) manage almost 50% of the national budget. Therefore, they are decisive in the implementation of RE plans. Some of the most relevant regional energy plans are:

- Basque Country: "Euskadi Energy Strategy. 3E-2010".
- Catalonia: "Energy Plan 2006-2015".
- Madrid: "Energy Plan from the Community of Madrid 2004-2012".
- Andalusia: "Andalusian Energy Sustainability Plan 2007-2013".
- Valencia: "Wind Energy Plan from the Community of Valencia".

- Galicia: "Promotion Program of Solar Energy in Galicia" and "Wind Energy Plan of Galicia".
- Energy Sector Plan for the Balearic Islands 2015 (currently under revision)

The National Action Plan for Renewable Energies 2011-2020 (PANER 2011-2020) and the Renewable Energies Plan 2011-2020 (PER 2011-2020)

As obligation derived from the European Directive 2009/28/CE related to the promotion of renewable energies, Spain has submitted on date July 2010, its National Action Plan for Renewable Energies 2011-2020 (PANER 2011-2020), based on the national goals established by the European Commission for Spain (20% contribution from renewable sources to gross final energy consumption and 40% renewable sources contribution to electricity production).

In line with goals comprised in this document, the Ministry of Industry, Tourism and Trade is working on the Renewable Energies Plan 2011-2020, as a continuation of the previous Renewable Energies Plan approved for the period 2005-2010.

The implementation of this new plan aims at achieving a total contribution of renewable energy sources of 22.7% of total gross final energy consumption²¹⁷ by 2020, and 42.3% of total electricity production by the same year.

The following table gives a first approach to renewable energy goals set up by the plan.

Renewable energies final energy consumption (ktep)	2008	2012	2016	2020	2020 (renewables rate %)
Renewables for electricity production	5,342	8,477	10,682	13,495	40.0%
Renewables for heating/cooling	3,633	3,955	4,740	5,618	18.9%
Renewables for transport	601	2,073	2,768	3,500	13.6%
Total renewables	9,576	14,504	18,208	22,613	22.7%
Total renewables (according to Directive)	10,687	14,505	17,893	22,382	20.0%

Source: Ministry of Industry, Tourism and Trade. National Action Plan for Renewable Energies in Spain (PANER) 2011-2020. 2010.

Complete achievement of the goals set up by the Plan will help Spain, not only to fulfill renewable contribution goals established by the European Commission but to surpass them.

The Law of Sustainable Economy

The approval process for this regulation was initiated on November 2009 and it consists of a package of measures designed to improve the situation of the Spanish economy after the crisis period. The measures are focused on three sectors: finance, business and environment.

The environmental area is presented on the title III of the document, named "Environmental Sustainability", and is divided into the following four chapters:

²¹⁷ With intermediate contribution goals set up at 15.5% by 2012, and 18.8% by 2016.

- Sustainable energy model: sets up targets of 20% renewable energies participation on the final gross energy consumption and 10% renewable energies participation within the transport sector by 2020. Contains information related to the indicative and mandatory planning tools required, cooperation structure among public administrations, necessity of research and development within the fields of renewables and energy efficiency, transparency on information to end consumers, simplification of administrative procedures, energy saving in public administration, and monitoring mechanisms.
- Emissions reduction: the targets will be based on future goals established by the European Union. The information contained comprise topics such as the role of the Spanish carbon sinks, emission compensation schemes, creation of a fund for carbon credit purchase, and increase on the tax deduction related to environmental investments.
- Sustainable mobility: sets up principles and regulation tools for transport management, as well as goals and priorities for transport infrastructure planning and management. There is particular reference to Sustainable Mobility, stating ruling principles and goals and pinpointing the utility of developing Sustainable Mobility Plans, modernization and efficient use of transport means, and acquisition of clean vehicles as key actions to be developed.
- Refurbishment and dwelling: sets up common goals to implement the sustainability concept within the built environment, criteria for urban renovation and refurbishment, as well as required infrastructure to improve the quality of the built environment.

This law will act as a basic document in the implementation of the sustainability concept in the Spanish Economy. Therefore, the information provided has general character and particular definitions will be performed in the future Energy Efficiency and Renewable Energies Law, still to be developed and approved by the Central Government.

The Role of IDAE

An important source of subsidies for investments in renewable energy projects is the Institute for Diversification and Energy Saving²¹⁸(IDAE) which offers the following support:

- **Third-Party Financing (TPF):** this is one of the most appropriate mechanisms available to undertake investment projects in energy saving and efficiency and energy generation using various sources, including renewable energy sources. The IDAE, the main promoter of this financing mechanism in Spain, has been using it successfully since 1987.
- **Project finance and Provision of services:** a financing mechanism applicable to projects investing in energy saving, energy efficiency and renewable energy sources, which have undergone a prior economic/technical feasibility analysis. It is a new model of financial collaboration which entails drawing up and signing two contracts: A framework collaboration and service provision contract and a project finance contract (i.e. a business loan).

²¹⁸ Instituto para la Diversificación y Ahorro Energético. More information can be checked at: www.idae.es

- **Program of aid for strategic projects:** This is a line of IDAE support aimed at financing energy saving and efficiency projects. The programme is set in the context of the IDAE's direct actions under the 2008-2012 Action Plan for the 2004-2012 Spanish Energy Saving and Efficiency Strategy (E4).
- **Program of Voluntary Agreements with companies involved in the thermal use of biomass in buildings (Biomcasa):** This program aims at establishing a financing system to ease access to hot water production systems using biomass in buildings. This program is framed in the Renewables Energy Plan 2005-2010.
- **Program GEOTCASA. Financial schemes to authorised companies for the installation of geothermal equipment in buildings:** The programme has been set up within the context of the strategic goals of the Renewable Energies Plan 2005-2010²¹⁹ and aims at giving financial support (total budget valued at 3.000.000 Euros) to equip buildings with geothermal installations for the production of hot water and heating/cooling. Use of these incentives is subjected to installation of the equipment through authorized companies selected by IDAE.
- **Program SOLCASA.** Financial schemes to authorised companies for the installation of solar thermal equipment in buildings. As the programme GEOTCASA, this tool has been created following the goals defined by the Renewable Energies Plan 2005-2020 and aims at offering financial support (estimated budget up to 5.000.000 Euros) to equip buildings with solar thermal installations to produce hot water as well as heating/cooling services. Use of the incentives is subjected to installation of the equipment through authorized companies selected by the IDAE.

3 Details RES-Heating and Cooling Support Policy

Royal Decree 661/2007, dated May 25th, to regulate electricity production under the special regime.

Similar to pure electricity generation, combined production of heat and electricity is also promoted via the feed-in-tariff and feed-in-premium scheme paid for the electricity production of the plant. In particular, high efficiency cogeneration, using either biomass or biogas is considered under the regulation and awarded with special tariffs following the same scheme as presented in the RES-E section.

Royal Decree 616/2007, dated May 11th, for the Promotion of Cogeneration.

The primary promotional tool within the country for cogeneration is set up under the Royal Decree 616/2007, dated May 11th. This regulation aims at fostering primary energy saving, using high efficiency cogeneration, and sets up the methodology for updating and organizes the economic and legal regime of the electricity production within these types of plants.

This regulation creates a favorable scenario for cogeneration using biomass, particularly in the tertiary sector, and is particularly demanding with cogeneration processes involving a low use of heat. Regarding economic profitability, this new decree aims at achieving large profitability for cogeneration processes involving biomass use (for both

²¹⁹ It is assumed that goals related the programs GEOTCASA and SOLCASA will be reviewed once the new PER 2011-2020 is approved.

selling electricity to distribution companies and in the electricity market). In the situation of selling the electricity in the market, the feed-in-tariff varies according to the reference market price. Therefore, maximum and minimum limits are established for each technology²²⁰.

The electricity production with biomass (through cogeneration or not), and in particular, those plants running from 1st January 2008, will be regulated under the RD 661/2007.

In addition, it has to be pointed out that the economic regime is temporary and will be reviewed as the power capacity goals are achieved for each of the technology groups. All plants registered from that moment on will be awarded with a different feed-in-tariff.

Goals regarding power capacity²²¹ related to plants fuelled by biomass (as principal resource) are:

- Electricity production with biomass²²²: 1 317 MW.
- Electricity production with biogas²²³: 250 MW.

As previously mentioned, this regulation aims at promoting high efficiency cogeneration. Thus, it establishes a minimum energy output (equivalent electricity output²²⁴) which is calculated²²⁵ and, for the case of cogeneration using biomass set up the following minimum limits:

- Biomass for electricity production²²⁶: 30%
- Biogas for electricity production²²⁷: 50%

For plants with a capacity under 1 MW, requirements are reduced to 27% and 45%, respectively.

Electricity production with cogeneration distinguishes clearly between electricity generation using biomass or using biogas as primary resource. The remuneration related to electricity, generated through cogeneration with biomass varies depending on the capacity of the plant (less or more than 2 MW) and on the fuel used.

In case of hybrid plants in which biomass is not the only primary energy source or in which different types of biomass are used, remuneration of each of the technologies and/or fuels will be achieved considering the supplied energy for each of the sources, considering the mass and calorific power (kWh/kg) of each one.

The implementation of the Law on Sustainable Economy states that future regulation will set up public economical incentives to fulfill goals foreseen in the law regarding to renewable energy sources generation (20% of gross final energy consumption). This

²²⁰ Which are updated considering Consumer's Price Index (-0.25 until 2012 and -0.50 from that moment on).

²²¹ Independent from generation through cogeneration.

²²² Groups b.6 and b.8 from the RD 661/2007.

²²³ Group b.7 from the RD 661/2007.

²²⁴ Rendimiento Energético Equivalente - REE

²²⁵ Partially in base on some factors defined under the European Directive 2004/8/CE.

²²⁶ Included in groups b.6 and b.8 of the RD 661/2007.

²²⁷ Included in the Group b.7.2 of the RD 661/2007.

regulation will guarantee adequate remuneration for investments in special regime technologies to generate capacity implementation according to the goals defined in the new energy plans. The revision of cost will be also performed considering cost structure, learning curve of the technology development, participation share in the special regime, etc.

Specific mechanisms and tools will be defined under definite implementation of the Renewable Energies Plan 2011-2020 (currently under development) and approval of the Renewable Energies and Energy Efficiency Plan (to be developed).

As stated in the document, on the short term, regulation has been approved modifying remuneration system for special regime generation, particularly in the case of wind power and solar PV.

Building Technical Code (Código técnico de edificación, CTE) – Solar Thermal and Photovoltaic Obligations for Buildings

From September 29, 2006, [Royal Decree 314/2006] new or renovated buildings with demand for hot water and/or covered swimming pools acclimatization are obliged to use solar thermal energy. The mandatory requirement of installing solar PV depends on different parameters of the building: climatic zone, surface (m²), and type and use of the building. The local and regional governments can harden the national law by increasing the minimum of installed solar systems.

In 2006, the new Building Technical Code was approved, by Royal Decree 314/2006. The CTE intends to obtain more sustainable and efficient buildings. The Energy Saving Basic Document (DB-HE) aims to achieve a more rational use of the energy in buildings, reducing its energy consumption and using renewable energy sources, establishing energy efficient criteria and the use of solar energy, thermal or photovoltaic, in new or renovated buildings.

The document, DB-HE has five basic energetic requirements, and it is the document DB-HE 4 Minimum Solar Contribution to Sanitary Hot Water covers between 30% and 70% of the building's hot water needs by solar thermal systems, the exact share depending on the climatic zone where the building is set and the foreseen daily demand of hot water.

Regarding solar PV, the legislation (document HE 5) defines a minimum installed power depending on climatic zone, constructed surface (m²), and type and use of building (especially for tertiary buildings such as hospitals, hotels, supermarkets, etc). There are tables with coefficients to determine the minimum power to install. Solar PV plants built under this building obligation are also eligible for the feed-in tariff.

On the other hand, some exceptions are defined in the law, situations in which the building satisfies its domestic hot water demand by other renewables or by cogeneration or for shaded buildings.

The Renewable Energy Plan in Spain 2005-2010 (PER) had the target to reach in 2010, 4.900.000 m² of solar thermal installed collectors. The Building Technical Code is a key instrument for the Solar Energy development in Spain and to fulfill the Plan targets.

The new Renewable Energies Plan 2011-2020 (currently under elaboration) will set up new targets related to solar thermal collectors by 2020, according to goals defined by the

foreseen contribution renewable energy sources within energy generation for heating/cooling (renewable contribution valued at 18.9% by 2020). According to the scenarios designed in the Plan it is foreseen that solar thermal contribution in Spain by 2020 will be approximately 7,500 GWh.

4 Details RES-Transport Support Policy

Quota obligation

Law 12/2007, dated 2nd July, that modifies the Hydrocarbons Law, implementing the obligation to use biofuels, sets up obligatory targets (to be fulfilled by the oil distribution companies) for biofuels use: 3.4% (for 2009) and 5.83% (for 2010) as well as minimum targets for the use of ethanol valued at 2.5% (for 2009) and 3.9% (for 2010).

ORDER ITC/2877/2008 was created as a tool for the promotion of biofuels and other renewable fuels within the transport sector. The order comprises the use targets defined by the above mentioned law and defines an obligation for fuel distributors to ensure biofuel²²⁸ blending in both diesel and gasoline according to the following targets: 2.5% (for 2009) and 3.9% (for 2010).

On December 23rd, the Royal Decree 1738/2010 was approved, setting up new biofuel targets for 2011, 2012 and 2013. Values set up on the regulation were that of 5.9% (2011), 6.0% (2012), and 6.1% (2013). On March 4th, the Ministry of Industry sent out a regulatory proposal to increase biofuels obligation utilization up to 6% already on 2011. This proposal is currently being analyzed by the National Commission of Energy.

Tax relief

In addition to the use obligation, another key instrument for the promotion of renewable fuels in Spain is a tax relief, established by the Law 22/2005, dated 18th November.

The lead on this law lies with the Ministry of Economy and Treasury²²⁹. The law establishes a zero tax rate for biofuels (instead of 0.278 €/liter for diesel and of 0.371 €/liter for gasoline), so as to improve their market position compared to fossil fuels. The Ministry is the entity to administer the scheme and the law will be in effect until 31st December 2012, when it shall be revised.

The “zero rate” on the Hydrocarbons tax is entitled to the use of bioethanol, biomethanol and biodiesel as transport fuel and is also applicable to biomethanol and biodiesel used for heating purposes. It has to be remarked that biofuels are not exempted from two other existing taxes, which are:

²²⁸ Biofuels considered are: bioethanol, biodiesel, biogas, biomethanol, biodimethylester, bioETBE, bioMTBE, synthetic biofuels, biohydrogen pure plant oil, and “other biofuels”.

²²⁹ <http://www.meh.es/en-GB/Paginas/Home.aspx>

- The “tax on the retail sales of certain hydrocarbons” (IVMH)²³⁰, including a national component of 0.024 €/liter as well as a regional component of approximately 0.024 €/liter;
- The “value-added tax” (IVA)²³¹ of 16%.

Targets on biofuel use within the transport sector are not given in this law, but are set up by the Real Decreto 61/2006²³², which establishes a target of 5.75% substitution of fossil fuels by biofuels in the road sector. The national renewable plan (Plan de Energías Renovables 2005-2010²³³) sets up a target for biofuels consumption at a value of 5.83% of gasoline and gasoil in road transport. In June 2007, the Spanish government modified Law 34/1998, regarding the Hydrocarbons Sector²³⁴ through introducing the “Disposición Adicional Decimosexta” which makes blending of biofuels into petroleum fuel obligatory. This regulation has set an interim target for 1.9% of biofuels to be blended into regular fuels in 2008 (not mandatory), which will become mandatory proportions of 3.4% in 2009 and 5.83% in 2010.

Tax Benefit for Investment in Biofuel Production

As mentioned in the RES-E fiscal regulation section, the Regulation of the Corporate Tax²³⁵, updated by the Royal Legislative Decree 4/2004 introduces a tax rebate scheme for environmental investments, including agricultural and forestry products as well as used oils, to be transformed in biofuels (biodiesel and bioethanol).

Modifications related to available percentage of tax reduction, introduced by the new Law of Sustainable Law, apply to this section.

Support for Energy Cropping

Farmers can receive, depending on the type of crop, a grant of 45ha for growing energy crops. This incentive scheme will be available until the total surface in the EU devoted to energy crops exceeds 1.5 million ha. In 2009, a total surface of 35.591 ha was eligible to apply for. This economic help is split into the following crops: sunflower (64% of total surface), rape (27% of total surface) and cereals (triticale, wheat and rye). The use of land set aside to grow energy crops in Spain has not been very successful. In fact, productivity levels in Spain are around one third less than in other European countries such as Germany or France. Therefore, Spain did not benefit so much from the compensatory program (based on yield) of the European Common Agricultural Policy.

230 Impuesto sobre las ventas minoristas de hidrocarburos. More information can be reviewed at: http://www.aeat.es/AEAT/Contenidos_Comunes/Aduanas/Impuestos_especiales/Estudio_relativo_2003/vtasmino.pdf

231 Impuesto sobre el valor añadido. More information can be reviewed at: http://www.agenciatributaria.es/wps/portal/Listado?channel=3e9921a53a335010VgnVCM100000d7005a80____&ver=L&site=56d8237c0bc1ff00VgnVCM100000d7005a80____&idioma=es_ES&menu=1&img=8

232 <http://www.boe.es/boe/dias/2006/02/17/pdfs/A06342-06357.pdf>

233 This plan will be substituted by a new Renewable Energies Plan that will be issued on this year

234 Ley 34/1998 del Sector de Hidrocarburos

235 Real Decreto 537/1997 sobre el Reglamento del Impuesto de Sociedades. More information can be reviewed at: http://noticias.juridicas.com/base_datos/Derogadas/r9-rd537-1997.html

Other considerations

The European Directive 2009/28/CE establishes sustainability criteria for biofuels and bioliquids that must be fulfilled independently of the origin of the raw sources (location of the crop plantation):

- Biofuels can not be produced from raw materials proceeding from lands with high biodiversity values.
- Biofuels can not be produced from raw materials proceeding from land with high carbon reservoirs.

Although the directive requires Member States to set up sustainability criteria for biofuel utilization, there is currently no reference regarding the introduction of particular legislation to fulfill this requirement.

5 RES-E Grid Integration

In Spain, RES-E is statutorily entitled to connection to and usage of the grid with priority²³⁶. The plant operator may be contractually entitled to an expansion of the grid, where the operator shall bear the costs if the connection of the system to the grid requires a grid expansion.

Basic legislation to regulate grid access to renewables is comprised under the following regulations:

- Royal Decree 661/2007, dated May 25th.
- Royal Decree 1955/2000, dated December 1st.

Spain follows, in principle, a *deep charging approach*, in which costs of grid connection are borne by the project developer, as well as the necessary reinforcement work arising from the connection of the generator. New users connecting to the same line extension within a period of 5 years may be responsible for a pro-rata payment of these costs, based on their relative use of the installed capacity. These payments will be used to reimburse the original contributor.

Connection costs can vary significantly according to the reinforcement requirements of the grid. The reliance on a deep charging approach constitutes an obstacle to projects in areas where grid reinforcements are required. This is further complicated by the fact that the process of connection charging itself is generally a negotiation between producers and the distribution company, even if it is possible to appeal against its decision.

The plant operator shall bear the costs of connection to and a possible expansion of the grid²³⁷ as well as all costs related to feeding and transmission of electricity generated from renewable energy. Furthermore, operators of plants whose capacity exceeds 10 MW and which shall be connected to a control system shall bear the costs of installations and maintenance of the control systems, including installation and maintenance of the communication lines to the grid operator.

236 As stated in RD 661/2007.

237 Annex XI nr. 8, 9 RD 661/2007).

RES-E shall be fed in at priority over electricity from conventional sources of energy. However, this priority ceases if the plant operator does not comply with the conditions laid down by the contract on the technical relations between plant operator and grid operator²³⁸.

All systems that generate electricity as specified by the special regulation and whose capacity exceeds 10 MW shall be connected to a central control system, which shall be the interface to the plant operator. The control system shall provide real-time system information and make sure that the plant operator's instructions are implemented so that the reliability of the electric system is granted.

Construction of transmission and distribution installations in Spain is subject to a compulsory energy plan. The most recent plan "Gas and Power sectors Planning 2007-2016-Development of the transport network"²³⁹ shows the projected expansion of the national grid as well as the existing infrastructure per region. The document "**Planning of Gas and Electricity Sectors 2007-2016**" predicts the evolution of the Spanish energy sector and plans future infrastructure required to cover electricity and gas demand. Figures presented are consistent with those in the RES-E Plan but considered from an integrated perspective with the national energy mix.

As far as the grid operator's general obligation to expand the grids is concerned, the operator shall elaborate a grid expansion plan in co-operation with the Ministry of Economy every four years. The plan shall take into account the number of existing and new systems and the opinions of interested persons²⁴⁰. Time limitations and deadlines of an expansion of the grid depend on the terms of the contract.

The grid shall be expanded according to the principle of non-discrimination. Therefore, renewable-energy-sourced electricity is not given priority.

The costs of general expansion of the grid are borne by the grid operator²⁴¹. If the expansion benefits exclusively the plant operator, he shall bear the costs of the expansion²⁴².

Additional requirements for RES-E operators intending to improve the integration of variable renewable electricity into the grid are established within the Spanish feed-in regulation:

- **Forecasts for feeding electricity to the grid:** Decree 436/2004 obliged operators of installations (> 10 MW) to provide the distributor with a forecast of the electricity they intend to feed into the grid at least 30 hours before the start of each day. Penalties are established for deviations.

²³⁸ Art. 17.e, Annex XI nr.4 RD 661/2007).

²³⁹ Planificación de los sectores de electricidad y gas 2007-2016. [Planning of electricity and gas sectors 2007-2016] Desarrollo de las redes de transporte [Development of transport networks]. Ministerio de Industria, Turismo y Comercio. Secretaría General de Energía. Subdirección General de Planificación Energética. [Ministry of Industry, Tourism and Trade. General Energy Secretary. General Section of Energy Planning. More information can be checked at: <http://www.mityc.es/es-ES/Documentacion/Publicaciones/Otras%20publicaciones/pansectelecgag20082016.pdf>

²⁴⁰ Art. 11 RD 1955/2000.

²⁴¹ Annex XI RD 661/2007.

²⁴² Annex XI RD 661/2007.

- **Cost of deviation:** The cost of deviation was 10% of the average electricity tariff applied to the difference between the forecast and the electricity measured (when the permitted tolerance is exceeded – the tolerances are 20% for solar and wind power, and 5% for the rest). For renewable energy installations, this came into force on 1 January 2006. The cost of deviations for installations opting to sell directly to the market were the same as that applied to installations operating in the Ordinary System. The obligation to make forecasts and the penalties for deviations improve the functioning of the system and the quality of the electricity fed into the grid.

6 RES Production, Potential and Market Development

RES-E

- According to the targets set up by the National Action Plan for Renewable Energies 2011-2020, the key technologies in the forthcoming years in terms of renewable contribution to the national energy mix will be wind, biomass and hydro power (participation share of 31%, 22%, and 15% of all renewable energy by 2020, respectively).
- PV solar expansion has suffered large regression due to the implementation of the Royal Decree Law 14/2010, which has led to economical loses for special regime energy producers due to additional costs (derived from access toll implementation) and lower remuneration levels (caused by limitation of working hours for installations).
- Spain has one of the largest biomass potentials in Europe and this has to be developed. Until now, premium tariffs promoted more wind and PV solar but considering current promotion regulatory framework (less beneficial for solar PV and thermal), trends will change towards solar thermal and biomass.
- Market development regarding renewable energy sources in the forthcoming years will depend on:
 - o Strategies and planning comprised in the new Renewable Energies Plan 2011-2020
 - o Final definition of targets and goals set up by the Law on Sustainable Economy
 - o Approval and implementation of the Renewable Energy and Energy Efficiency Law
 - o Effects on the Spanish technologies and corporations derived from implementation of RDL 14/2010, RD 1565/2010, and RD 1614/2010.

RES-H&C

- Implementation of the solar thermal obligation in buildings is in process.
- Increasing development and implementation of co-generation under the support of the law RD 616/2007.

- District heating –not very well developed so far in Spain- is becoming better known and new district heating projects will be in place in the near future.

RES-T

Regarding the current capacity of national production and use of biofuels, the Spanish market is underdeveloped, because of the national structure of the fuel market: fossil fuel producers in oligopoly, mostly monopolistic primary logistics (CLH), and distribution technical and market barriers. In addition, imports of fuels from foreign countries (such as Argentina and Indonesia) are causing severe problems to the national biofuel industry. Major part of production plants have almost stopped production as they are not competitive compared with the import of biofuels.

The Secretary of Energy has kept paralyzed for the last two years the approval process for regulation of biofuels import. Unless this process is reactivated it is foreseen that losses to the sector will be valued in approximately 1,400 million Euros and more than 6,000 work places.

REFERENCES

The websites of the Comisión Nacional de Energía²⁴³ (CNE-regulatory entity)) and the Instituto de Diversificación y Ahorro Energético²⁴⁴ (IDAE-Ministry of Industry) represent the main sources of updated information regarding relevant energy laws and regulation. The IDAE's website includes a list of regional legislation, which is very useful considering that a large share of competences related to environment and energy have been transferred from National to Regional authorities.

The most relevant energy legislation currently in force is presented in the following list:

- [Law 54/1997](#) dated November 27, of the Electricity Sector. Its main aim is the full liberalization of the Spanish electricity market. It establishes a Special Regime for renewable energy sources (<50MW) and guarantees grid access, once the necessary administrative permits have been obtained. It also sets a premium price for electricity from the Special Regime. Although electricity generation capacity is no longer planned by the State, transport infrastructures are still planned centrally.
- [Royal Decree 2019/1997](#), dated December 26th, which organizes and regulates the electricity market.
- [Royal Decree 2017/1997](#), dated December 26th, which regulates and organizes procedure to liquidate costs related to transport, distribution and commercialization via tariff, system permanent costs and diversification and energy supply costs.
- [Royal Decree 1955/2000](#), dated December 1st, regulates the activities of transport, distribution, marketing, supply and authorization procedures of

243 Information available at: <http://www.cne.es/cne/Home>

244 Information available at: www.idae.es

electricity. Updated by RD 1454/2005 and RD 661/2007. It describes the procedure to obtain grid connection.

- [Royal Decree 1700/2003](#), dated December 15th transposes [Directive 2003/30/CE](#) and sets specifications of fuels and the use of biofuels.
- [Royal Legislative Decree 4/2004](#), dated March 5th, which approves the refunded text regarding societies taxation.
- [Royal Decree 436/2004](#), dated March 12th, to establish the methodology for updating and organize legal and economic regime of the electricity production activity within the special regime.
- [Royal Decree 61/2006](#), dated January 31st, sets the indicative target of 5.75% biofuels consumption in 2010.
- [Royal Decree 314/2006](#), dated March 17th, approving the Technical Building Code, relevant for solar thermal.
- [Royal Decree 1634/2006](#), dated December 29th, establishes the electricity tariff change of the 1st of January 2007.
- [Law 35/2006](#), dated November 28th, related to the Individual Income Tax and partial modification of the laws regarding Societies, Income of non residents and patrimony.
- [Rule ITC/1522/2007](#), dated May 24th, establishes the regulation of a guarantee of origin for electricity from renewable sources and high efficiency cogeneration.
- Royal Decree 616/2007 Cogeneration
- [Royal Decree 661/2007](#) dated May 25, regulates electricity production under the Special Regime²⁴⁵. It modifies and replaces the economic and legal scheme regulating the Special Regime in force so far (RD 436/2004), to meet the following needs:
 - o Regulate some technical aspects to remove barriers to new capacity.
 - o Disengage the premium tariff from the average or reference electricity tariff in order to avoid windfall profits.
 - o Increase incentives for cogeneration and biomass.
 - o Establish targets of reference installed capacity in compliance with the objectives in the RES-E Plan 2005-2010, the Energy Saving and Efficiency Strategy for Spain (E4), and Directive 2001/77/EC.
- [Law 17/2007](#), dated July 4th, modifies Law 54/1997 to adapt it to [Directive 2003/54/EC](#) regarding common rules for the internal market of electricity.
- [Royal Decree 1028/2007](#), dated July 20th, establishes the administrative procedures for processing authorization requests of offshore wind power generation facilities.
- [Royal Decree 616/2007](#), dated May 11th, regarding promotion of cogeneration.
- [Royal Decree 871/2007](#), dated June 29th that adjusts electricity tariffs from July 1st onwards.

²⁴⁵ Facilities under the Special Regime enjoy a number of privileges such as guaranteed sale of electricity produced and economic incentives. Power generation facilities must meet some requirements to adhere to the Special Regime, mainly, have an installed capacity below 50 MW and use renewable energies or cogeneration technologies.

- [Royal decree 1565/2010](#), dated November 19th, on the regulation and amendment of certain aspects related to electricity generation under special regime,
- [Royal Decree 1614/2010](#), dated December 7th, which governs and modifies certain aspects of electricity generation activities using solar thermoelectric and wind power technologies.
- [Royal Decree Law 14/2010](#), dated December 23rd, on the implementation of urgent measures to correct electricity sector tariff deficit.
- [Order ITC/2794/2007](#), dated September 27th, in which electrical tariffs are reviewed from October 1st, 2007.
- [Order ITC/2877/2008](#), dated October 9th, which establishes promotion tools for the use of biofuels and other renewable fuels for transport.
- [Order ITC/3860/2007](#), dated Decembre 28th, in which it is reviewed the electrical tariffs from January 1st, 2008.
- [Royal Decree 222/2008](#), dated February 15th, in which it is stabilised the retributive regimen of the electrical energy distribution activity.
- [Royal Decree 1578/2008](#), dated September 26th, related to remuneration of the electricity production activity through photovoltaic technology for plants installed later than limit date regarding remuneration set in the Royal Decree 661/2007, dated May 25, for this technology.
- [National Renewable Energies Plan 2005-2010](#), dated March 26th, issued by the Council of Ministers represents the mail tool at national level to reinforce national goals on energy policy on quality and security on energy supply for end users as well as respect to the environment. General goals of the plan set up that renewables will contribute to produce 12.1% of global energy consumption and 30.3% of brute electricity consumption. Biofuels will substitute 5.83% of gasoline and gasoil for transport.

Additional Sources of Information

Ministry of Industry, Tourism and Trade

Paseo de la Castellana 160-162
28046, Madrid
Spain
Tel.: 0034 902 44 60 06
Fax: 0034 91 458 30 01
Web page: www.mityc.es

Instituto para la Diversificación y Ahorro Energético (IDAE)

Calle Madera 8
28004, Madrid
Spain
Tel.: 0034 91 456 49 00
Fax: 0034 523 04 14
Web page: www.idae.es

Comisión Nacional de Energía (CNE)

Calle Alcalá 47

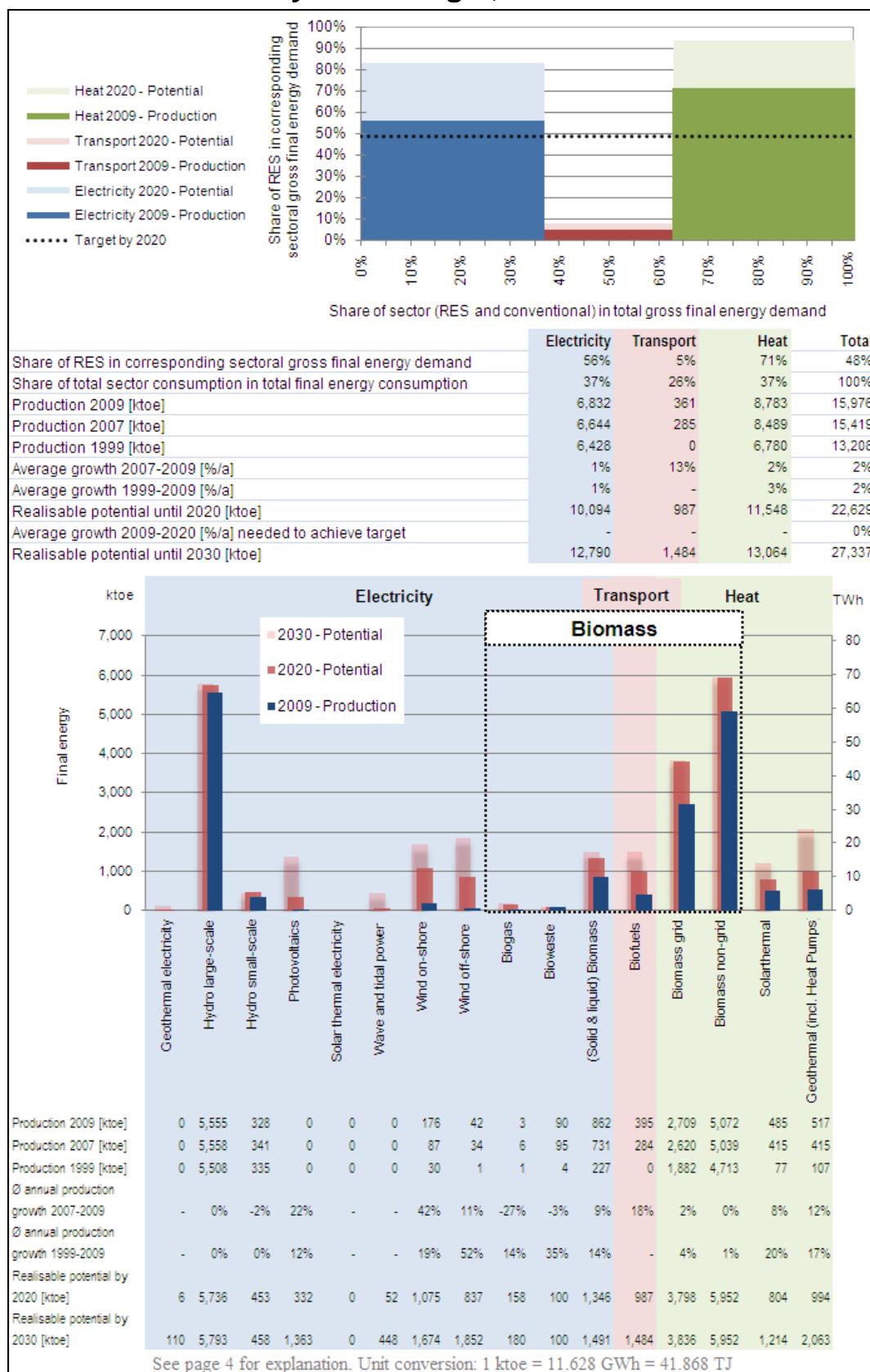
28014, Madrid

Spain

Tel.: 0034 91 432 96 00

Web page: www.cne.es

SWEDEN - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

New legislative amendments regarding a quota obligation with tradable green certificates for RES-E (and peat) entered into force on 1 July 2010. The quota obligation system has been revised and extended until the end of 2035. The new RES-E target determines that RES-E production should increase by 25 TWh in 2020 in comparison with 2002 levels.

Currently, the electricity certificates system applies only to electricity produced in Sweden. However, Norway and Sweden have agreed on a joint green certificates market from 1 January 2012 onwards.

1 Summary: RES Support Policy

RES-E

The main support instrument for RES-E is a quota obligation with tradable green certificates. This system came into effect in May 2003 and will be valid until the end of 2035. All RES technologies (wind, solar, geothermal, biogas, biomass, hydro, wave energy) for generation of RES-E are eligible for the quota system.

Norway and Sweden have agreed to aim for a joint green electricity certificate market as from 1 January 2012.

Sweden also promotes RES-E through fiscal measures. Biomass and peat used for electricity production are tax-free. Electricity is not taxable if it is produced at wind farms or in a power plant with installed capacity less than 100 kW by a non-commercial producer. Reduced real estate tax is applied for wind energy plants. Subsidies (for solar cells, wind energy projects and research and development in the field of wind energy) are also provided.

These support instruments for RES-E are applicable at national level.

RES-H&C

Currently, fiscal measures (exemption from energy, CO₂, sulphur taxes) and grant schemes for investment in solar heating, are the main RES-H support instruments in Sweden.

A building obligation is another instrument that supports RES-H development.

These support instruments for RES-H are applicable at national level.

RES-T

A tax relief system is in place to promote biofuels. There are no energy taxes for ethanol or biodiesel. Green taxes such as the CO₂ tax promote biofuels in an indirect way.

These support instruments for RES-T are applicable at national level.

2 Details RES-Electricity Support Policy

Quota Obligation and Tradable Certificates

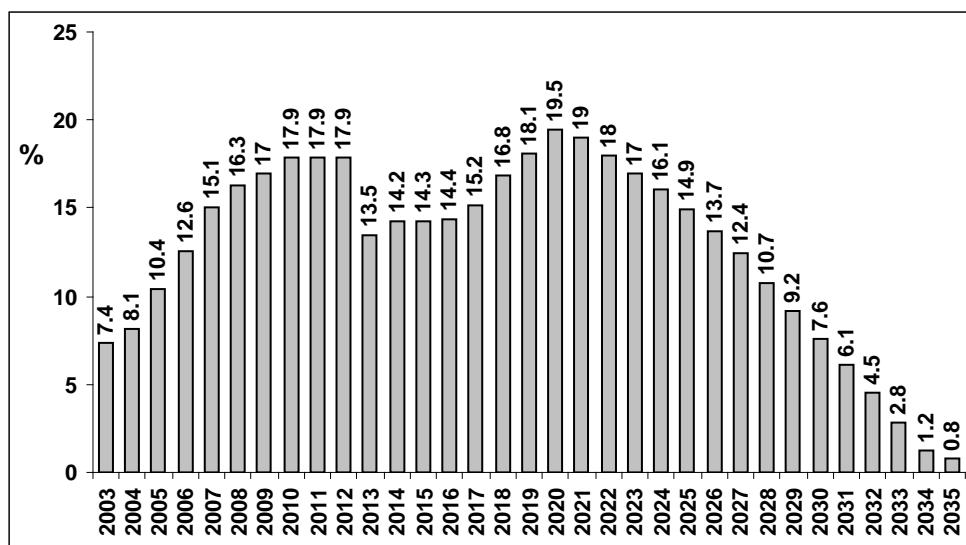
The expansion of electricity production from RES and peat in Sweden is supported by a quota obligation with a tradable electricity certificates system. This system came into effect on 1 May 2003, based on Act No. 2003:113 on Electricity Certificates [1] and Regulation No. 2003:120 on Electricity Certificates [2]. The objective of the system is to increase the production of electricity from RES by 25 TWh by 2020 (in comparison to 2002 production). The system will be valid until end of 2035. The latest legislative amendments entered into force on 1 July 2010.

According to the Act on Electricity Certificates [1], production facilities using biomass, biogas, wind and hydro energy that came into operation prior to 1 May 2003, are not entitled to electricity certificates after the end of 2014. If production facilities using solar or geothermal energy came into operation prior to 1 May 2003, then the support will not be provided after the end of 2012. The eligibility of other plants ends after 15 years of promotion; however, the end of 2035 is the latest. Besides, the Act No 2010:598 on Sustainability Criteria for Biofuels and Liquid Biofuels [3] stipulates that a producer using liquid biofuels is eligible to be awarded with certificates only if the biofuels are regarded as sustainable. This provision is effective since 1 January 2011.

The functioning of the electricity certificate system is based on a quota. Companies supplying electricity to the consumers and certain electricity consumers are those who are obligated to have a particular amount of RES-E and thus to satisfy an annual specific quota. Some use of electricity is exempted from the quota obligation. The largest exemptions are for electricity-intensive companies.

The quota has been set for the period 2003 until 2035. Figure 1 presents the quotas that have been set for each year.

Figure 1 Quota obligation, % of total electricity production [1]



A decrease in the quota obligation after the end of 2012 is foreseen due to the fact that the first older production units will be phased out from being eligible within the certificate system after the end of 2012, even though they will continue producing electricity. Since new production units can receive certificates only for 15 years, further reductions of the quota are assumed in future years.

All RES technologies (wind, solar, geothermal, biogas, biomass, hydro, wave energy) used in generation of RES-E are covered by the quota system. Hydro is, however, covered only if the plant had a maximum installed capacity of 1,500 kW at the end of April 2003 or is a large newly built plant. Only certain large existing plants are covered, i.e. if changes in the legal framework have made their profitable operation impossible or if the renewal of a plant whose capacity does not exceed 15 MW has made it unprofitable [1]. Electricity produced from peat in cogeneration plants also qualifies for certificates.

Currently, the price of the certificate is determined by interaction of supply and demand. Supply of certificates is formed by RES and peat electricity producers who participate in the system on a voluntary basis. Demand is created through a quota obligation. Every year, those having quota obligations are required to fulfil them. By 31 March, quota obliged subjects have to ensure that they have a sufficient amount of certificates in their accounts. On 1 April the Swedish National Grid utility "Svenska Kraftnät" cancels corresponding amounts of certificates. Those who have not enough certificates to fulfil quota are penalized. Historically, a fixed value of quota obligation penalty fee was set. In 2003 and 2004 the penalty fee was limited to 175 SEK (19.18 €²⁴⁶) and 240 SEK (26.30 €) per certificate, respectively. A fixed fee was set in order to protect consumers against extremely high electricity certificate prices. In practice it had the effect of setting price levels and operated as a price ceiling for certificates. Since 2005, the penalty fee is dependant only on the certificate price and thus does not form a price ceiling anymore. This penalty fee is 150% of the weighted average price of certificates during the period from the previous 1 April until 31 March of the following year. Those having a surplus of certificates can save them for future years' needs or sell them.

Information on electricity certificate prices is publicly available at "Svenska Kraftnät" website [4]. The annual average price of a spot electricity certificate was 195.40 SEK (21.02 €) in 2007, 247.21 SEK (25.74 €), 293.20 SEK (27.61 €), and 294.57 SEK (30.87 €) in 2008, 2009 and 2010, respectively.

Electricity production that qualified for green electricity certificates amounted to 15.6 TWh in 2009: 62.7% was from biomass fired plants, 16.0% from wind plants, 15.7% from hydro plants, 5.6% from peat fired plants. A small number of solar energy plants were approved for reception of certificates, but they produced only 212 MWh during the year. Wave energy or geothermal energy plants have so far not been submitted for approval and inclusion in the system. Peat is included in the quota obligation system, but it is not counted for the 25 TWh target. Thus, 15.6 TWh of electricity was qualified for electricity certificates in 2009. Electricity production from RES within the certification scheme amounted to 14.7 TWh in 2009; 6.5 TWh of this already existed in 2002. In comparison to 2002 this is an increase of 8.2 TWh.

²⁴⁶ Average annual exchange rates are provided by the Central Bank of Sweden: 9.1250 SEK/€ (for 2003), 9.1268 SEK/€ (for 2004), 9.2481 SEK/€ (for 2007), 9.6055 SEK/€ (for 2008), 10.6213 SEK/€ (for 2009) and 9.5413 SEK/€ (for 2010) // <http://www.riksbank.com/templates/stat.aspx?id=17211>

At present, the Swedish electricity certificate system applies only to electricity produced in Sweden. However, Norway and Sweden have agreed on a joint green electricity certificates market from 1 January 2012 [5, 6].

Trading on the electricity certificate market occurs through bilateral agreements, directly between producers and those having quota obligations, and through contract purchases involving the service of a broker. Certificates are traded not only by electricity companies having their own trading departments, but also by industrial companies and district heating utilities, as well as by smaller electricity network companies and producers who trade only a few times per year.

The Swedish Energy Agency (<http://www.energimyndigheten.se/en/>) and “Svenska Kraftnät” (<http://www.svk.se>) take responsibility for the functioning of the electricity certificate system. For each produced and metered MWh of electricity from any RES, or even from peat, “Svenska Kraftnät” issues one electricity certificate and later takes a responsibility to cancel it. “Svenska Kraftnät” prepares and maintains the certificate register, publishes regular information on the number of certificates issued, traded and cancelled. The Swedish Energy Agency monitors and analyses developments of the electricity certificate market.

Tax exemptions

Electricity and fuel taxation in Sweden is based on Act No 1994:1176 on Energy Tax [7]. In accordance with the act, taxes are levied on energy, carbon dioxide, sulphur and electricity. Electricity production is exempted from energy and carbon dioxide tax, meanwhile it is subject to sulphur tax in specific cases. In principle, biomass and peat used for electricity production are tax-free [8]. Electricity is not taxable if it is produced at wind farms or in a power plant with installed capacity less than 100 kW by a producer who does not “professionally” deliver electricity. In other cases electricity is taxable. The size of the tax varies in a range of 0.5-28.0 öre (0.05-2.9 €ct) per kWh used.

The Act on Federal Real Estate Tax [9] determines the rate of a tax imposed on real estate. The tax is also set for power generating units. The tax rate depends on the ratable value of the facility and power generation unit. The common tax rate is 0.5% of the ratable value of power generating unit, except for wind and hydro power plants. Wind plants are subject to a reduced tax level (0.2%), whereas hydro power plants are subject to a higher tax (1.7%) [9]. The act stipulates that since 1 January 2011 a new property tax on hydro plants will be set (2.8%) for each calendar year.

Subsidies

Regulation No. 2009:689 on State Subsidies for Solar-PV connected to the Grid stipulates a support for solar energy development [10]. The support is limited to actions commenced on or after 1 July 2009 and completed by 31 December 2011. This regulation is appointed to reduce the system costs, to increase the number of operators and to reach an annual electricity production increase from solar cells with at least 2.5 GWh during the state aid period. The aid may not exceed 60% of the eligible costs (planning and labor costs, costs of materials) and for large companies, aid may not exceed 55% of the eligible costs. Eligible costs for solar-PV may not exceed 75,000 SEK (7,860 €) plus VAT per installed kW. Eligible costs for solar electricity and solar thermal hybrid system may not exceed 90,000 SEK (9,433 €) plus VAT per installed kW. Support should not exceed 2 million SEK (209,615 €) for solar photovoltaic systems or solar

electricity and solar thermal hybrid systems per building. Regulation No. 2007:160 on Support for Planning Initiatives for Wind Power authorizes support for municipalities, county administrative boards, municipal and regional cooperative bodies for a planning process, helping to clarify the conditions for the expansion of wind power plants [11]. Subsidies are available for planning efforts that have been decided after the end of 2006 and referred to being finalized before the end of 2011. The state subsidy covers 50% of the estimated costs. Eligible actions are the development of a new plan, deepening or supplementing the existing general plan, detailed wind mapping and landscape analysis. The support does not apply to individual projects.

Regulation No 2003:564 on Grants for Measures Promoting Effective and Environmentally Friendly Energy stipulates the support for large-scale offshore wind farms. Contribution to a large-scale wind power plant may be up to 100% of costs, if the applicant shows that support is essential for the establishment to take place [12]. Grants are provided for technology development and market introduction in collaboration with trade and industry as well for environmental impact studies. Although grants will be valid till 31 December 2012, it is presently not possible to apply for grants since the limitation has been already reached. In 2003-2007 350 million SEK (36.68 million €) and in 2008-2012 also 350 million SEK (36.68 million €) were allocated [18].

3 Details RES-Heating and Cooling Support Policy

Subsidies

In 2010 subsidies for RES-H were provided under two regulations: the Regulation No 2008:1247 on Financial Support for Solar Heating [13] and Regulation No 2005:1255 on Support for Conversion from Direct-Acting Electricity Heating in Residential Buildings [14]. Under the first regulation, support was provided for installations of solar heating devices for hot water, as well as hot water and heating or cooling in 2009-2010. Under the second regulation, support was provided for a converting of direct electricity heating systems to systems connected to district heating, installation of heat pumps and through installation of biomass heating. Support was provided for actions commenced on or after 1 January 2006 and completed by 31 December 2010.

Tax Exemptions

RES-H is supported in an indirect way by raising taxes on fuels. In accordance to the Law on Energy Tax [7], energy products used for heat production are subject to energy, CO₂ and in certain cases sulphur tax [8]. Energy and CO₂ tax is not paid for wood, briquettes, pellets, peat. However, peat is subject to sulphur tax.

Building Obligations

Regulation BBR No. 2006:22 on Building, Section 9 "Energy management" states that dwellings shall be designed in such way that the specific energy consumption of the building does not exceed the determined energy level [15]. This level is set depending on the climate zone the dwelling is assigned to and a number of dwellings per building. It is mentioned that the specific energy consumption of the building may be reduced with energy from thermal solar collectors and photovoltaic solar cells installed at the building. Similar requirements hold for non-residential premises.

4 Details RES-Transport Support Policy

The primary target is to ensure that 5.75% of transport fuels are produced on the basis of renewable resources in 2010 and 10% by 2020.

Tax relief

Sweden promotes the use of ethanol and bio-diesel through a tax relief. There are no energy taxes for ethanol or biodiesel (Table 2).

Table 2. Energy, carbon dioxide and sulphur taxes for motor fuels in Sweden since 1 January 2010 [8]

Energy source	Energy tax	Carbon dioxide tax	Sulfur tax	Total tax
Natural gas/methane, - SEK/m ³ - €/m ³	0.00 0.00	1.35 0.14	0.00 0.00	1.35 0.14
Diesel fuel, - SEK/liter - €/liter	1.33 0.14	3.01 0.32	0.00 0.00	4.34 0.46
LPG, - SEK/kg - €/kg	0.00 0.00	1.67 0.18	0.00 0.00	1.67 0.18
Petrol, unleaded, environment class 1, - SEK/liter - €/liter	3.06 0.32	2.44 0.26	0.00 0.00	5.50 0.58
Ethanol/RME, SEK/liter (€/liter)	0.00	0.00	0.00	0.00

No energy and carbon dioxide taxes are levied on ethanol, rapeseed oil methyl ester (RME) or biogas.

Further support

Some regulations are accepted to promote environmentally friendly cars. Regulation No 2009:1 on Environmental and Traffic Safety Requirements for Authority Vehicles and Journeys stipulates that governmental authorities buy or lease green cars [16]. This provision is not applied to emergency vehicles and cars with more than four seats in addition to the driver. Act No 2006:228 on Special Provisions Concerning Vehicle Tax exempts environmental cars from vehicle tax [17].

Regulation No 2009:938 on State Aid for Production, Distribution and Use of Biogas and other Renewable Gas aims to promote energy technologies that are beneficial from a climate perspective, but not yet commercially competitive [19]. The support should contribute to efficient and expanded production, distribution and use of biogas and other renewable gas. The aid may cover not less than 45% of eligible costs. The support for a project may not exceed 25 million SEK (2.6 million €).

The new Government Bill affirms that Sweden's rural development program for 2007-2013 should be directed to support and improve the production and processing of RES. Sweden also provides investment support for planting forests for energy use in the country.

5 RES-E Grid Integration

Access of RES-E to the grid is subject to the general provisions set in the Electricity Act that came into effect on 1 January 1998 [20]. The costs arising from the usage of the grids by RES-E are borne by the plant operators, who pay a grid usage fee. Plants of less than 1.5 MW are subject to a reduced fee. The Swedish electricity legislation treats entities on equal terms and no special priority to the grid is given with the current regulatory framework, either for different types of electricity generation installation or for electricity consumers [20].

6 RES Production, Potential and Market Development

RES-E

The share of RES-E in the total electricity demand amounted to about 51.0% in 2007 compared to 49.1% in 1997.

Hydropower is the largest source of RES-E in Sweden. In 2007, hydropower generated over 66,159 GWh, which corresponds to over 86% of RES-E generation. The RES-E production from biomass showed the strongest growth during 1997-2007. In 2007, solid biomass contributed 8,496 GWh towards electricity generation. Biowaste also generates substantial amounts of electricity (472 GWh in 2007) and is growing. Generation of electricity from wind was recently initiated in Sweden (both onshore and offshore) and had reached 1430 GWh in 2007 (401 GWh from offshore).

RES-T

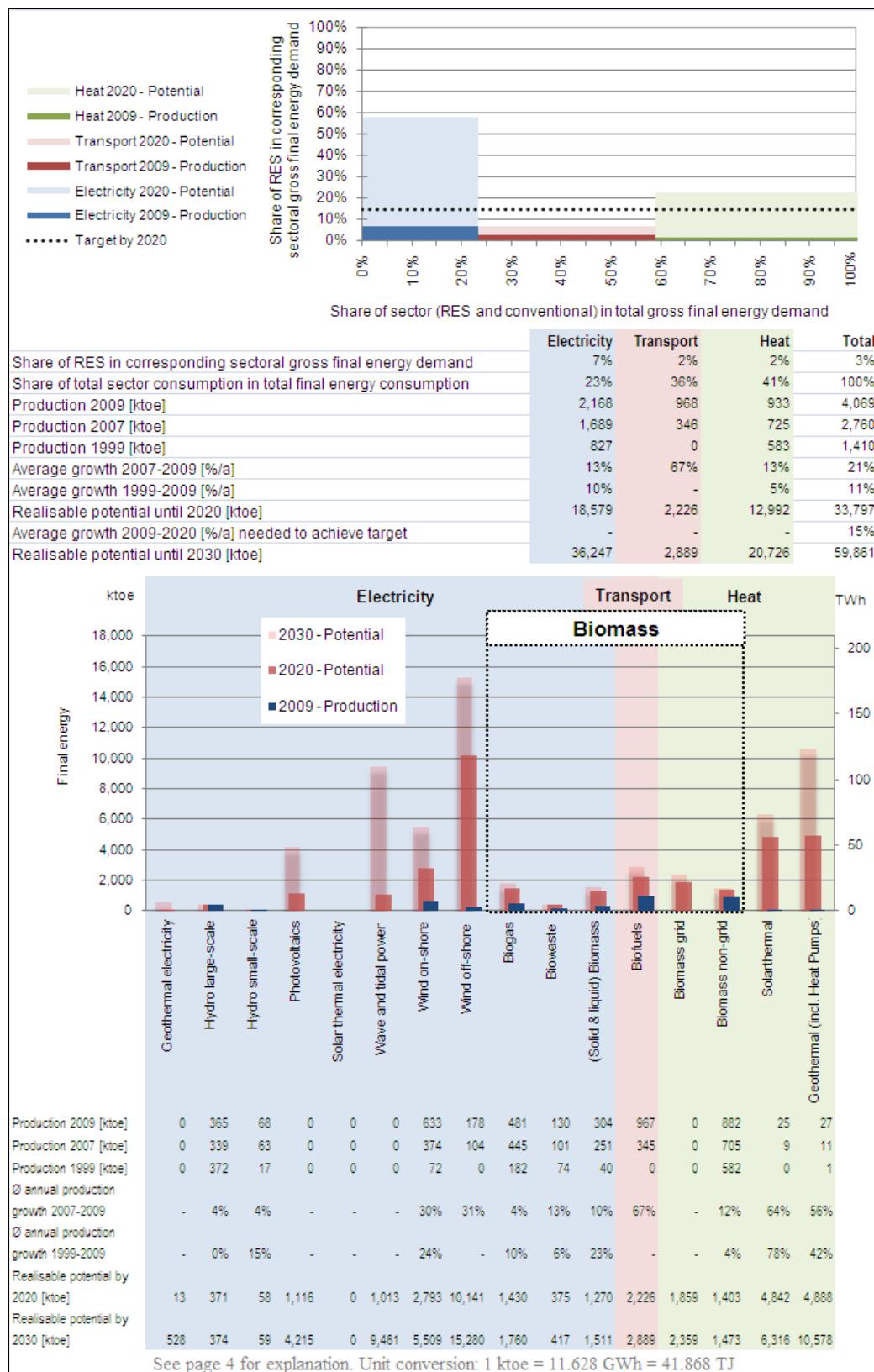
In Sweden, the consumption of biofuels has increased in the past few years. Biodiesel consumption increased almost twofold in comparison to 2006. In 2007, bioethanol consumption amounted to 182 ktoe and biodiesel to 102 ktoe. Around 64% of biofuel consumption in Sweden in 2007 was bioethanol, and around 36% was biodiesel.

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UNITED KINGDOM - Summary: RES Target, Production and Potential



Summary of most important policy changes since last country profile (autumn 2009)

There have been a number of key RES policy updates in the UK since October 2009. In April 2010 the feed-in tariff (FIT) was launched, providing support to RES-E projects of less than 5MW. Significant changes have also been announced for the operation of the Renewables Obligation (RO), the UK's primary policy instrument for promoting large-scale RES-E generation. These include increased support for offshore wind, the introduction of sustainability requirements for biomass and most recently proposals to discontinue the scheme from 2017 and introduce an expanded FIT to cover all RES-E generation.

A major new support system for RES-H will be introduced in summer 2011 with the launch of the Renewable Heat Incentive (RHI). This policy instrument is a feed-in tariff for heat, which aims to stimulate the widespread take-up of RES-H in the UK.

1 Summary: RES Support Policy

RES-E

The key policy instruments for the support of RES-E at the national level are the Renewables Obligation (RO) and the recently introduced Feed-in Tariff (FIT).

The RO increased the share of RES-E in the UK from 1.8% in 2002 to 6.6% in 2009. However, a criticism of the RO is that it has led to excessive profits for generators and an increase in costs to consumers, whilst only modestly increasing RES-E deployment. This was partly addressed in April 2009 by the introduction of technology “banding” in the RO. Recently the government proposed to discontinue the scheme from 2017 and introduce an expanded FIT to cover all RES-E generation.

The FIT scheme was launched in April 2010 and targets RES-E projects <5MW. As of February 2011, over 21,000 installations had registered for support, the majority being solar, wind and micro-hydro projects. However, the take-up of farm-scale anaerobic digestion has been lower than expected and there have been concerns that large-scale solar projects (>50kW) will take a disproportionate amount of the available funding. Government is therefore undertaking an early review of the FIT scheme to examine these and other issues that have been identified in the operation of the scheme to date.

RES-H&C

Support for RES-H&C in the UK to date has lacked focus. Currently, the main support instrument is Enhanced Capital Allowances (ECAs), which provides businesses with up-front tax relief on capital investment in designated energy-saving plant and machinery. Although this is of some assistance, the measure is not specific to RES-H. Benefiting from the measure is also reliant on a company making a profit, against which the capital expenditure can be offset.

To meet the UK's overall RES target under the RED, the government is planning to introduce a Renewable Heat Incentive (RHI) in summer 2011. This will initially target the non-domestic sector, followed by the domestic sector in October 2012.

RES-T

The primary support instrument for renewable fuel in the UK is the Renewable Transport Fuel Obligation (RTFO), which was implemented on 15 April 2008. This is currently accompanied by a £0.20 per litre fuel duty exemption on biodiesel produced from used cooking oil which is in place until March 2012.

The RTFO targets increase incrementally to 5% biofuels share in road transport (by volume) in 2013/14. Following the UK Government's Gallagher Review (July 2008), which expressed concerns about the indirect effects of biofuels, quota targets were reduced (original target was to reach 5% already in 2010/11). The key changes to the RTFO in 2011 will be to assimilate it to the requirements of the RED, specifically with regard to mandatory Carbon and Sustainability requirements, but also to implement aspects such as the double counting of advanced biofuels and wastes and residues.

2 Details RES-Electricity Support Policy

Renewables Obligation

The primary support mechanism for RES-E in the UK is the Renewables Obligation (RO), a quota system with tradable green certificates known as Renewables Obligation Certificates (ROCs).

The legislation is divided into the Renewables Obligation (for England and Wales), the Renewables Obligation Scotland (SRO), and the Northern Ireland Renewables Obligation (NIRO). These schemes are managed by the Department of Energy and Climate Change, DECC, (<http://www.decc.gov.uk>), the Scottish Government (<http://www.scotland.gov.uk>) and the Department of Enterprise, Trade and Investment for Northern Ireland (<http://www.detini.gov.uk>) respectively. The scheme is administered by the UK electricity regulator, the Office of Gas and Electricity Markets, Ofgem, (<http://www.ofgem.gov.uk>).

The RO is periodically revised. For example, in April 2009, “technology banding” was introduced into the scheme (see below). The Government intends to review the bands in accordance with the future phases of the EU Emissions Trading Scheme, implying that the current bands will be effective until April 2013. DECC announced in December 2010 that it intends to consult on the new banding levels for 2013 in summer 2011 and confirm the bands by autumn 2011, one year ahead of the original schedule²⁴⁷ to give more certainty to the market on future banding levels.

The RO is an existing instrument. The primary legislation governing the RO is the Renewables Obligation Order (England and Wales), the Renewables Obligation Order (Scotland) and the Renewables Obligation (Northern Ireland).

The RO was introduced in England, Wales and Scotland in April 2002 and in April 2005 in Northern Ireland. The scheme was originally set to run until March 2027. In 2010, the previous Government administration extended the scheme until 2037. However in December 2010 the new Coalition Government proposed in the Electricity Market Reform (EMR)²⁴⁸ consultation to discontinue the RO from 2017 and to instead extend support for RES-E under an expanded FIT from 2013 (see section on the FIT). Under this proposal, generators would be able to make a one-off choice between the RO and FIT between 2013 and 2017. Alternatively, another option could be to introduce the expanded FIT in 2017 so that one RES-E policy instrument is available at any one time. Although installations would still receive RO support for up to 20 years, it is unclear what implications these options will have on the ROC market post 2017.

From April 2010, plants under 50kW will no longer qualify for support under the RO, but are instead eligible for support under the recently introduced FIT scheme (see below). Maximum size limits are in place for specific technologies. Support for tidal impoundment is restricted to projects below 1GW declared net capacity (dnc). Large hydro projects (20MW dnc) that were commissioned before April 2002 are also excluded.

247 http://www.decc.gov.uk/en/content/cms/news/pn10_126/pn10_126.aspx

248 <http://www.decc.gov.uk/assets/decc/Consultations/emr/1041-electricity-market-reform-condoc.pdf>

There is no cap on the volume of new installations that can qualify for support under the RO. However, since April 2006 there has been a 10% limit in place on the proportion of ROCs from co-firing of biomass with fossil fuel that an obligated party may use towards its obligation. This cap increased to 12.5% in April 2010 ("energy crops" such as miscanthus and short rotation coppice willow and poplar will be excluded from the cap).

A RES-E project can be supported by the RO in addition to other support measures (for example the Climate Change Levy exemption described below). Projects cannot receive support under both the RO and the FIT however.

RO support is not conditional on certified equipment or certified installers.

The RO places an obligation on all licensed UK suppliers of electricity to supply an increasing proportion of their electricity from renewable sources. Electricity suppliers can meet their obligation:

- by surrendering ROCs to Ofgem as evidence of renewable electricity generation;
- by paying the non-compliance "buy-out" price; or
- by a combination of the two.

Targets for the RO, as well as the level of the buy-out price each year can be found in Table 5: RO targets, buy-out price and amount recycled over time. The buy-out price is adjusted annually in line with the retail price index. Payments are fed into a buy-out fund that is recycled annually to electricity suppliers in proportion to the number of ROCs they surrendered in the compliance period.

Table 5: RO targets, buy-out price and amount recycled over time

Year	Targets *	Non-compliance buyout price		Amount recycled **	Total "worth" of ROC ** (buyout + recycle)	
	% supply (consumptio n target)	£/MWh	€/MWh ***		£/MWh	€/MWh ***
2002/03	3	30	34.95	15.94	45.94	53.52
2003/04	4.3	30.51	35.54	22.92	53.43	62.25
2004/05	4.9	31.39	36.57	13.66	45.05	52.48
2005/06	5.5	32.33	37.66	10.21	42.54	49.56
2006/07	6.7	33.24	38.72	16.04	49.28	57.41
2007/08	7.9	34.30	39.96	18.65	52.95	61.69
2008/09	9.1	35.76	41.66	18.61	54.37	63.34
2009/10	9.7	37.19	43.33	15.17	52.36	61.00
2010/11	11.1	36.99	43.09	n/a	n/a	n/a
2011/12	12.4	38.69	45.07	n/a	n/a	n/a
2012/13	Targets will be set by DECC prior to the start of the obligation period	Increases in line with retail price index				
2013/14						
2014/15						
2015/16						

* Targets for Northern Ireland (NI) are lower than the other two regions (England and Wales, and Scotland). Targets for NI electricity suppliers are 4.27% in 2010/11.

** From 1 April 2005 the single recycling mechanism was introduced, making the amount recycled per ROC equal across all three regions (England and Wales, Scotland, and Northern Ireland).

*** Exchange rate used £1: €1.165

The targets in Table 1 were originally based on a “headroom” of 8% (i.e. difference between target and estimated RES-E) up to 2015/16. The headroom was increased to 10% in April 2011 following concerns that RES-E will meet the RO targets before 2015/16, resulting in the ROC price crashing. Targets will therefore now be set on an annual basis prior to the start of the obligation period.

The technologies covered by the RO include: Wind (onshore and offshore), bioenergy (landfill gas, sewage gas, biomass combustion and co-firing, anaerobic digestion), advanced biomass and waste conversion technologies (gasification, pyrolysis), solar photovoltaic, hydro, tidal (stream and impoundment), wave, geothermal and geopressure.

The RO was originally set up on a technology neutral basis, whereby 1 ROC was issued for every 1 MWh of eligible renewable electricity. From April 2009, the RO has been ‘banded’; the number of ROCs awarded per MWh is now dependent on the technology type. Support to emerging technologies has been ‘banded-up’ and support to established technologies has been ‘banded down’. The following ROCs are earned for each MWh of RES-E generated:

- 0.25 ROCs/MWh for Landfill gas²⁴⁹;
- 0.5 ROCs/MWh for Co-firing of non-energy crop biomass (with a cap on the proportion of a supplier's obligation that can be met through co-firing), Sewage gas;
- 1 ROC/MWh for Onshore wind, Hydro-power, Co-firing of energy crops, Co-firing of biomass with CHP, Energy from waste with CHP, Geopressure, Standard gasification and pyrolysis;
- 1.5 ROCs/MWh for Offshore wind, Dedicated regular biomass, Co-firing of energy crops with CHP; and
- 2 ROCs/MWh for Dedicated energy crops, Dedicated energy crops with or without CHP, Dedicated biomass with CHP, Wave, Tidal-stream, Tidal impoundment <1GW (barrage and lagoon), Advanced gasification and pyrolysis, Anaerobic digestion, Solar photovoltaic, Geothermal, Microgeneration (50kW or less) regardless of technology.

In the April 2009 budget, the Government announced that it was temporarily increasing the banding for offshore wind from 1.5 to 2 for projects that reach financial close between 23 April 2009 and 31 March 2010, and from 1.5 to 1.75 for projects that reach financial close between 1 April 2010 and 31 March 2011 (on the proviso that offshore works start prior to the end of 2011/12 respectively). This decision was later extended so that all offshore wind projects accredited between 1 March 2010 and 31 March 2014 will now qualify for 2 ROCs per MWh.

Furthermore, the Government announced in December 2010 that it would introduce “phasing” for offshore wind projects accredited after 31 March 2011, where generators

249 Northern Ireland has not banded landfill gas, which remains at 1 ROC/MWh.

can register the installed capacity for the project in up to five phases (with a minimum of 20% in the first phase)²⁵⁰. Each phase will be eligible for support for 20 years (up to 2037).

In March 2009, Ofgem updated the RO to disqualify support for RES-E using biodiesel produced using methanol derived from fossil fuel sources. However, this decision has been updated so that from April 2011 ROCs are awarded for the renewable portion of the fuel. Furthermore, ROC eligibility for electricity generated from bioliquids will be dependent upon meeting mandatory sustainability requirements from April 2011, in line with the requirements of the RED (Renewable Energy Directive).

In December 2010, the Government announced its intention to introduce mandatory sustainability reporting in April 2011 for generators of 50kW or above using solid or gaseous biomass. From April 2013, support for generators of 1MW and above ROC will be conditional on meeting the sustainability criteria (including a minimum greenhouse gas savings target of 60%)²⁵¹.

ROCs can be traded through bilateral contracts at any time, or traded via auctions which are held monthly. It is possible to bank ROCs for one year. For example, ROCs issued in 2010/11 may be used for compliance in 2010/11 or 2011/12, but not after this period. In any year, banked ROCs can only be used to meet a maximum of 25% of a supplier's obligation.

Annual compliance periods run from 1 April one year to 31 March the following year. Separate ROCs are issued to generators in Scotland (SROCs) and Northern Ireland (NIROCs), but the three types of certificate are fully tradable and all can be used by any UK electricity supplier for compliance with the RO.

There is no minimum or maximum price for ROCs. The price is determined by the market. The value of a ROC is dependent on the price a generator can achieve for trading their ROCs and is equivalent to:

- The buy-out penalty paid by suppliers who do not meet their obligation; plus
- The amount recycled back from the buy-out fund to suppliers in proportion to the number of ROCs they used for compliance.

The buy-out recycling mechanism gives suppliers an extra incentive to hold ROCs and has so far kept the ROC market price above the buy-out price.

For example, for the 2009/10 period: the buy-out payment was £37.19; plus the recycle of £15.65; gives a ROC "value" of £52.36 (see Table 5: RO targets, buy-out price and amount recycled over time). This calculation forms the basis of the value of a ROC.

The most recent ("e-ROC") auction was held in February 2011. Over 31,000 ROCs were traded in the auction at an average ROC price of £48.60 (~56.62 €/MWh).

²⁵⁰ DECC, Government Response to the Statutory Consultation on the Renewables Obligation Order 2011,
See chapter 1. <http://www.decc.gov.uk/assets/decc/Consultations/Renewables%20Obligation/1059-gov-response-ro-order-2011-cons.pdf>

²⁵¹ DECC, Government Response to the Statutory Consultation on the Renewables Obligation Order 2011,
See chapter 2. <http://www.decc.gov.uk/assets/decc/Consultations/Renewables%20Obligation/1059-gov-response-ro-order-2011-cons.pdf>

The lowest average price for ROCs traded via auction was £38.42 back in January 2006, and the highest was £53.27 achieved in July 2008. Average ROC prices in 2009 and 2010 were £50.72 and £47.65 (~€59.09 and €55.51) respectively. Future ROCs are not traded.

E-ROC auction price data is publicly available. Historic trading prices of ROCs can be found at: <http://www.eroe.co.uk/trackrecord.htm><http://www.nfpas.co.uk/nfpas/trackrecord.htm>.

Projects accredited under the RO before 26 June 2008 will receive ROCs until 2027 at the latest (or project end date), while projects accredited after 26 June 2008 will receive ROCs for a maximum period of 20 years. As previously indicated, Government proposes to expand the FIT scheme in 2013 to include large-scale RES-E generators and discontinue the RO from 2017.

Feed-in Tariff

The UK Government introduced a renewable electricity FIT scheme in 2010. Regulatory aspects of the scheme are managed by DECC and the scheme is administered by Ofgem. Additional information on this instrument can be found on DECC's website²⁵².

The FIT became operational on 1 April 2010. No end date has yet been announced, however the FIT will provide support for a period of between 20 to 25 years (depending on the technology).

The Government originally intended to conduct the first major review of the FIT scheme in-line with the review of the RO "rebanding" discussed above and to implement any changes to the scheme resulting from this review in April 2013. However, this review has been brought forward. This follows the target set in the Spending Review, conducted in October 2010, of delivering £40m (10%) efficiency savings in the scheme by 2014/15 (effectively capping the budget at £360m). Government has also expressed concerns over the rapid take-up of large-scale solar projects (>50kW) under the FIT (and that these projects will consume a disproportionate amount of the total available funding) and furthermore that the take-up of farm-scale AD projects (<500kW) has been lower than anticipated.

Following on from these concerns, a 'fast-track' consultation review²⁵³ of the scheme was announced on 18 March 2011 (and closing 6 May 2011), which proposes new tariffs for large-scale solar and farm-scale AD (see below). It is proposed that the new tariffs will be effective from 1 August 2011 and for new scheme entrants only (i.e. not imposed retrospectively). Alongside this review a 'comprehensive' review²⁵⁴ of the scheme will also take place by the end of 2011, focussing on tariff levels, degression rates and methods, eligibility of technologies and interaction with other policies. Tariff levels will remain unchanged until April 2012 (unless the review reveals a need for greater urgency).

A maximum size of 5MW is set for projects to receive support under the FIT (over 5MW support is through the RO). There is no minimum plant size; however projects under

²⁵²http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/feedin_tariff/feedin_tariff.aspx

²⁵³ http://www.decc.gov.uk/en/content/cms/consultations/fit_review/fit_review.aspx

²⁵⁴http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/feedin_tariff/review/review.aspx

50kW can only receive support under the FIT, while projects between 50kW and 5MW are eligible to choose whether they would like support under the RO or the FIT.

A RES-E project can be supported by the FIT in addition to other support measures (for example the Climate Change Levy exemption described below). Projects cannot receive support under both the RO and the FIT however.

This scheme is a feed-in tariff and not a feed-in premium and is payable for renewable electricity used on-site or exported to the grid.

The conditions to receive the FIT support are that the RES-E project is <5MW and that the technology is one of those listed in Table 6. Support for projects under 50kW is conditional on Microgeneration Certified Scheme (MCS) certified equipment and installation by a MCS certified installer. Prospective generators intending to receive FITs will also need to ensure they have any necessary physical connections to the electricity distribution and transmission system and, if necessary, the right to export to the market.

There is currently no proposal to cap the total volume of electricity produced per year, or per technology or of installed capacity that is entitled to receive the FIT, although this may change following the 2011 review of the FIT scheme.

Table 6: FIT tariffs per technology for 2011/12 (for existing installations installed in 2010/11 and new installations installed in 2011/12).

Technology	Scale	Tariff (£p/kWh)	Tariff (€cent/kWh)*
Anaerobic Digestion	>500kW	9.4	11.0
Anaerobic Digestion	<500kW	12.1	14.1
CHP255	2kW	10.5	12.2
Hydro	<15kW	20.9	24.4
Hydro	15–100kW	18.7	24.4
Hydro	100kW–2MW	11.5	13.4
Hydro	>2MW	4.7	5.5
PV	<4kW (new build)	36.1	42.1
PV	<4kW (retrofit)	41.3	48.1
PV	4–10kW	36.1	42.1
PV	10–100kW	31.4	36.6
PV	100kW–5MW	30.7	35.8
PV	Stand alone system	30.7	35.8
Wind	<1.5kW	36.2	42.2
Wind	1.5–15kW	28.0	32.6
Wind	15–100kW	25.3	29.5
Wind	100–500kW	19.7	23.0
Wind	500kW–1.5MW	9.9	11.5
Wind	>1.5MW	4.7	5.5
Existing microgenerators transferred from the RO (accredited under the RO on or before 31 March 2010)		9.4	11.0
Export tariff		3.1	3.6
* Exchange rate used £1: €1.165			

255 The tariff is available for the first 30,000 units only.

As can be seen from the table above, the FIT support decreases with technology size. The site quality has no bearing on the tariff, however.

Table 7: Proposed FIT tariffs for Solar PV (>50kW) and AD (<500kW) to be implemented from 1 August 2011 (for new installations only). provides an overview of the proposed new tariff rates for Solar PV (>50kW) and AD (<500kW). These reflect significant reductions for Solar PV, particularly for installations >100kW.

Table 7: Proposed FIT tariffs for Solar PV (>50kW) and AD (<500kW) to be implemented from 1 August 2011 (for new installations only).

Technology	Existing Scale	Proposed Scale	Existing Tariff (£p/kWh)	Proposed Tariff (£p/kWh)	Proposed Tariff (€cent/kWh)*
Anaerobic Digestion	<500kW	<250kW	12.1	14	16.3
Anaerobic Digestion		250-500kW		13	15.1
Solar PV	10-100kW	50-150kW	32.9	19	22.1
Solar PV	100kW-5MW	150-250kW	30.7	15	17.5
Solar PV		250-5MW	30.7	8.5	9.9
Solar PV	Stand alone	Stand alone	30.7	8.5	9.9

A project will receive the FIT for 20 years (25 years for solar) and will be guaranteed to remain at the same generation tariff level for the whole support period, subject to an annual inflationary linked adjustment. Tariffs for new projects for specific technologies will be reduced annually to reflect expected decreases in technology costs (fixed “degression” rates). The tariff reduction is in line with the expected technology cost reductions for different technologies at different scales (e.g. 7% for PV, 4% for wind <1.5kW and 3% for wind between 1.5 and 50kW). Revised FIT tariffs will be applied to new scheme entrants only.

Feed-in Tariff (> 5MW) – proposed options

In the EMR consultation (which ran from December 2010 to March 2011), a number of options were presented for the design of a FIT for large-scale electricity producers. These include a:

- Fixed FIT (fixed tariff per unit electricity regardless of the wholesale price)
- Premium FIT (fixed premium on top of the variable wholesale electricity price)
- FIT with Contract for Difference (CfD): Generators sell their electricity into the market, and then, depending on the price, either receive a top-up payment or, are required to repay revenues. The top-up payment or repayment is calculated as the difference between the average market wholesale price and the agreed tariff level.

DECC's stated preference in the consultation is to implement a FIT CfD based tariff. Proposals to implement any changes will be launched in late Spring 2011.

Climate Change Levy Exemption

The Climate Change Levy (CCL) is an environmental tax on industrial and commercial users of electricity (domestic and transport sectors are excluded); RES-E generation is exempt from the levy.

The Treasury takes the policy lead on the CCL (<http://www.hm-treasury.gov.uk>). Guidance for generators and suppliers on the CCL and the CCL exemption for renewables is published by Ofgem (<http://www.ofgem.gov.uk>).

The levy in 2010/11 is set at £4.70/MWh (5.48 €/MWh) and typically rises annually according to the retail prices index (the 2009/10 levy was not increased). Levy Exemption Certificates (LECs) are issued by Ofgem for eligible renewable energy generation and are earned to prove exemption from the Climate Change Levy.

The CCL came into operation in April 2001 and is regulated by the Finance Act 2000. No end date (or duration) has been set for the CCL by the Government. There is therefore no guarantee that it will remain in place for the duration of the project's lifetime.

The CCL exemption is valid for RES-E generation from any plant size; there are no minimum or maximum size thresholds. In addition, there is no cap in place for the LECs that are issued by Ofgem.

Individual RES-E projects can be supported by more than one measure, such as the RO or FIT described above.

The CCL exemption is not conditional on the use of certified equipment or certified installers.

3 Details: RES-Heating and Cooling Support Policy

Support for renewable heating and cooling in the UK to date has lacked focus. The main support instrument currently is Enhanced Capital Allowances (ECAs). There have also been a number of grant schemes available for bioenergy, although most of these are now closed. The Government has forecast that they would need to increase RES-H to 12% of heat demand in 2020 to meet the UK's overall RES target under the RED. To achieve this they plan to introduce a Renewable Heat Incentive (RHI) from summer 2011 to boost RES-H deployment.

Renewable Heat Incentive

To help the UK boost currently low levels of RES-H to help meet the UK's RES target for 2020, the government plans to introduce a Renewable Heat Incentive (RHI) in summer 2011, a feed-in tariff for heat. Regulatory aspects of the scheme will be managed by DECC and the scheme will be administered by Ofgem. Additional information on this instrument can be found on DECC's website²⁵⁶.

²⁵⁶http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/policy/incentive/incentive.aspx

The Energy Act 2008 (Section 100) allows for the setting up of the RHI, which would provide financial assistance to generators of renewable heat of all scales and to some producers of renewable heat, such as producers of biomethane.

The RHI will be launched in two phases. Initially only the non-domestic sector will be supported. The RHI will be extended to include the domestic sector and other renewable heat technologies in October 2012. Between 2011 and October 2012, the Government intends to launch a £15m (~17,5 mio €) Renewable Heat Premium Payment scheme, which will provide support to the domestic sector, and specifically target those households who are not connected to the gas grid. DECC intends to provide further details of this scheme shortly²⁵⁷. The RHI will remain open until at least 2020 with payments guaranteed for a period of 20 years from entry to the scheme.

A total of £860m (~1 bln €) has been set aside for the RHI over the period 2011 to 2014. The scheme is being funded out of general taxation, rather than as a levy on suppliers of fossil fuels for heat as had been previously proposed.

A RES-H project cannot be supported by the RHI in addition to support measures such as capital grant schemes that (have) contribute(d) to the direct cost of the installation (for example the Low Carbon Building Programme II and Bio-energy Capital Grants Scheme – see below). It will be possible to pay back the grant and receive support under the RHI.

CHP projects completed after 15 July 2009 will not be able to qualify for both RHI and RO support, if the 0.5 ROC CHP uplift is being claimed. For phase 2, DECC is considering allowing CHP projects to make a one-off choice between the RO plus uplift, or the RO minus uplift and RHI.

The RHI scheme will initially provide support for those RES-H technologies listed in Table 8: Proposed RHI tariffs per technology for 2011/12. and is only eligible for heat installations that have been accredited by Ofgem. Although not listed in the table, District Heating is eligible for support where the heat is produced by a RHI-eligible technology, although there is no additional support for the costs of constructing the piping network. Co-firing of biomass with fossil fuel, fossil fired CHP, waste heat from fossil fuel, exhaust air heat pumps and transpired solar thermal panels are excluded from the scheme.

RHI support for projects under 45kWth is conditional on Microgeneration Certified Scheme (MCS) certified equipment and MCS certified installers (or equivalent standard).

There is currently no proposal to cap the total heat produced per year, or per technology or of installed capacity that is entitled to receive the RHI. However, tariff rate “degression” will be introduced into the scheme from 2012 (where tariff rates decrease automatically once a specific installed capacity has been reached). The scheme will be reviewed every four years, with the first review in 2014 for implementation in 2015.

²⁵⁷ DECC has indicated that likely suport levels will be: Solar Thermal - £300/unit, Air Source Heat Pumps – £850/unit, Biomass Boilers - £950/unit, Ground Source Heat Pumps - - £1,250/unit.

Table 8: Proposed RHI tariffs per technology for 2011/12.

Tariff name	Eligible technology	Scale	Support calculation	Tariff (£p/kWh)	Tariff (€cent/kWh)*
Small biomass	Solid biomass; Municipal Solid Waste ²⁵⁸ (inc. CHP)	<200 kW _{th}	Metering. Tier 1 applies annually up to the "Tier break", Tier2 above the "Tier break" ²⁵⁹ .	Tier 1: 7.6 Tier 2: 1.9	Tier 1: 8.9 Tier 2: 2.2
Medium biomass		200 – 1,000 kW _{th}		Tier 1: 4.7 Tier 2: 1.9	Tier 1: 5.5 Tier 2: 2.2
Large biomass		>1,000 kW _{th}	Metering	2.6	3.0
Small ground source	Ground source heat pumps; Water source heat pumps, deep geothermal	<100 kW _{th}	Metering	4.3	5.0
Large ground source		>100 kW _{th}	Metering	3	3.5
Solar thermal	Solar thermal	<200 kW _{th}	Metering	8.5	9.9
Biomethane	Biomethane injection and biogas combustion, except from landfill gas	Biomethane all scales, biogas combustion less than 200 kW _{th}	Metering	6.5	7.6

Bioliquids will not be supported in 2011, although DECC will consider providing support in 2012, taking into account the sustainability requirements of the RED. DECC has also indicated that it intends to introduce mandatory sustainability criteria for biomass heat over 1MW_{th} from April 2013. Similarly, biomethane produced from landfill gas, air source heat pumps, direct air heating and Solid Recovered Fuel (unless derived from Municipal Solid Waste) may also be included in 2012.

It is proposed that a project will receive the RHI for 20 years. Payments are guaranteed to remain at the same generation tariff level for the whole support period, subject to an annual inflationary linked adjustment. RHI tariffs are likely to change over time but the revised tariffs will be applied to new scheme entrants only.

258 For MSW, the biomass content will be assumed to be 50%, unless it can be proved that the actual content is higher.

259 The "Tier Break" is a specified annual heat output and is calculated as: installed capacity x 1,314 peak load hours, i.e. kW_{th} x 1,314. The intention of introducing the Tier Break is to prevent that more heat than necessary is used

Enhanced Capital Allowances

ECA's provide businesses with up-front tax relief on capital investment in designated energy-saving plant and machinery. The Energy Technology List²⁶⁰ (ETL) details the energy-saving criteria for each type of technology, and lists those products in each category that meet them. The ETL currently covers 16 categories of technology. It is managed by the Carbon Trust, on behalf of the Government, and has two parts:

- The Energy Technology Criteria List (ETCL), which is reviewed annually to take account of technological development and market changes. It sets out the qualifying energy-saving criteria for each class of technology. New technology groups could be added as part of the annual review, but they must have the approval of the Department for Energy and Climate Change (DECC), Her Majesty's Revenue and Customs (HMRC) and the Treasury.
- The Energy Technology Product List (ETPL) is updated at the start of each month and lists the products and technologies that are eligible for an ECA.

The ECA scheme was introduced in 2001 as part of the government's Climate Change Programme. There is no proposed end date for the scheme.

The scheme is open to all businesses that pay UK corporation or income tax, regardless of size, sector or location. There is no defined maximum ceiling – a company can claim for any item on the ETL. Some products on the ETL may typically be sold as part of a larger product that is not on the ETL – for example an ETL motor that sits within a non-ETL compressor. In this case there is a list of maximum claim values for the products on the ETL. Companies can claim the value of their compressor that corresponds to just the motor part.

100% first-year ECAs allow the full cost of an investment in designated energy-saving plant and machinery to be written off against the taxable profits of the period in which the investment is made. This compares to the normal rate of capital allowances for spending on (non-energy saving) plant and machinery is 25% a year on the reducing balance basis. (So, a company would always be able to claim the same value back, but with ECAs they get the whole value of the tax rebate in the first year, rather than over the lifetime of their investment.)

ECAs can be claimed alongside other policies and measures. (Because the measure relates to a tax and is stated in the Finance Act, it is the highest level of legislation and a company can not be stopped from claiming against the policy.)

For example, it would be possible for a company to claim exemption to the Climate Change Levy (if they meet their energy saving target specified in their Climate Change Agreement) and claim ECAs on any energy saving technology investment they have made. It is also possible for a company to claim ECAs if they have used a 0% interest loan under the Energy Efficiency Loans Scheme (mainly for SMEs, administered by the Carbon Trust which expires on 28 March 2011).

Grant Schemes

RES-H is or has been also supported through various grant schemes. The major ones being:

260 <http://www.eca.gov.uk/etl>

- Scotland launched a £500,000 interest free loan scheme in March 2011 for the domestic sector for the installation of renewable heat and electricity technologies. This follows the delay in introducing the RHI. Funds are on a first-come-first served basis and are to be used to offset the upfront investment cost, up to a maximum of £2,000 per installation.
- The Bio-energy Capital Grant Scheme²⁶¹ was administered by DECC and aimed to promote the efficient use of biomass for energy by stimulating the early deployment of biomass fuelled heat and biomass CHP projects (including anaerobic digestion for heat only or CHP) by awarding capital grants towards the cost of equipment in complete installations. The scheme was aimed at businesses, organisations and charities in the commercial, industrial and community sectors in England only (note: not available in Scotland, Wales or Northern Ireland). The grant was set at a maximum of 40% of the difference in the cost of the installation compared to installing the fossil alternative. There was no minimum grant aid in any one application and the maximum was £100,000 per installation. The sixth round of the scheme closed on 31 March 2010 and the scheme will not be continued.
- The Wood Energy Business Scheme (WEBS)²⁶² is run by the Forestry Commission Wales, for Wales. Grants are available to support the installation of wood-fuelled heating and CHP. The second round of the scheme is now open for applications with a fund size of £17m. The scheme runs until 2013.
- The Scottish Biomass Heat Scheme²⁶³ was administered by the Scottish Government, and was open to small and medium scale enterprises (SMEs) in Scotland to apply for funding to install biomass heating systems in business premises and district heating demonstrators. In total £3.3 million of funding was available between April 2009 to March 2011.
- No specific grant support is currently available for biomass heat in Northern Ireland.
- The Carbon Trust Biomass Heat Acceleration project²⁶⁴ has made available £5million funding for R&D over the 5 year period from 2006. It was announced in March 2011 that this project will not be continued.

RO Support for CHP

The RO supports the use of Good Quality Combined Heat and Power (GQCHP). For example, co-firing biomass or the combustion of dedicated biomass qualifies for additional support under the RO compared to RES-E only generation. GQCHP is also exempt from the CCL.

261 <http://www.bioenergycapitalgrants.org.uk/>

262 <http://www.forestry.gov.uk/website/forestry.nsf/byunique/infd-7njg2e>

263 <http://www.usewoodfuel.co.uk/>

264 <http://www.carbontrust.co.uk/technology/technologyaccelerator/biomass.htm>

4 Details RES-Transport Support Policy

Renewable Transport Fuel Obligation

The main support instrument for renewable fuels in the UK is the Renewable Transport Fuel Obligation (RTFO).

The government lead on the RTFO is the Department for Transport (DfT)²⁶⁵ who set the renewable fuel targets that obligated parties must meet. These targets have been adjusted once since the scheme began – lowered due to concerns about indirect effects of biofuels. The scheme is currently administered by the Office of the Renewable Fuels Agency (RFA)²⁶⁶, a body specifically set up for the purpose. However, the Government announced in October 2010 that the RFA would be disbanded and its activities transferred to the DfT. This will take effect on 1 April 2011. There is no official timeframe for review or adjustment of the scheme.

The RTFO began on 15 April 2008, put in law by the Renewable Transport Fuel Order²⁶⁷ which was amended in 2009²⁶⁸. The scheme currently operates in annual obligation periods from 15 April one year to 14 April the next. The scheme was initially guaranteed for a 3 year “pilot” period, however it is intended that it will be continued as the main instrument to achieve the EU target of 10% renewable transport fuel at least to 2020.

The obligation is on fossil fuel suppliers (for road transport) who supply more than 450,000 litres of fossil fuel per year. The obligation falls specifically on refiners, importers and any others who supply fossil based road transport fuels at the point at which excise duties become payable.

Originally targets were set at 2.75% renewable transport fuel (by volume) in 2008/09, 3.75% in 2009/10 and 5% in 2010/11. However following the publication of the UK Government's Gallagher Review (July 2008) which expressed concerns about the indirect effects of biofuels, targets were reduced (approved by Parliament in April 2009) to 3.25% in 2009/10 and 3.5% in 2010/11, then increasing by 0.5% per year, reaching 5% in 2013/14. At the moment the obligation is intended to be increased to enable the minimum 10% target to be reached in 2020, although no target increase beyond 5% is confirmed.

Bioethanol and biodiesel currently receive one Renewable Transport Fuel Certificate (RTFC) for every litre supplied; for biomethane this is for every kg supplied. Other biofuels such as biobutanol are eligible under the Order, but to date none has been supplied. All biofuels therefore effectively receive the same level of support (per volume) - there is no “banding” concept as such introduced. However, once the RED has been implemented biofuels produced from wastes or residues, or advanced biofuels meeting the criteria of RED Article 21(2) will be double counted.

265 <http://www.dft.gov.uk/pgr/roads/environment/rtfo/>

266 <http://www.renewablefuelsagency.org/>

267 Renewable Transport Fuel Obligation Order 2007:
http://www.opsi.gov.uk/si/si2007/uksi_20073072_en_1

268Renewable Transport Fuel Obligation Order (Amended) 2009:
http://www.opsi.gov.uk/si/si2009/uksi_20090843_en_1

To earn an RTFC an obligated party must report to the RFA on the Carbon and Sustainability characteristics of the biofuel supplied. From the start this has been a reporting obligation where the results are made publically available – therefore there are no official minimum standards and companies can report “unknown”, but all this information is made public²⁶⁹. Indicative targets for company performance on Carbon and Sustainability were set for the first three years of the RTFO. In the current year, which ends in April 2011, companies should aim to source 80% of biofuels that meet a qualifying environmental standard, biofuels should achieve a minimum 50% GHG saving (according to the RED methodology), and companies should be able to report 90% of information asked of them. The DfT will not continue to set such targets once the RTFO has fully incorporated the RED requirements, as the EC Carbon and Sustainability requirements of the RED will be mandatory. The DfT aims to implement the RED requirements fully by the end of 2011.

RTFCs are tradable. They can be traded bilaterally or via auction websites run by organisations such as NFPAS, a subsidiary of the Non-Fossil Purchasing Agency²⁷⁰. There is no minimum or maximum price cap for certificates. The buy-out price payable if obligated parties do not meet their obligation was increased from £0.15 to £0.30 per litre in April 2010 when the fuel duty incentive was removed (see below).

The buy-out fund is administered by the RFA. At the end of each obligation period the buy-out fund is redistributed to companies who have redeemed RTFCs with the administrator, in proportion to the number of RTFCs they redeemed.

At the most recent (“e-TOC”) auction held in February 2011 no RTFCs were traded. This contrasts to the January 2011 auction where 9 million certificates were traded, the most successful auction to date. The average RTFC price at this auction was £12.5p (~€14.56 cent) for Year 2 certificates and £24.1p (~€14.56 cent) for Year 3 certificates.

E-TOC auction price data is publicly available. Historic trading prices of ROCs can be found at: <http://www.nfpas-auctions.co.uk/etoc/trackrecord.html>

<http://www.nfpas-auctions.co.uk/etoc/trackrecord.html>.

Figure 2: ROC prices in the “e-TOC” auctions from May 2010 (Source: <http://www.nfpas-auctions.co.uk/etoc/index.html>) shows average RTFC prices for the auctions held since May 2010.

269 <http://www.renewablefuelsagency.org/reportsandpublications/rtforeports.cfm>

270 <http://www.nfpas-auctions.co.uk/etoc/index.html>



Figure 2: ROC prices in the “e-TOC” auctions from May 2010 (Source: <http://www.nfpas-auctions.co.uk/etoc/index.html>)

Although there are no official forecasts of RTFC prices, it is likely that they will gain some value in future years if there is a shortage on the market, caused by the increasing percentage obligation and – perhaps more importantly – the introduction of *mandatory* carbon and sustainability criteria from the RED which may mean the supply of qualifying biofuels is lower than it is currently.

RTFCs can be carried over from one year to the next to meet up to 25% of a company's obligation. When the scheme moves over to RED minimum requirements it is intended that only RED-compliant RTFCs will be allowed to be carried over, although the details of this are not yet finalised.

Currently biofuels made from wastes and by-products automatically meet the environmental aspects of the carbon and sustainability reporting, but there is no further specific support. However the DfT plan to change the support level for these biofuels, in line with the double counting element of the RED. Details have yet to be decided.

There is currently no direct support for other renewable transport alternatives under the RTFO – such as hydrogen or electric vehicles – however the scheme has been designed with flexibility in mind to be able to potentially adapt in the future to cover options broader than biofuels.

Tax Exemption

The second element of biofuels support in the UK is a £0.20 per litre fuel tax exemption for biodiesel produced from used cooking oil. Previously the tax exemption also covered biodiesel (since 2002) and bioethanol (since 1 Jan 2005), however this ceased in April 2010. To compensate for this, the RTFO buy out price was increased to £0.30 per litre.

5 RES-E Grid Integration

At present, the grid operator, National Grid, is obliged to grant access to the grid according to non-discriminative criteria. RES-E is therefore not given priority (compared

to conventional generators). However, a public consultation²⁷¹ on "Improving grid access" is currently being held by DECC, which may result in changes to the system for 2010.

RES-E projects do not have priority in case of grid congestions.

Connection charges to the distribution network are considered to be "**shallowish**" in that the connecting generator pays for the assets required to connect it to the distribution network plus a proportion of network reinforcement costs. The costs for network reinforcement are based on an "allocation" basis (i.e. according to the relative share of the project in relation to the total installed capacity in the corresponding period.)

RES-E projects are required to forecast production and to pay for balancing energy if actual production and forecasted production deviate. Balancing costs can either be pre-agreed in bilateral agreements with other generators, or paid to the National Grid based on the spot market. Balancing costs fluctuate greatly between the time of year and time of day, and whether the costs are pre-agreed or subject to the spot market.

6 RES Production, Potential and Market Development

RES-E

To date, RES-E generation in the UK has been dominated by biogas (including landfill gas and sewage gas) and large-hydro. However, these technologies are now well-developed in the UK and are not expected to see further significant growth. The introduction of the RO in April 2002 has led to increased development of onshore wind and solid biomass projects. Both of these technologies now also contribute a significant portion of the UK's RES-E generation. Offshore wind is experiencing rapid growth, albeit from a low base.

Solid biomass has a growing share of RES-E generation and this trend is expected to continue in the coming years, particularly with the RO banding which now awards 1.5 or 2 ROCs per MWh for dedicated biomass. A number of companies have announced their intention to commission large-scale dedicated power stations. These include, Drax Power (3 x 290MW), MGT Power (2 x 300MW), E.on (300MW) and Prenergy (350MW).

Offshore wind is set to play an increasingly important role in the UK's RES-E generation mix. The government has set a target of 25GW additional generation capacity by 2020, on top of the 8GW already built or planned. A major initiative is the 1GW "London Array" project, which will be commissioned by a consortium involving E.ON, Dong Energy and Masdar.

RES-H&C

Current RES-H production in the UK is relatively low. Bioenergy offers however a key resource for providing RES-H in the UK with a large potential and currently contributes to about 1% of energy for heating. Solar thermal and geothermal heat are growing, but

271 Further information can be found at:

http://www.decc.gov.uk/en/content/cms/consultations/improving_grid/improving_grid.aspx

from a very low starting point. The introduction of the RHI in June 2011 is likely to provide a significant boost to the deployment of RES-H in the UK.

RES-T

The introduction of the RTFO in the UK in April 2008 has given a real boost to the UK biofuels market, and the awareness and engagement of stakeholders has risen rapidly. In 2009/10, 1.6 billion litres of biofuels were reported under the RTFO, an increase of 300m litres on the previous year, accounting for 3.3% of the UK transport fuels (and exceeding the target of 3.25%). Of this biofuel, 71% was biodiesel and 29% bioethanol. The UK industry was on the whole disappointed by the UK government decision to slow down the level of biofuel increase following the Gallagher Review, however despite this meeting the increasing biofuels obligation, particularly with mandatory carbon and sustainability requirements, should continue to support the UK biofuels industry.

In 2009 biodiesel production stood at 137 kt, down from 192 kt in 2008²⁷². This ranks the UK at 13th in total biodiesel production across the EU27. In November 2007 the UK's first dedicated bioethanol plant was opened: the Wissington plant in the east of England is owned by British Sugar and will produce 70 million litres of bioethanol per year from sugar beet. In 2009, Ensus opened Europe's largest wheat-to-bioethanol plant at Teesside plant, which has a production capacity of 400 million litres of bioethanol per year.

272 <http://www.eurobserv-er.org/pdf/baro198.pdf>