RENEWABLE ENERGY POLICY COUNTRY PROFILES

2011 version

Based on policy information available in November 2011

Prepared within the Intelligent Energy Europe project

RE-Shaping

Shaping an effective and efficient European renewable energy market

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www.reshaping-res-policy.eu

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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*
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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).

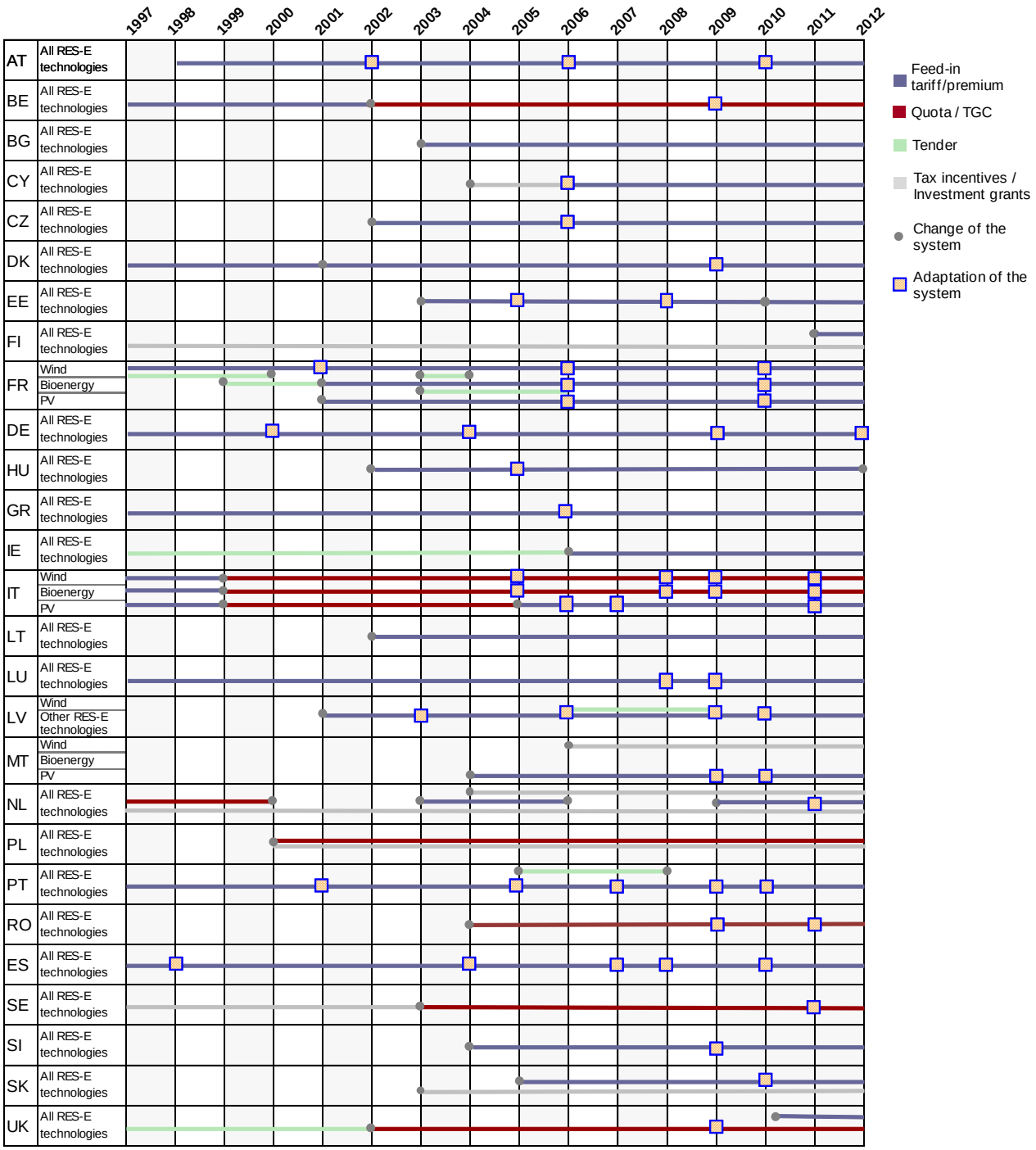
Second box: Graph – production and potential per RES technology
Allows visually comparing the relevance of the different RES technologies to each other – also across sectors

- 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



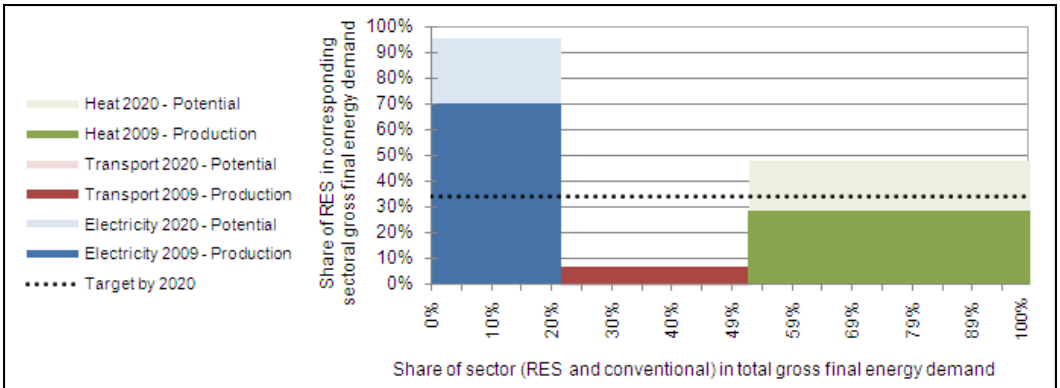
National binding 2020 RES targets

Table 1: National binding 2020 RES targets

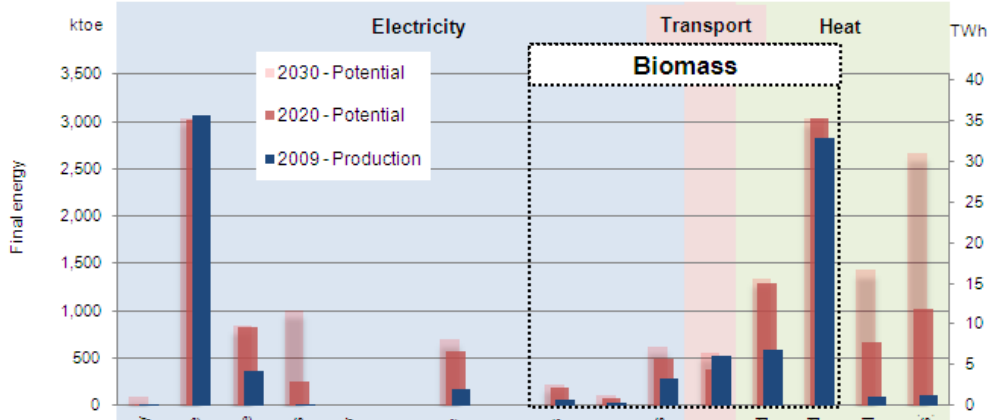
EU Member State	RES in 2005	RES in 2009 (prov.)	2020 RES Target	% increase required (2009-2020)
Austria	23.3%	*29.20%*	34%	5%
Belgium	2.2%	*3.80%*	13%	9%
Bulgaria	9.4%	*11.50%*	16%	5%
Cyprus	2.9%	*3.80%*	13%	9%
Czech Republic	6.1%	*8.50%*	13%	5%
Denmark	17.0%	*19.70%*	30%	10%
Estonia	18.0%	*22.70%*	25%	2%
Finland	28.5%	*29.80%*	38%	8%
France	10.3%	*12.40%*	23%	11%
Germany	5.8%	*9.70%*	18%	8%
Greece	6.9%	*7.90%*	18%	10%
Hungary	4.3%	*9.50%*	13%	4%
Ireland	3.1%	*5.10%*	16%	11%
Italy	5.2%	*7.80%*	17%	9%
Latvia	32.6%	*36.80%*	40%	3%
Lithuania	15.0%	*16.90%*	23%	6%
Luxembourg	0.9%	*2.80%*	11%	8%
Malta	0.0%	*0.70%*	10%	9%
Netherlands	2.4%	*4.20%*	14%	10%
Poland	7.2%	*9.40%*	15%	6%
Portugal	20.5%	*25.70%*	31%	5%
Romania	17.8%	*21.60%*	24%	2%
Slovak Republic	6.7%	*10%*	14%	4%
Slovenia	16.0%	*17.50%*	25%	8%
Spain	8.7%	*13%*	20%	7%
Sweden	39.8%	*50.20%*	49%	-1%
United Kingdom	1.3%	*2.90%*	15%	12%
EU 27	**8.5%**	***11.60%***	**20%**	8%

Source: http://ec.europa.eu/energy/renewables/targets_en.htm

AUSTRIA – Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	70%	7%	29%	30%
Share of total sector consumption in total final energy consumption	21%	31%	47%	99%
Production 2009 [ktoe]	4,004	526	3,609	8,139
Production 2007 [ktoe]	3,685	340	3,405	7,430
Production 1999 [ktoe]	3,625	16	2,704	6,345
Average growth 2007-2009 [%/a]	4%	24%	3%	5%
Average growth 1999-2009 [%/a]	1%	42%	3%	3%
Realisable potential until 2020 [ktoe]	5,437	385	6,006	11,827
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	1%
Realisable potential until 2030 [ktoe]	6,370	564	8,461	15,396



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	3,066	355	3	0	0	173	0	55	26	286	527	584	2,832	86	106
Production 2007 [ktoe]	0	3,002	339	2	0	0	164	0	46	33	273	341	458	2,808	63	76
Production 1999 [ktoe]	0	2,953	333	0	0	0	4	0	6	3	129	16	181	2,447	38	38
Ø annual production growth 2007-2009	0%	1%	2%	18%	-	-	3%	-	9%	-11%	2%	24%	13%	0%	17%	19%
Ø annual production growth 1999-2009	-	0%	1%	28%	-	-	44%	-	25%	26%	8%	42%	12%	1%	9%	11%
Realisable potential by 2020 [ktoe]	6	3,013	829	255	0	0	572	0	191	81	488	385	1,296	3,032	662	1,016
Realisable potential by 2030 [ktoe]	101	3,044	838	1,010	0	0	699	0	221	106	626	564	1,334	3,032	1,432	2,664

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

Austria passed a new green electricity act in July 2011, which in parts is still awaiting approval by the European Commission. New dynamics are already observable as additional budget to reduce the waiting list have already become effective. When fully operational the new legislation can be expected to have a significant impact on the Austrian renewable electricity market.

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 23 September 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 combined with developments on the cost side of renewable technologies stimulated new capacity additions so that the technology caps were reached soon, which resulted in long waiting lists. The new 2012 Green Electricity Act addresses these issues.

RES-H&C

In Austria, national support policy for RES-H&C projects is provided by the Environmental Support Act (Umweltförderungsgesetz), which promotes RES mainly in the form of investment grants. An extended support structure is effective since 1 October 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. Several pilot projects are currently under way to support the development of e-mobility.

2 Details RES-Electricity Support Policy

The federal support policy for electricity from RES is regulated by the Austrian Green Electricity Act (Ökostromgesetz), which has been amended several times since its implementation in 2002 (the last amendment was adopted in 2011). Currently, Austria is in a transition phase from regulations based on the act from 2002 to the new act with elements of the old and new law being effective simultaneously. The amendment is expected to become fully effective sometime in 2012 upon notification by the European Commission.

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 current annual budget regarding net support expenditures for yearly new RES-E installations is set at € 21 million. 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).

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". 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/). Photovoltaics (PV) installations with an installed capacity up to 5kWp receive investment grants; funding is provided by KLI.EN (http://www.klimafonds.gv.at/).

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	investment grants
		5kWp to 20 kWp	38
		over 20 kWp	33
	stand alone	up to 5 kWp	investment grants
		5 kWp to 20 kWp	35
		over 20 kWp	25
Biogas (waste)		sewage gas	6
		landfill gas	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[3]:	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

The revision of the Green Electricity Act in 2009 together with strong cost decreases of PV equipment (Ökostromgesetz-Novelle 2009, Ökostromverordnung 2010) have created a favourable framework for renewable electricity in Austria. This has significantly spurred applications for new generation capacity compared to previous periods of slow growth. However, due to the design of the current support system, which has a capped annual budget of € 21 million and PV being capped at 2.1 million, the volume of applications by far exceeded the yearly budget. As a result, many projects needed to be put on a waiting list to be commissioned at a later stage. For instance, the volume of the PV applications in the pipeline reached beyond 2020; for wind there were more than 500 MW of capacity on the waiting list.

The new 2012 Green Electricity Act addresses many of these obstacles by allocating an additional onetime budget to reduce the waiting list. The budget provides funds to wind, PV and hydro power and has an overall volume of € 128 million. However, project investors need to accept lower tariffs to receive the funding from this budget. For wind power, a total of € 80 million is reserved; tariff rates awarded to projects will vary between 9.5 and 9.7 cent/kWh depending on the position on the waiting list. For

[1] Defined in §8 of the Ökostromverordnung

[2] Defined in §8 of the Ökostromverordnung

[3] Defined in §8 of the Ökostromverordnung

PV, the amendment makes available a onetime additional budget of € 28 million. As for wind power rates vary according to the position on the waiting list (see Table 2 below). To hydro power projects the law provides additional investment grants with a total volume of € 20 million. These changes in the legislation have already taken effect and most applicants have already accepted the reduced tariffs.

Table 3: A vailable tariffs PV for immediate contraction

Contraction according to year on waiting list	**Applied tariff: 25 €Cent/kWh**	**Applied tariff: 33 €Cent/kWh**	**Applied tariff: 35 €Cent/kWh**	**Applied tariff: 38 €Cent/kWh**
2012	2,5% reduction	5% reduction	6% reduction	7,5% reduction
2013	7,5% reduction	10% reduction	11% reduction	12,5% reduction
2014	12,5% reduction	15% reduction	16% reduction	17,5% reduction
2015 or later	17,5% reduction	20% reduction	21% reduction	22,5% reduction

Feed-in tariff: Future developments

Besides the additional onetime budget to reduce the waiting list, the green electricity act 2012 brings further changes and improvement that will become effective most likely by the middle of 2012 after notification by the European Commission. The most important changes can be summarized as follows:

- The targets for green electricity are increased and the support period is extended to 2020. Specifically, wind is supposed to reach 3,000 MW by 2020 (factor 3) and PV 1,200 MW (more than factor 10). The overall potential of renewable energy in electricity generation is estimated at around 11 TWh, which would result in a share of renewables in electricity consumption of around 85 %. Moreover this trajectory would also enable Austria to equalize its nuclear imports and become an exporter of electricity again after 2015.

- The act increases the annual budget significantly to € 50 million. The calculation methodology has been revised in order to reduce investment risk and individual budgets are allocated to the technologies as follows: € 8 million to PV (up from € 2.1 million; plant size now limited to 500 kW); € 10 million to biomass; € 11.5 million to wind power; and € 1.5 million to small hydro (in addition to € 16 million/annum of investment grants). The remaining € 19 million are allocated to a shared pool, which can be accessed when individual budgets are utilized. In this case, for PV only a grid parity tariff of 18 cent/kWh would be granted. This shared budget will be decreased annually by one million Euros in a period of ten years. The new tariffs are still to be announced, but in general the new act allows for multiple year schemes. From 2012 onwards, waiting lists will be discontinued and replaced by a scheme under which project investors need to reapply in the following year.

- The financing structure of the budget has been revised and is primarily linked to the grid tariffs. This also reduces the burden on the energy intensive industry; the

allocation that finances the feed-in tariff is limited to € 20 per year for low-income households.

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 4 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 4: Tariffs under the „Umweltförderung im Inland“ support scheme

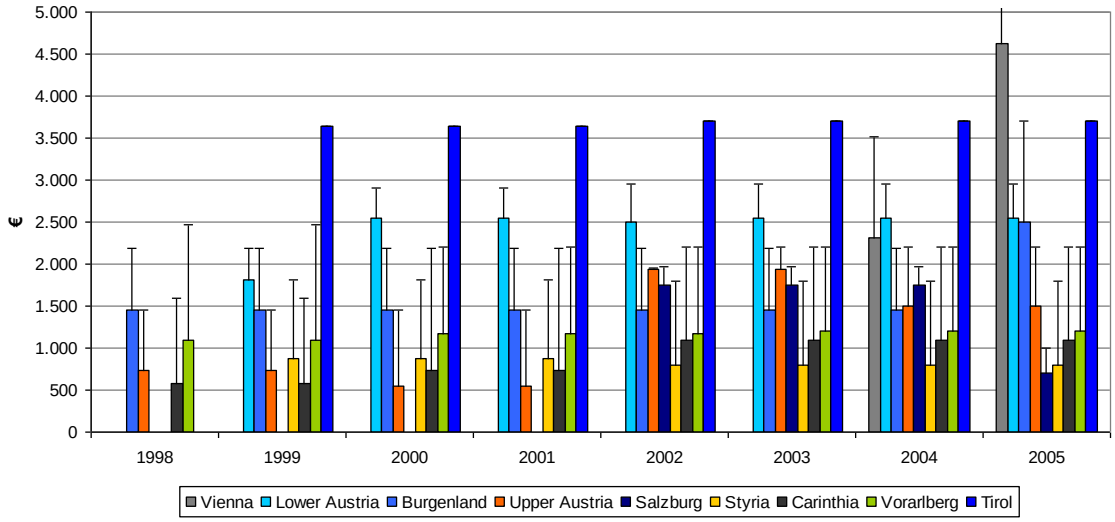
RES	capacity	subject to receive support	level of support
connected to district heating	≤ 400 kW	investments that are made inside the property of the receiver, are owned by him and are required to connect to the grid	•€ 56/kW for 0 to 100 kW, then € 32/kW for every additional kW up to 400 kW •When connected 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
	> 400 kW	investments that are made inside the property of the receiver, are owned by him and are required to connect to the grid	•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
biomass plants	≤ 400 kW	biomass firing plants as central supply unit at operational level	•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
	> 400 kW	biomass firing plants as central supply unit at operational level	•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 •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	•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) •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 m2	Solar heating systems to supply warm water or space heating	• € 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
	> 100 m2	Solar heating systems (>100 m2) to supply warm water or space heating & installations for the thermal drive of cooling systems	•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
heat pumps	≤ 400 kW	Heat pump systems for warm water and heating supply	•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
	> 400 kW	Heat pump systems for warm water and heating supply	• 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

Support Schemes at state level

With regard to the overall financial volume, 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 governments of the states, nine different schemes exist. From a macro perspective, the situation is not easily observable and changes are based on individual decisions by the states. With respect to biomass heating systems, investment incentives are granted in every state, but amounts and sets of conditions vary. In Carinthia and Vorarlberg, fixed amounts are paid, whereas in other states 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 past development of the average investment aids for domestic biomass heating systems with typical capacities of 15 to 25 kW in the Austrian states 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 states 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

Furthermore the amendment in 2009 introduced separate quotas for diesel (6.3 %) and petrol (3.4 %). In 2010 the target of 5.75 % was exceeded with a share of 6.58 %, which translates into a total volume of 427,900 tonnes of biofuels. %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 46 litres of biofuels per 1,000 litres. Given these preconditions as of December 2010, the mineral oil duty for petrol per 1,000 litres is € 482 with sulphur content up to 10 mg/kg or € 515 and for diesel € 397 with a sulphur content up to 10 mg/kg or € 425 otherwise. 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.

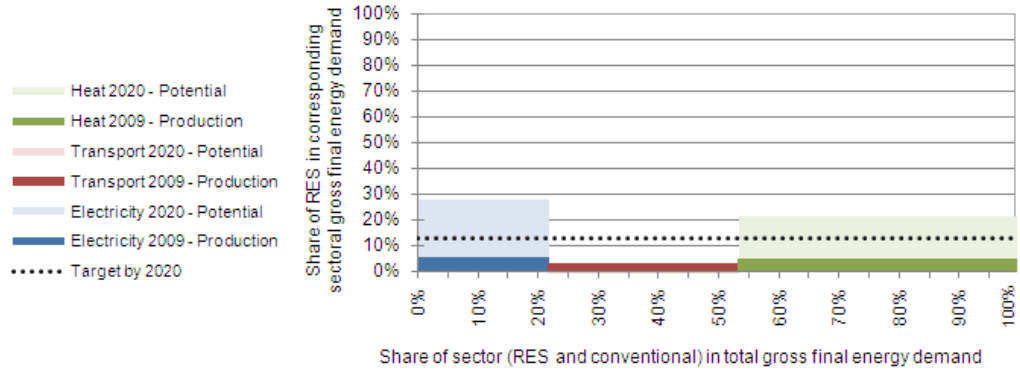
The first question that has to be answered is whether RES-E projects have priority in grid connection compared to conventional generators. In Austria this issue is dealt with in the Electricity Economy and Organizational Act (EIWOG) and §23 states that all plant operators have the same right to the grid 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).

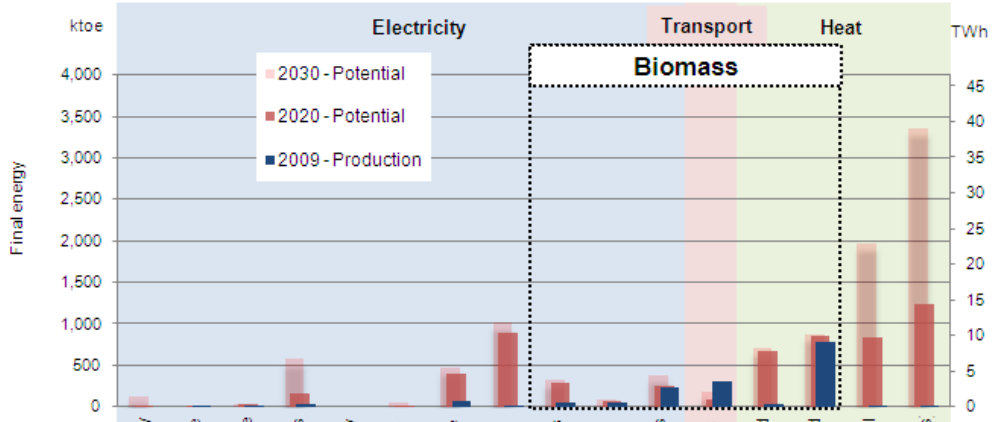
Another important aspect is the financing of grid extensions. In accordance with the general provisions of energy law, the costs of a grid expansion are borne by the receiver. The receiver is either the final consumer or the grid operator (§ 7 EIWOG). This interpretation would suggest a “shallow” charging 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 states 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.

BELGIUM - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	6%	3%	5%	5%
Share of total sector consumption in total final energy consumption	21%	32%	47%	100%
Production 2009 [ktoe]	423	305	858	1,586
Production 2007 [ktoe]	282	97	677	1,056
Production 1999 [ktoe]	73	0	415	488
Average growth 2007-2009 [%/a]	22%	77%	13%	23%
Average growth 1999-2009 [%/a]	19%	-	8%	13%
Realisable potential until 2020 [ktoe]	2,103	83	3,565	5,751
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	10%
Realisable potential until 2030 [ktoe]	2,834	172	6,920	9,925



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	15	16	33	0	0	74	8	40	40	229	304	36	784	18	20
Production 2007 [ktoe]	0	15	16	0	0	0	40	0	25	26	156	97	3	648	12	14
Production 1999 [ktoe]	0	12	17	0	0	0	1	0	6	19	17	0	4	407	2	2
Ø annual production growth 2007-2009	-	0%	0%	-	-	-	37%	-	27%	25%	21%	77%	246%	10%	20%	21%
Ø annual production growth 1999-2009	-	2%	0%	-	-	-	51%	-	20%	8%	30%	-	25%	7%	25%	27%
Realisable potential by 2020 [ktoe]	7	15	26	150	0	3	404	891	277	72	258	83	664	845	828	1,229
Realisable potential by 2030 [ktoe]	132	15	26	574	0	58	474	1,014	321	80	384	172	704	880	1,975	3,361

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

Last year only small changes have been made in Belgian energy policy, almost all on a regional level. In Brussels and Flanders, initiatives for green heat have been developed. In Flanders, the scheme for minimum prices for solar PV has been lowered again, for the third year in a row. As of December 2011, Belgium has a new federal government and it is expected that new energy policy will be made in the coming year.

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 again in 2011. Also the scheme for minimum prices on PV has been adjusted; the prices now decrease gradually over the year.

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 quality[4] CHP (not necessarily renewable), combined with CHP certificates. In Walloon, high quality CHP is integrated in the green certificates system.

Additionally in Flanders the initiative “Groene Warmte” is stimulating RES-H with premiums for placing solar thermal installations and heat pumps. In Brussels, energy premiums are available for RES-H options.

There are no important changes expected.

RES-T

The main instrument to promote RES-T is a tax exemption 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.

4 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%[5] 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)
- 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.

[5] www2.vlaanderen.be/economie/energiesparen/doc/verhoogde_investeringsaftrek_bijlage.doc (in Dutch)

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%	2011–2020: 6.2% - 20.9%[6]
Duration	years		10	10		10
Min price* (fixed)	(€/MWh)	Wind offshore	n.a.	n.a.	n.a.	€107 for the first 216 MW, €90 for the following (20 years)[7]
	(€/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 15 - 20 years)[8]	€150		€150
Penalty	(€/MWh)		Until 1 April 2012: €125 (until Until 1 April 2013: €118 From 1 April 2013: €100[9]	€100 (2011)	€100 (2007-2010)	

6 http://economie.fgov.be/nl/binaries/NREAP-BE-v25-NL_tcm325-112992.pdf

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

8 See Table 2 for a detailed scheme on solar PV

9 www.eubelius.be/nl/spotlight/groenestroomcertificaten_vlaams_parlement_past_steun_voor_groene_stroom_aan

Table 2: New minimum prices in Flanders as of 2011, 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	100 €/MWh[10]

Table 3: Detailed scheme on minimum prices solar PV in Flanders as from 27 April 2011 [11]

Year	< 250 kWp	> 250 kWp	
01/01/2011	330 €/MWh	330 €/MWh	20 years
01/07/2011	330€/MWh	240 €/MWh	
01/10/2011	270 €/MWh	150 €/MWh	
01/01/2012	250 €/MWh	90 €/MWh	
01/04/2012	230 €/MWh	90 €/MWh	
01/07/2012	210 €/MWh	90 €/MWh	
01/10/2012	210 €/MWh	90 €/MWh	
2013	190 €/MWh	90 €/MWh	15 years
2014	150 €/MWh	90 €/MWh	
2015	110 €/MWh	90 €/MWh	
2016	90 €/MWh	90 €/MWh	15 years
2017	90 €/MWh	90 €/MWh	
2018	90 €/MWh	90 €/MWh	

The Flemish government decided to reduce the support for solar PV by decreasing the minimum prices. Also they lowered the capacity threshold below which an installation is eligible for a higher tariff from 1 MWp to 250kWp. Solar energy installations that are installed on houses after January 1, 2010 are only eligible for green certificates when the roof or attic[12] floor is insulated.

10 http://www.freyavandenbossche.be/article/extra-impuls-nieuwe-technologie-groene-stroom/

11 www.eubelius.be/nl/spotlight/groenestroomcertificaten_vlaams_parlement_past_steun_voor_groene_stroom_aan

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

In Walloon, only PV is being promoted with minimum price; the guaranteed price is €150 / MWh and is fixed for 10 years[13]. Other RES options are supported on a federal level[14]:

The federal target on RE in electricity is 20.9% in 2020[15]. This target is subdivided over the three regions. The RES-E target in the Walloon region is 16.25% of gross electricity consumption in 2011 for renewable electricity and CHP. From 2012 this should increase by 3.65% per year to 30% in 2016[16]. In Flanders, the target increased from 0.8% in 2002 towards 6% in 2010, afterwards the quota increases to 13 % in 2020[17]. In Brussels, the target is 2.5 % in 2009 to 3.25 % in 2012.

Furthermore, there is a penalty for non-fulfilment. For Brussels and Walloon the penalty is 100 €/MWh, in Flanders the penalty is 125 €/MWh. As indicated in Table 1, this penalty is lowered in April 2012 to 118 €/MWh and to 100 €/MWh in April 2013[18]. The two tables below present the price for green certificates during the last years in Flanders and Walloon:

Table 4 Prices for green certificates in Flanders (Source: VREG[19]**)**

	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

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

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

15 http://www.febem-fege.be/nl/goto.cgi?bijlage=3095

16 http://www.demorgen.be/dm/nl/5379/Ecotips/article/detail/1223838/2011/02/17/Wallonie-beoogt-een-derde-groene-elektriciteit-tegen-2016.dhtml

17 http://www2.vlaanderen.be/economie/energiesparen/milieuvriendelijke/Nuttige_documenten/Nationaal_actieplan_HE.pdf

18 www.eubelius.be/nl/spotlight/groenestroomcertificaten_vlaams_parlement_past_steun_voor_groene_stroom_aan

19 http://www.vreg.be/statistieken-groene-stroom-0

Table 5 Prices for green certificates in Walloon (Source: CWape[20])

	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
2011 Q1	519,362	83.62
2011 Q2	545,983	82.48
2011 Q3	576,057	81.84

Walloon: Renewable energy and CHP

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 CO_2 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% RES-E in 2016[21].

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 [22]

The deduction is regulated by Royal decree regarding investment- and tax-deductions for energy saving measures of 1 September 2006.[23]

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 %.

20 http://www.cwape.be/?dir=3.4.08&title=Statistiques+et+Prix

21 http://www.demorgen.be/dm/nl/5379/Ecotips/article/detail/1223838/2011/02/17/Wallonie-beoogt-een-derde-groene-elektriciteit-tegen-2016.dhtml

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

23 http://reflex.raadvst-consetat.be/reflex/pdf/Mbbs/2006/09/08/100189.pdf

- Invertors: Efficiency for grid connected systems must be higher than 91%, for autonomous systems this must be higher than 88%.
- The panels must be oriented to the south under an incline between 0^0 and 70^0 to the horizon.

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 11 October 2011[24]. This adjustment was on the list of technolgies that are eligible for the Ecologiepremie plus[25].

The total legal framework can be found here:

http://ewbl-publicatie.vlaanderen.be/servlet/ContentServer?c=Page&pagename=Ondernemen%2FPage%2FMVG_CMS4_VT_Special_Subnav&cid=1296471354661

The current call became available on 1 February 2011, the end date is not known.

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 limited to about 150 predefined technologies[26].This includes a wide range of technologies not specifically limited to RES-E. The subsidy is calculated by an “ecology score” (depending on the environmental impact of the technology), the size of the company and the subsidy bonus[27]. The subsidies can be as high as 15% of the investment costs for large enterprises and up to 30% of the investment costs for small enterprises. The subsidies are granted with a maximum €1,000,000 over three years[28]. Additional to these subsidies a subsidy bonus can be granted[29], when the company chooses to:

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24 http://ewbl-publicatie.vlaanderen.be/Uploads/EP_PLUS_MB_LTL_20111011.pdf

25 http://ewbl-publicatie.vlaanderen.be/Uploads/LTL-EPPlus-2011-10-opsomming.pdf

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

27 http://ewbl-publicatie.vlaanderen.be/servlet/ContentServer?c=Page&pagename=Ondernemen%2FPage%2FMVG_CMS4_VT_Special_Subnav&cid=1296471354493

28 http://ewbl-publicatie.vlaanderen.be/servlet/ContentServer?c=Page&pagename=Ondernemen%2FPage%2FMVG_CMS4_VT_Special_Subnav&cid=1296471354493

29 http://ewbl-publicatie.vlaanderen.be/servlet/ContentServer?c=Page&pagename=Ondernemen%2FPage%2FMVG_CMS4_VT_Special_Subnav&cid=1296471354493

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

The subsidy bonus can be as high as 5% for large enterprises and 10% for small enterprises.

If the enterprise operates in the energy intensive sector, then the application is subjected to additional conditions. An enterprise with an energy use between 0.1 PJ and 0.5 PJ is only eligible for the ecologiepremie when it is committed to the audit agreement. Enterprises with an energy use exceeding 0.5 PJ should be committed to the benchmarking agreement[30].

Technologies that are also supported with CHP- or Green Certificates are excluded from the Ecologiepremie[31]. The subsidised investments must be exploited for at least five years after the last payments have been received[32].

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

Flanders: Permit Exemption for small wind turbines

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 restrains are even bigger. Small wind turbines are only eligible in the nearby presence of houses, enterprises and aboveground utilities[33]. A Decree on spatial planning, permit and enforcement policy was enacted on 27 March 2009[34]. It establishes that small wind turbines in agricultural areas can directly apply for a permit without a spatial execution plan. This instrument is operational and there is no end date set.

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 energy, in 2011 this includes also wind, hydro, biomass and geothermal. Only CHP is excluded[35]. The following premiums can be granted:

- PV system: the maximum subsidy is 30% of the invoice;

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30 http://ewbl-publicatie.vlaanderen.be/servlet/ContentServer?c=Page&pagename=Ondernemen%2FPage%2FMVG_CMS4_VT_Special_Subnav&cid=1296471354451

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

32 http://ewbl-publicatie.vlaanderen.be/Uploads/EP-PLUS%20-%20Algemene%20informatie%20DEF20110201,0.htm#_ Toc283387513

33 http://www2.vlaanderen.be/economie/energiesparen/milieuvriendelijke/Wetgeving/Windenergie/Omzendbrief_LNE_200901_RO.pdf

34 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

35 http://www.leefmilieubrussel.be/uploadedFiles/Contenu_du_site/Professionnels/Les_subsides_et_la_fiscalit%C3%A9/03Primes_%C3%A9nergie_2011/NL_RECAP_T_110208.pdf?langtype=2067

- Wind energy, hydro-electric, biomass and geothermal: the maximum of the subsidy is 25% of the invoice for investments and studies.

Condition to obtain the subsidy is that the equipment must be installed by a certified installer[36]. In case of solar energy, the regulation makes support conditional to the use of certified equipment[37]:

- 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://www.leefmilieubrussel.be/Templates/Particuliers/Informer.aspx?id=4818&langtype=2067

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.[38] 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 the budget has been lowered to 11.7 million Euros[39], in 2011 the budget is almost the same: nearly 12 million Euros[40]. The instrument can be combined with green certificates.

36 http://www.leefmilieubrussel.be/uploadedFiles/Contenu_du_site/Particuliers/01_Gestes/09_Mes_primes/Primes_%C3%A9nergie_2011/2011%20Nl_CG_110301_fin.pdf?langtype=2067

37 http://www.leefmilieubrussel.be/uploadedFiles/Contenu_du_site/Particuliers/01_Gestes/09_Mes_primes/Primes_%C3%A9nergie_2011/2011%20Nl_D2_110411_fin.pdf?langtype=2067

38 http://www.envirodesk.be/node/48716 (Dutch).

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

40 http://www.leefmilieubrussel.be/Templates/news.aspx?id=28510&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. However, there is a quota obligation system for CHP (not related to RES-E/H sources) and promotion for RES-H/C.

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 of primary energy are saved in comparison to the separate electricity production. CHP certificates are only rewarded to installations that are newer than 1 January 2002 and meet the quality standards of the VREG[41]. For installations larger than 1 MW a specific CHP-test is mandatory[42]

The quota obligation system is implemented only in the Flemish part of Belgium. In the Wallonia and the Brussels region CHP is included in the green certificate scheme for RES-E. The Flemish 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 GCs[43].

More information: http://www.vreg.be/ and 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 €31[44]. The penalty for missing CHP certificates is €45 per certificate. This penalty is lowered to €41 after 31 March 2012[45].

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[46]
- Heat pumps if the heat pump has an EG-label and the coefficient of performance is higher than 3[47]
- Wood burning stove if it has an efficiency of 60% according to norm EN303-5[48]

41 http://www.vreg.be/minimumsteun-0

42 http://www.vreg.be/algemene-info-0

43 http://energiesparen.be/node/2439

44 http://www.vreg.be/minimumsteun-0

45 http://www.vreg.be/minimumsteun-0

46 http://www.energiesparen.be/subsidies/subsidieregel_detail?id=1821&verstr=769&doelgroep=1

47 http://www.energiesparen.be/subsidies/subsidieregel_detail?id=1829&verstr=769&doelgroep=1

48 http://www.energiesparen.be/subsidies/subsidieregel_detail?id=2179&verstr=769&doelgroep=1

- Insulation of roof, walls and floor:
  - For roof insulation the thermal resistance R should be at least 2.5 m^2K/W;
  - For insulation of outside walls, the thermal resistance R should be at least 2.0 m^2K/W, for inner walls this must be at least 0.75 m^2K/W;
  - For insulation of the floor the thermal resistance R should be at least 2.0 m^2K/W for insulation that is connected to the **outer side** and 1.0 m^2K/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 m^2K/W.

The federal tax agency manages the tax scheme[49]. 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.[50]

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: Groene warmte

Sustainable heat is promoted in Flanders through the “Groene Warmte” initiative[51]. The initiative promotes three types of sustainable heat: solar thermal, heat pumps and pellet boilers.

- Additional to the federal tax regulations, Flanders also has installation premiums for solar thermal and heat pumps: When a solar thermal installation is placed in an existing house a premium of €75 per m2 can be obtained. This premium has a minimum of €525 and a maximum of €1,500[52]. In 2012 this premium increases to €200 per m2[53].
- Placing a heat pump can result in a premium up to €1,680. The premium is calculated by the following formula: €270*(0.87*COP-2.5)*kWe. Conditions for the subsidy are that the heat pump should be placed by a certified installer and meet minimal COP requirements, depending on the type of heat pump[54.]

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.

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49 http://www.energiesparen.be/subsidies/belastingvermindering

50 http://reflex.raadvst-consetat.be/reflex/pdf/Mbbs/2006/09/08/100189.pdf

51 http://www.energiesparen.be/groenewarmte/

52 http://www.energiesparen.be/subsidies/subsidieregel_detail?id=2207&verstr=793&kind=560&doelgroep=1

53 http://www2.vlaanderen.be/economie/energiesparen/premies/2012/premies_dnb2012.pdf

54 https://extranetdocs.eandis.be/Livelink/livelink.exe/fetch/2000/4557018/5063895/4557023/4557019/4557568/4557571/4557031/5063896/8295584/Warmtepomp.pdf?nodeid=8295643&vernum=-2

"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 (see also RES-E section). In heating, there are two installation premiums for RES options: for solar thermal and heat pumps.

- Solar thermal boiler: the maximum subsidy is 50% of the installation costs[55];
- Heat pump: the maximum subsidy is 30% of the installation costs[56].

To become eligible for an Energy Premium, the heating options should meet the following requirements:

- For solar thermal: the thermal resistance factor of the isolation material of the boiler should at least be 2 m^2K/W[57];
- For solar thermal: the installer must guarantee that the equipment will be working for at least 2 years;
- For heat pump: brine / water, water / water and air / water are eligible for the Energy Premium;
- For heat pump: according to EN 14511 and EN 255 the COP must be equal or higher than the requirements of the most recent European ecolabels (www.ecolabel.com).

In addition to stimulating renewable energy, there are also premiums for energy efficiency in housing[58]. 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 and capital bonus, interest rate subsidy or a guarantee[59].
- Several DSOs have a subsidy for the installation of a heat pump, depending on the size of the system.

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55 http://www.leefmilieubrussel.be/uploadedFiles/Contenu_du_site/Particuliers/01_Gestes/09_Mes_primes/Primes_%C3%A9nergie_2011/2011%20Nl_D1_110411_fin.pdf?langtype=2067

56 http://www.leefmilieubrussel.be/uploadedFiles/Contenu_du_site/Particuliers/01_Gestes/09_Mes_primes/Primes_%C3%A9nergie_2011/2011%20Nl_C4_110318_fin.pdf?langtype=2067

57 http://www.leefmilieubrussel.be/uploadedFiles/Contenu_du_site/Particuliers/01_Gestes/09_Mes_primes/Primes_%C3%A9nergie_2011/2011%20Nl_D1_110411_fin.pdf?langtype=2067

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

59 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-CHP[60].

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.[61] 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:
    a. 250 million litres/year between 2008 and 2012
    b. 187.5 million litres between 1 January 2013 and 30 September 2013
- Biodiesel:
    c. 380 million litres/year between 2009 and 2012
    d. 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

Electricity generated in RES-E projects has priority acces to the grid. Nevertheless, the system operator is required to secure the continuity of the electricity supply, i.e. integration of renewable energy should not lead to imbalances in the system[62]. 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

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

61 http://reflex.raadvst-consetat.be/reflex/pdf/Mbbs/2006/06/16/98575.pdf

62 http://economie.fgov.be/nl/binaries/NREAP-BE-v25-NL_tcm325-112992.pdf

have to be carried by the RES-E project; upstream reinforcement costs are paid by the system operator/ split among all network users.

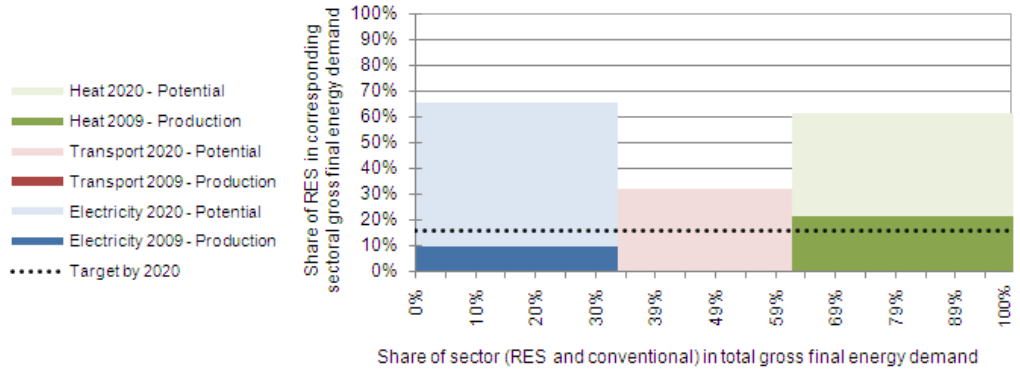
The Belgium government requires the TSO Elia to pay 1/3 of the costs of the undersea connection of an offshore wind farm, up to 25 M€[63].

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[64].

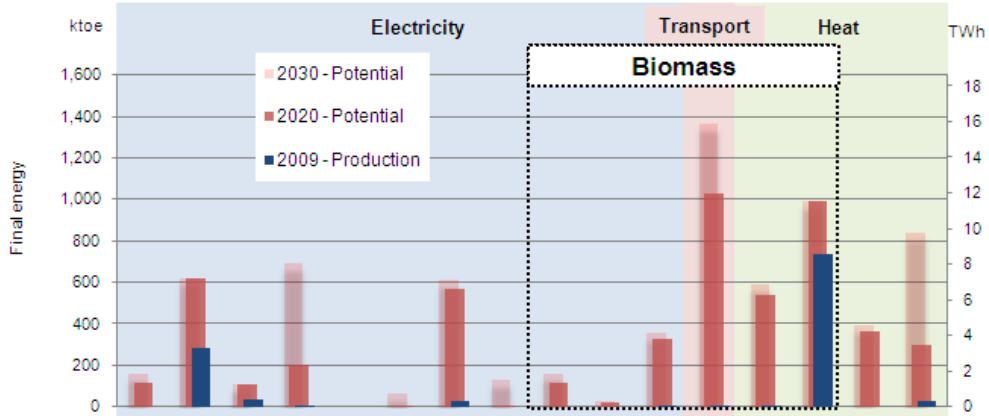
63 http://www.creg.be/nl/greenelec.html

64 http://www.creg.be/nl/greenelec.html

BULGARIA - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	10%	0%	21%	11%
Share of total sector consumption in total final energy consumption	33%	29%	37%	98%
Production 2009 [ktoe]	320	4	763	1,086
Production 2007 [ktoe]	251	2	715	968
Production 1999 [ktoe]	237	0	457	694
Average growth 2007-2009 [%/a]	13%	41%	3%	6%
Average growth 1999-2009 [%/a]	3%	-	5%	5%
Realisable potential until 2020 [ktoe]	2,094	1,030	2,188	5,311
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	5%
Realisable potential until 2030 [ktoe]	2,708	1,367	2,814	6,889



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	283	36	0	0	0	24	0	0	0	1	3	2	735	-	26
Production 2007 [ktoe]	0	272	28	0	0	0	4	0	0	0	0	2	0	675	-	40
Production 1999 [ktoe]	0	279	9	0	0	0	0	0	0	0	0	0	0	422	-	35
Ø annual production growth 2007-2009	-	2%	13%	-	-	-	159%	-	-	-	-	22%	-	4%	-	-19%
Ø annual production growth 1999-2009	-	0%	14%	-	-	-	-	-	-	-	-	-	-	6%	-	-3%
Realisable potential by 2020 [ktoe]	112	617	110	204	0	8	568	6	117	23	329	1,030	539	990	365	294
Realisable potential by 2030 [ktoe]	160	623	111	693	0	63	612	130	162	25	354	1,367	593	990	392	840

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

After several sessions of the Bulgarian Parliament, a new RES Law was adopted. The 'Act on Energy From Renewable Sources' was published in issue 35 of the State Gazette and came into force on 3rd May 2011.

The new law was supposed to fully implement the RES Directive 2009/28/EC and to reflect the needs for a sustained development of the RES sector in Bulgaria. The main source of criticism for this the newly adopted legislation are the investors in RES: the green energy associations have a common opinion that the new RES law has failed to fulfil its purposes. They claim it is rather restrictive towards medium-sized and large investment projects, and it would lead to a withdrawal from previously declared investment interests. And as a result, according to the Bulgarian Wind Energy Association, the new regulations would not help Bulgaria fulfil the EU RES targets for 2020.

Regarding the implementation of the EU RES legislation, the newly adopted national targets for RES do not seem very consistent. The new law envisages the share of RES to increase around 1% every 2 years until 2018. This would lead to a 13.69% in the final Bulgarian energy consumption in 2018, while the 2020 target of Bulgaria is 16%. A speed-up of bringing RES online (and decreasing energy consumption) would need to be done in the two remaining years.

The administrative unit that promotes the production of energy from renewable sources will be reorganised. The old Energy Efficiency Agency is being converted into an Agency for Sustainable Energy Development (ASED). The process has taken too long already (since May 2011) and, although the Rules of Regulation of ASED have been adopted by the Council of Ministers on 26 October, the reformed agency has effectively not started towork.

Another weakness of the new RES Law is the delegation to local governments to develop procedures to implement RES (e.g. simplification of the application procedure for rooftop PV). It would be more effective to help 260 Bulgarian municipalities to prepare a national framework of recommendations than to allow for the development (or lack of it) of many local sets of procedures.

Also, the new RES law does not clarify when a complete database of the existing RES projects and the ones in the process of development (both required by law) will be created, how it will be maintained and made publicly available.

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, in February 2011the ministry of agriculture announced [65] a ban for RES projects (wind and solar PV) on fertile agricultural land (for local fertility classes 1 thru 8), 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. That idea was immediately opposed by the RES sector. They wondered why such measures would

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

only apply to RES projects, referring to a thermal power plant where over 2,000 ha of arable land would be used.

According to the chairman of the Eco Energy Association, Mr Velisar Kirjakov, more changes in the RES law are under preparation and are expected to be presented by the end of 2011. They concern mainly the price determination of the feed-in tariffs for wind energy projects. Currently the feed in-tariffs are determined by Act 15[66] of the RES projects.

This rule was created to deal with possible price reductions of solar equipment in the period between commissioning and completion of the construction process. This is especially applicable for solar PV projects, which saw PV module prices going down dramatically over the last years. The wind sector also has problems with another aspect of the low predictability of the Bulgarian FiT system: the tariffs are formed quite at the last moment and include a large aspect of uncertainty, creating insecurity for the wind park projects.

In addition, changes in the Energy Act are currently under discussion and are expected to be adopted before the end of 2011. They concern mainly the liberalisation of the energy sector. The draft text does not mention the term renewable energy, but it is likely that the Energy Act will affect RES developments.

66 The document evidencing the full completion of the construction works of the project.

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 by 31 March of each year, and whenever the RES law is adjusted (as we have seen in 2011). The FiT has led to large scale wind energy projects, in addition to solar PV farms of several megawatts. The Bulgarian feed-in tariffs have sparked wide interest among local and international project developers. However, since the introduction of FiT in 2007 only a limited number of projects out of a pipeline of several gigawatt 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 SMEs (energy efficiency, only RES-H&C).

For households there is another credit line launched by EBRD through commercial banks, which is a continuation of The Residential Energy Efficiency Credit Line (REECL). The first stage was conducted from 2005 till early 2010 and since July 2011 there is a continuation under the acronym 'REECL-2'. It provides loans for energy efficiency with subsidy component of 20-35%. REECL-2 will continue until 2014 and has a capital of € 40 million. Supported by the scheme are small scale RES H&C and RES-E. The subsidy component is provided through the Kozloduy Nuclear Power Reactor Decommissioning Fund (KIDSF). 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 Bulgaria's entry into the EU.

Legislative changes supporting RES-H&C in Bulgaria were introduced with the new RES law, which mentions that RES heating and cooling will be supported and plans are made to develop a centralized network for RES H&C, where economically viable. However, this formulation does not yet define criteria for economic viability and rather leaves it to the discretion of the energy auditors.

RES-T

In 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 1 March 2011. However, the implementation of this quota was delayed in March 2011.

After national protests against the high fuel costs (early 2011) the prime minister ordered to remove the blending of biofuels from the obligations of the fuel retailers. The high petrol tariff issue came even more into the public focus as the prime minister was accused of protecting Lukoil, a de facto monopoly fuel importer for Bulgaria. After warnings from the European Commission that Bulgaria is violating European regulations, biofuels were re-introduced. 5% biodiesel has to be blended with conventional diesel as of January 2012 and 6% as of June 2012. Bioethanol starts from 2% volume as of 2012 and reaches 9% in 2016. The 10% 2020 target is not mentioned and it is unlikely that gas stations offering pure biodiesel and bioethanol at customer request are specifically supported by law.

2 Details RES-Electricity Support Policy

Project owners and investors, partially associated under the Bulgarian Association of Alternative Energy Producers (http://www.apeebg.org) and the Bulgarian Photovoltaic Association (http://www.bpva.org), lobby intensively, particularly with the intent of getting as high as possible FiTs for their RES-E projects. There is also a continuous discussion about the procedures for Environmental Impact Assessment, where there is so far no common procedure among the regional environmental inspectorates on how to assess solar PV activities. Hydro power plants and wind power plants are regarded as industrial installations, while solar PV projects have not been included into these procedures[67].

The Bulgarian Wind Energy Association (www.bgwea.org) was established in 2010 and turned into an active player, channelling the interests of its members, as well as being a constructive discussion partner for the Bulgarian government.

There are no additional instruments at regional/local level contributing substantially to the growth of RES-E. Some Bulgarian municipalities, including the capital Sofia (on 26 May 2011), have joined the Covenant of Mayors initiative which requires them to develop local Sustainable Energy Action Plans with a scope till 2020. 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 and sunny) agricultural region.

Feed-in Tariff[68]

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 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). The number of biomass projects producing RES-E is low, considering the potential of the country (wood and agricultural residues).

Feed-in tariffs have sparked wide interest among local and international project developers and investors leading to hundreds of projects (wind and solar PV) that have applied for (preliminary) grid connection with regional and national grid operators, totalling to some 4 GW. With the new RES Act this interest significantly decreased as evidenced by the reduced number of projects. Many RES projects used to exist only on paper and are far from secured financing. One of the aims of the new RES Act was to sift out projects with uncertain financing by imposing stricter conditions, including financial deposits and deadlines for projects to be developed. Further, the country's grid operators cannot connect this large capacity to the grid, as there are hardly any funds for strengthening and improving the power networks available, even though by law RES projects need preferential treatment in being connected.

Prior to the enforcement of the new RES Act, 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

67 http://www.energetika.net/eu/novice/interviews/bulgarian-ministry-of-environment-and-water-prepares-a-repor

68 Renewable and Alternative Energy Sources and Biofuels Act" (RESBA; "Zakon za vazobnovjaemite i alternativnite energijni iztochnici i biogorivata" in Bulgarian).

certain categories of land ineligible for RES projects has seriously cooled the market already in 2010.

According to the previous RES Act the feed-in tariff in Bulgaria consisted of a specific tariff, depending on the type of RES. Unlike other countries with a FiT system, in Bulgaria the FiT can be adjusted, also for RES projects already in operation.. These changes to the FiT can be a few percent compared to the respective tariff of the previous year. With the new RES Act this problem was solved to a large extent by fixing the tariff for a certain period for existing projects. However, it allows much more flexibility to change the FiT for the projects that come at a later stage and that use for instance much cheaper technology. Such a price gap appeared with the PV modules in the last years decreasing the price per Wp installed from € 4-4.5 in 2006 to as low as € 2 in 2011.

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 were expected to be more simplified with the new RES law but this was transferred as a duty to the municipal level.

At the moment there is no cap, on the total volume of electricity produced from RES source, in total or per technology, although it has been discussed in the sector and by the Bulgarian government.

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 has been adjusted over the last 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%).

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%

The current legislation (May 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 20 years for solar PV , geothermal and biomass and 15 years for small scale hydro (maximum 10 MW), and 12 years for wind energy 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 (DKEVR; www.dkevr.bg) have to be negotiated with

the regulator following the criteria stated in the RES Act such as market price, investment costs, installed capacity, available technologies etc.

Financial Support for Investment: industrial EBRD Credit Line

A prolonged EBRD credit line, or Bulgarian Energy Efficiency and Renewable Energy Credit Line (www.beerecl.com) 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 € 2.5 million. On that basis, the incentive can reach a maximum of € 500,000. The budget has been extended to be used until H2-2011 with € 55 million, while € 13 million still remain from the original budget.

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

Small scale investment in RES by households is described above in detail with the REECL-2 credit line.

Kozloduy Decommissioning Fund

The Kozloduy Decommissioning Fund (KIDSF) is providing subsidies for the credit lines run by the EBRD. However, fund management can also be approached for funding directly. The ministry of Economy, Energy and Tourism is now planning to prepare a pipeline of eligible projects for using KIDSF with the help of an appointed consultant.

Structural Funds

Some of the EU structural funds in the current programming period 2007-2013 were expected to launch measures in support of 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 just 2 years before the end of the current EU budget. One priority under the RDP had already seen several rounds of applications and received hundreds of applications for solar PV projects. So far (as of November 2011), only few of the applications are rewarded under the RDP.

Many RDP areas refer (in)directly to developing locally, small scale biomass projects by farmers and rural communities (8 out of 32 areas). Again, the government announced that about € 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 measure where RES in public buildings could be funded has been announced in 2011 as so far the practice is mostly to invest in energy efficiency. The measures that are expected to support the housing sector will not be launched prior to early 2012. However, it is not very likely that people will choose the renewable energy before they invest in energy efficiency even though as mentioned above this is required by the RES act for all new and renovated buildings.

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 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. € 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 receives many benefits (labour, expertise, income tax etc). The agency responsible for this scheme supported wind and solar PV projects in the past, but it 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 context[69].
- Some of the EU structural funds are designed to support RES. 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.
- 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. The process seems to be stuck (as of November 2011), probably due to weak forecasts to sell the carbon credits.
- The 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 2 March 2011[70]. The energy strategy includes all sorts of renewable energy but it does not indicate proper targets.
- 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

69 http://sgp.undp.org/web/countries/BUL/bulgaria.html

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

ordinance of 2007 for format, content and circumstance for issuing of certificate of origin[71] which was amended 6 Feb 2009[72].

Expected future changes

No important policy changes at national level have been announced.

3 Details RES-Heating and Cooling Support Policy

With the new RES act a rather non-descript regulatory support for RES-H&C appeared.

Although there is not much specific legislative or regulatory support for RES-H&C in Bulgaria, such projects are financially supported, by means of:

- The first EBRD credit line for business - BEERECL (see chapter on support for RES-E)
- The second EBRD credit line for households 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. A second version ('REECL-2') was launched in 2011. 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).

The following measures are 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 funds that can be granted per household is not clear yet.

The expected scheme will distribute € 40 million over 4 years. The previous scheme as a comparison had a budget of € 50 million of which almost € 15 million 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.

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

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

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.

€ 53 million under the Rural Development Fund are 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 forestation activities under the RDP.

Building Obligations

Since the new RES legislation came into effect, new buildings and overhauls of building require the use of RES of min. 15% (article 20). It is expected that this 'requirement' will not be well observed, let alone be enforced, as the legislation mentions that the RES installations need to be 'technically feasible and economically viable' for the particular case, leaving much room not to include RES in buildings.

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 2008-2020[73] 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.

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	**Biofuel**	**Minimal blend**
	biodiesel	3% vol
March 1, 2011	biodiesel	5% vol
March 1, 2012	biodiesel	6% vol
September 1, 2014	bioethanol or ethers from bioethanol	2% vol
March 1, 2015	bioethanol or ethers from bioethanol	3% vol
September 1, 2015	bioethanol or ethers from bioethanol	4% vol
March 1, 2016	bioethanol or ethers from bioethanol	5% vol
September 1, 2016	bioethanol or ethers from bioethanol	6% vol
March 1, 2017	bioethanol or ethers from bioethanol	7% vol
September 1, 2017	bioethanol or ethers from bioethanol	8% vol;
1 March 2018	bioethanol or ethers from bioethanol	9% vol.
1 January 2020	Biofuels blended in all transport fuels	10% vol

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.

The sustainability criteria for biomass/biofuels, required by Directive 2009/28/EC are integrated in the new RES law. Biofuels should:

- Not be from sources grown on land important for biodiversity;
- 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;

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

- 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;
- lead 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 been planning to introduce free parking in the city centre for electric vehicles and considers free parking for plug-in electric cars. 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 place[74].

5 RES-E Grid Integration

Grid integration remains 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. According to the national grid operator, NEK, the south-western part may have similar problems, because so many solar PV projects have been applying for grid connection permits in this part of Bulgaria.

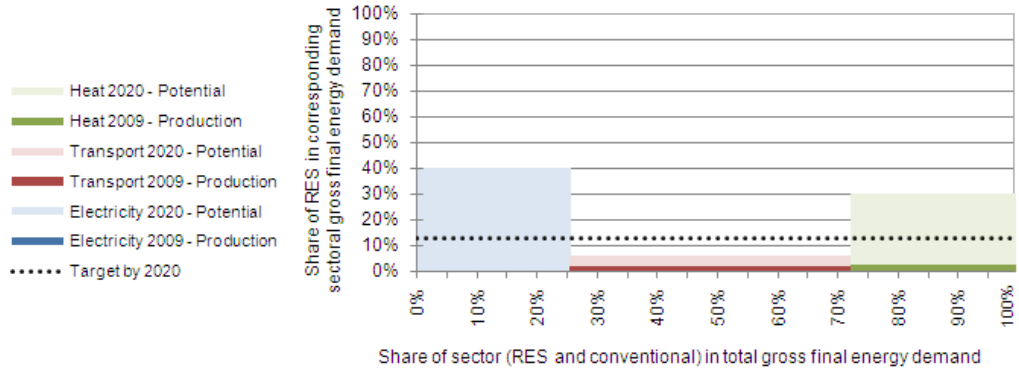
The new RES Act requires that the grid operators annually state free capacities that can be used to connect renewable energy power plants and they are required to include means to develop the grid into their budgets in order to facilitate the development of RES. The previous RES Act stated that grid operators are required to extent the network on their expense to the border of the renewable energy power plant. In the current legislation this was changed and RES developers have to pay a deposit of 5000 BGN (approx. € 2,500) for every megawatt capacity that they plan to develop, at the stage of declaring that they are to develop a project. Upon conclusion of a preliminary contract for integration to the grid, an advance payment is due. It amounts to BGN 50,000 (approx. € 25,000) for every MW installed capacity of the future energy unit for installed capacity above 5 MW and BGN 25,000 for every MW installed capacity when the total capacity is below 5 MW. The deposits are then deducted from the final connection fee, which is defined by the grid operator that needs to use the rules of a special ordinance.

It is not clear whether RES-E projects have priority in case of grid congestions (i.e. priority in dispatch).

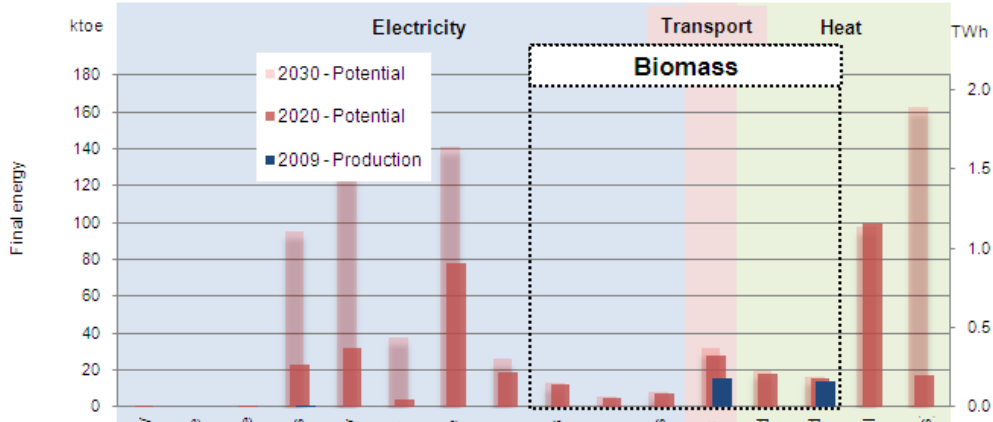
Also, to avoid delays in licensing processes, often extending far beyond the legally required terms, the legislator envisages the system of ‘silent approval’ i.e. if a permit is not granted or rejected within the legal deadline, the developer can consider it approved.

74 http://sofia.dir.bg/2011/02/11/news7979927.html

CYPRUS - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	0%	2%	3%	1%
Share of total sector consumption in total final energy consumption	25%	47%	28%	100%
Production 2009 [ktoe]	0	15	14	29
Production 2007 [ktoe]	0	1	6	7
Production 1999 [ktoe]	0	0	2	2
Average growth 2007-2009 [%/a]	22%	287%	53%	102%
Average growth 1999-2009 [%/a]	-	-	21%	31%
Realisable potential until 2020 [ktoe]	180	28	150	357
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	21%
Realisable potential until 2030 [ktoe]	424	32	297	753



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	0	0	0	0	0	0	0	0	0	0	15	0	14	-	0
Production 2007 [ktoe]	0	0	0	0	0	0	0	0	0	0	0	1	0	6	-	0
Production 1999 [ktoe]	0	0	0	0	0	0	0	0	0	0	0	0	0	2	-	0
Ø annual production growth 2007-2009	-	-	-	100%	-	-	-	-	-100%	-	-	287%	-	53%	-	-
Ø annual production growth 1999-2009	-	-	-	-	-	-	-	-	-	-	-	-	-	21%	-	-
Realisable potential by 2020 [ktoe]	0	0	0	22	32	4	78	19	12	5	7	28	18	15	99	17
Realisable potential by 2030 [ktoe]	0	0	0	95	128	38	141	26	13	5	8	32	20	16	98	163

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

No major changes occurred since the last update in March 2011.

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 165MW of wind parks were approved till the end of July of 2011 and three wind parks of total capacity of 133.5MW are already in operation. In the National Renewable Energy Action Plan (NREAP[75]), submitted in 2009, 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 2011 reached 9MW, while the total volume of applications received was 28MW. Moreover, the installed capacity of biomass utilization units for electricity production reached 8.6MW in 2011. Further, 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.

75 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 introduced in 2009 and was updated in 2011. 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, 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[76].

The current system was enforced by the Act 33(I)/2003[77].

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

Due to an accident in July 2011, the main thermal power station of Cyprus (Vasilikos power station, 640MW) is damaged and is expected not to be operational for a long period, creating serious power shortage problems on the island. To compensate for this development the authorities plan to remove the cap on PV installations and target the installation of 26,5MW of PV (21-150kW) in 2012 (24,5MW old applications and 2MW new applications). Furthermore, a new PV capacity category is proposed for 2012: PV (150kW – 10MW). A bidding process is expected to be introduced as selection process and a total capacity of 50MW in 2012 is targeted. At the time of the current update (Nov. 2011) these plans were not yet approved.

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.

The instruments for RES-E can roughly be divided into two categories or frameworks which are worked out in detail below:

- Framework 1: for large commercial wind, solar (thermal or PV) or biomass systems: a feed-in tariff system is defined.
- Framework 2 and Framework 3: subsidy schemes for small-scale projects

76 http://www.cie.org.cy/

77 http://res-legal.eu/en/search-for-countries/cyprus/legal-source/land/zypern/instrument/354/u eberblick/rechtsquelle.html?bmu%5blastPid%5d=150&bmu%5blastShow%5d=1&cHa sh=03ea35aa0d

Framework 1: for large commercial wind, solar (thermal or PV) or biomass systems: a feed-in tariff system is defined[78]

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 [79], 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. The energy tax is proposed to be increased to 0.065€ct/kWh in 2012. Framework 1 is valid 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 2011 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 late 2011.

Table 1: Feed-in tariffs per technology for grid connected systems (2011)

Framework 1		Price (€/MWh)
Wind (for up to 165MW)		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 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 1,750 kWh/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 ownership type and size of the enterprise. Specific caps in the allowed subsidies are applied based on

78 http://www.cie.org.cy/menuGr/pdf/sxedia-xorigiwn/Sxedio_xorhgiwn_gia_nomika_2011.pdf and http://www.cie.org.cy/menuGr/pdf/sxedia-xorigiwn/Sxedio_Xor_APE_gia_hlektroparagwgh-2011.pdf

79 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

the type of technology and subsidy schemes. In 2011 and 2012, the subsidies were removed for interconnected systems and a unified FIT system was implemented.

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 40% 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 N814/2006[80]) and the EU definition of Small/Medium Enterprises [81].

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 1998/2006 [82].

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 1857/2006 [83]. 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 with 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, these frameworks apply mainly to smaller scale projects (wind generators up to 30kW or small autonomous PV systems up to 20kW).

Frameworks 2 and 3 were revised in 2011.

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

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

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

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

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

	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 interconnected (<20kW)		40% max €48,000 Price: €205/MWh max €200/kW/a		Choice 1: 55% max €65,000 Price: €205/MWh Choice 2: 0% Price: €383/MWh
PV systems Autonomous (<20kW)	15%: LE 25%: ME 35%: SE max €50,000	40% max €50,000	35% max €50,000	55% max €65,000
Small hydro (run-of-river)	15%: LE 25%: ME 35%: SE max €105,000	40% max €105,000	35% max €105,000	

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

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:

a) 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		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 11.10.2010[84].

According to the new support instrument, a total amount of €1,800 is provided for the purchase of low emission vehicles (<165g CO2/km) when replacing a vehicle that is older than 15 years.

84 http://www.mcw.gov.cy/mcw/rtd/rtd.nsf/All/5C7066392976799AC22577B60029323E?OpenDocument

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

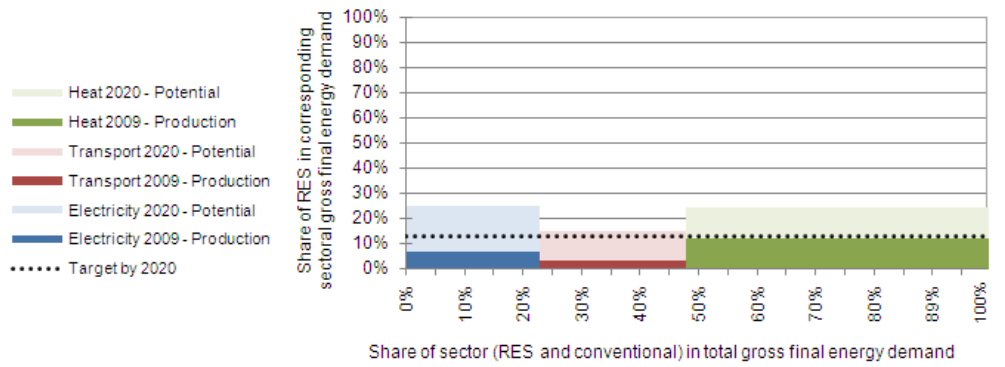
	Framework 2	
	Regional	**de minimis**
Biofuels for transportation (cost for construction of production plant)	15%: LE 25%: ME 30%: SE max €680,000	40% max €200,000

Specific targets per year and fuel technology were set in the National Renewable Action Plan.

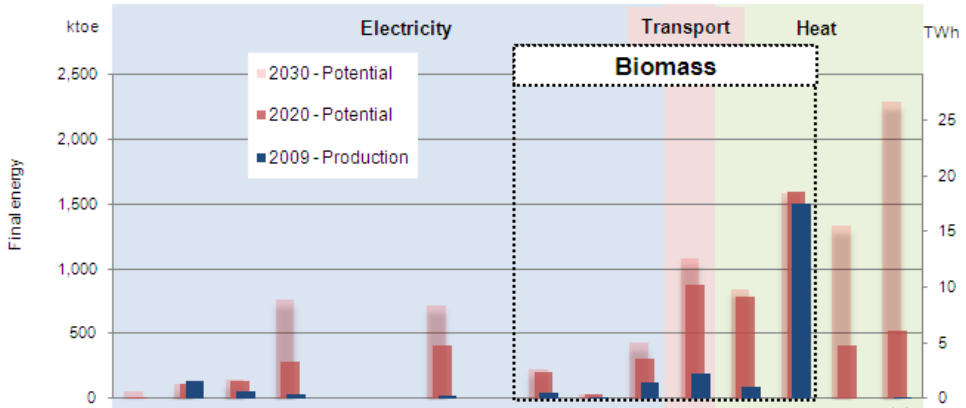
5 RES-E Grid Integration

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.

CZECH REPUBLIC - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	7%	3%	12%	8%
Share of total sector consumption in total final energy consumption	23%	25%	52%	99%
Production 2009 [ktoe]	400	195	1,596	2,191
Production 2007 [ktoe]	293	30	1,682	2,005
Production 1999 [ktoe]	203	45	1,078	1,326
Average growth 2007-2009 [%/a]	17%	155%	-3%	5%
Average growth 1999-2009 [%/a]	7%	16%	4%	5%
Realisable potential until 2020 [ktoe]	1,459	881	3,314	5,655
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	5%
Realisable potential until 2030 [ktoe]	2,288	1,086	6,059	9,433



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	128	48	30	0	0	24	0	38	1	120	195	89	1,505	-	2
Production 2007 [ktoe]	0	128	47	0	0	0	9	0	18	1	83	30	80	1,600	-	2
Production 1999 [ktoe]	0	138	33	0	0	0	0	0	13	0	45	45	141	935	-	2
Ø annual production growth 2007-2009	-	0%	1%	978%	-	-	66%	-	43%	0%	20%	155%	5%	-3%	-	0%
Ø annual production growth 1999-2009	-	-1%	4%	-	-	-	-	-	12%	14%	10%	16%	-4%	5%	-	1%
Realisable potential by 2020 [ktoe]	3	106	135	277	0	0	402	0	202	27	307	881	788	1,591	412	523
Realisable potential by 2030 [ktoe]	55	107	141	768	0	0	723	0	230	30	429	1,086	843	1,591	1,332	2,292

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

Since January 2011 a new tax on solar electricity has been introduced. A draft of the new Law on RES is under discussion.

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.

In January 2011 the government introduced a new tax on solar electricity.

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. Proposed purchase prices for 2012 are shown in Table 2 [18].

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

	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	
Power plant	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.

Table 2: Feed-in tariffs/premium level in 2012 [18]

Power plant	Feed-in		Premium	
	CZK/MWh	€/ MWh	CZK/MWh	€/ MWh
Small hydro PP commissioned on new sites from 1 January 2012 to 31 December 2012	3190	129	2140	87
Biomass O1 category: new PP or commissioned from 1 January 2008 to 31 December 2012	4580	185	3530	143
Biomass O2 category: new PP or commissioned from 1 January 2008 to 31 December 2012	3530	143	2480	100
Biomass O3 category: new PP or commissioned from 1 January 2008 to 31 December 2012	2630	107	1580	64
Biogas category AF1: new PP or commissioned from 1 January 2012 to 31 December 2012	4120	167	3070	124
Biogas category AF2: new PP or commissioned from 1 January 2012 to 31 December 2012	3550	144	2500	101
Wind PP commissioned from 1 January 2012 to 31 December 2012	2230	90	1790	73
PV <30kW commissioned from 1 January 2012 to 31December 2012	6160	249	5080	206

* € 1 = 24.72 CZK (2011-11-29)

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.

Proposed changes on RES-E support in a draft of the new Law on RES:

- Basic principles of support will remain the same: RES-E is supported by a premium purchase price. The purchase price of electricity is to be established to ensure the fifteen-year return on investment in power plants generating RES-E. Support must annually decrease by more than 5%. This rule was already introduced in the existing version of this Law.
- Small power plants up to 100 kW of installed capacity can choose between a premium or a feed-in tariff. Higher capacity power plants and co-firing power plants will automatically get the premium.
- Until now there was only an annual premium. The draft of the newly proposed law introduces the hourly premium, which will vary according to the current operational situation in the network and according to predefined rules. ERO shall publish a "formula" how this hourly premium will be calculated. It can be expected that it will be higher in the winter, on weekdays and in the morning when a lack of electricity is observed. Ergo the lowest premium will be paid at night when electricity demand is lower.

Solar tax

In January 2011 the government introduced a new tax on solar electricity. The investors who commissioned plants with an installed capacity over 30 kW-peak in 2009 and 2010 will have to pay a retroactive solar tax. This Tax varies from 26 percent (FIT for sold power to grid operators) to 28 percent (premium payments for electricity produced and consumed in the consumption place) and will be valid for three years (2011 – 2013) [17].

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. There are no new targets set for the year 2011 and 2012.

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

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 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.

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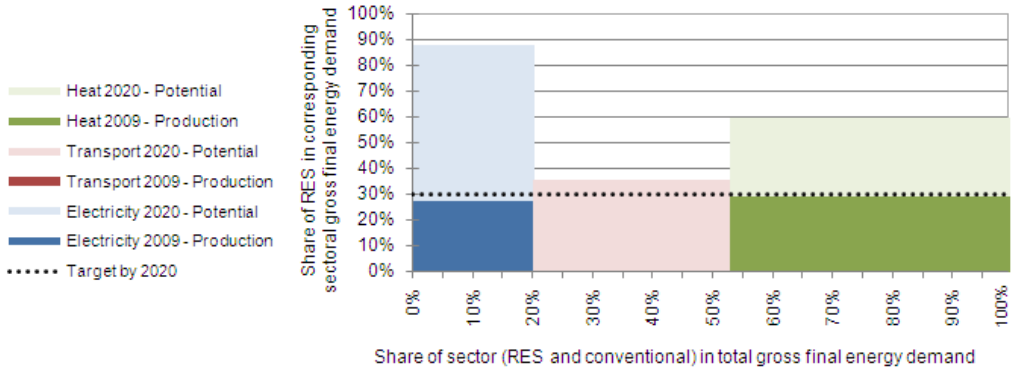
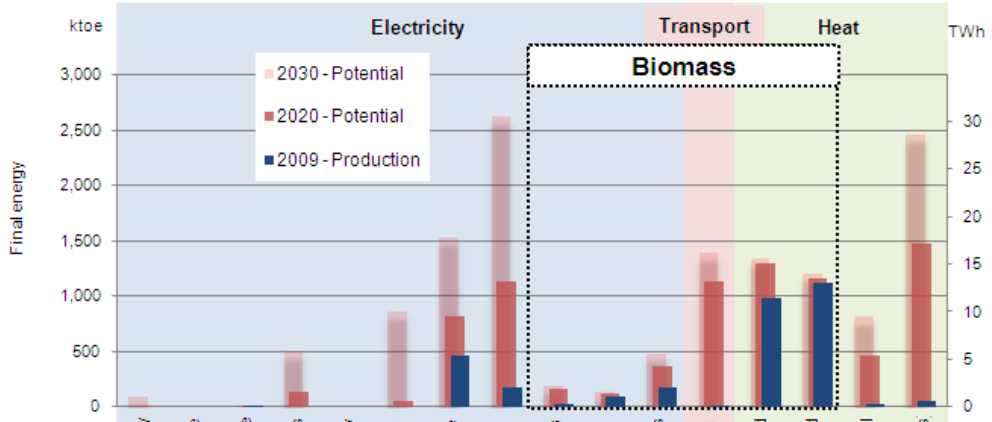
DENMARK - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	27%	0%	29%	19%
Share of total sector consumption in total final energy consumption	20%	33%	47%	100%
Production 2009 [ktoe]	864	10	2,173	3,047
Production 2007 [ktoe]	892	6	2,104	3,002
Production 1999 [ktoe]	380	0	1,114	1,494
Average growth 2007-2009 [%/a]	-2%	29%	2%	1%
Average growth 1999-2009 [%/a]	9%	-	7%	7%
Realisable potential until 2020 [ktoe]	2,775	1,128	4,410	8,312
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	3%
Realisable potential until 2030 [ktoe]	5,881	1,393	5,826	13,101



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Bioweste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	0	2	0	0	0	464	171	28	88	169	10	984	1,117	27	46
Production 2007 [ktoe]	0	0	2	0	0	0	442	110	26	89	157	6	886	1,177	21	21
Production 1999 [ktoe]	0	0	2	0	0	0	268	3	17	54	46	0	530	582	0	1
Ø annual production growth 2007-2009	-	-	0%	-	-	-	2%	25%	3%	-1%	4%	29%	5%	-3%	14%	49%
Ø annual production growth 1999-2009	-	-	-2%	-	-	-	6%	52%	5%	5%	14%	-	6%	7%	49%	43%
Realisable potential by 2020 [ktoe]	4	0	3	129	0	44	818	1,134	162	120	360	1,128	1,304	1,165	466	1,475
Realisable potential by 2030 [ktoe]	88	0	3	499	0	861	1,538	2,625	193	133	479	1,393	1,338	1,208	814	2,467

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

There were no important policy changes in 2011. However, based on the Energy Strategy 2050, which was announced in February 2011, the Government has initiated negotiations on a new energy agreement.

The goal of the Danish government is independence from coal, oil and gas by 2050. In the short term, the need for new renewable energy capacity is justified by the target of a 30 % share of renewables by 2020. Meeting and upholding this target will require significant efforts in the years to come.

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 CO_2 neutral, is exempt from the CO_2 tax. Solar heating plants are exempt from both energy and CO_2 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 CO_2 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 off-shore receive a premium which in combination with the market price may not exceed (depending on location) 51.8 or 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 ore/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. More information about this instrument is available at www.energinet.dk.

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. 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 was DKK 25 million (€3.4 million) per year and applies to the period of 2008-2011. Regarding the year 2012, the Energinet.dk is waiting for a political agreement to be made regarding the future of the ForskVE-programme.

Funding is provided for research, development and demonstration projects within the exploitation of environmentally friendly power generation technologies under the ForskEL-programme. The 2012 budget is DKK 130 million (€ 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.

Energienet.dk has provided a budget of DKK 10 million (€ 1.34 million) for guarantees. Each guarantee will cover most of the loan in question. The maximum guarantee is DKK 500,000 (€ 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 CO_2 neutral, it is exempt from CO_2 duty. Solar heating plants are exempt from both energy and CO_2 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: DKK 20,000 (€ 2,681) for the establishment of geothermal heating; DKK 15,000 (€ 2,011) for the establishment of liquid-water heat pumps and air-water heat pumps; DKK 10,000 (€ 1,341.8) for the establishment of district heating units and 25 % of investment costs for solar installations. In total DKK 400 million (€ 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 a 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 CO_2 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 DKK 200 million (€ 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 DKK 53 million (€ 7.1 million) for the period 2008-2012. DKK 180 million (€ 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.

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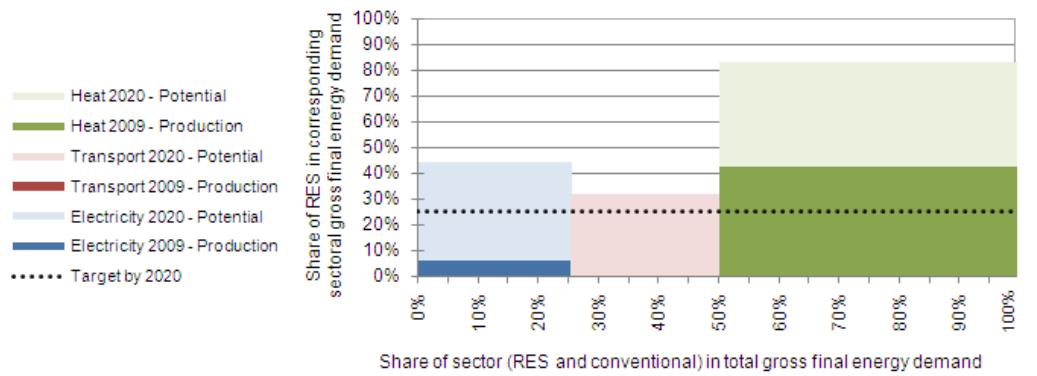
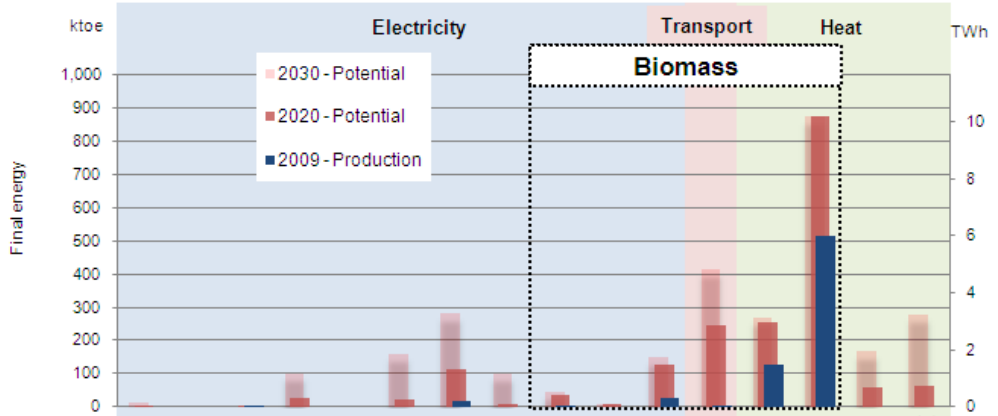
ESTONIA - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	6%	0%	43%	23%
Share of total sector consumption in total final energy consumption	25%	25%	50%	100%
Production 2009 [ktoe]	47	0	643	690
Production 2007 [ktoe]	12	0	571	583
Production 1999 [ktoe]	1	0	496	497
Average growth 2007-2009 [%/a]	93%	-	6%	9%
Average growth 1999-2009 [%/a]	42%	-	3%	3%
Realisable potential until 2020 [ktoe]	339	245	1,250	1,834
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	2%
Realisable potential until 2030 [ktoe]	776	416	1,589	2,781



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	0	2	0	0	0	17	0	1	0	26	4	127	516	-	0
Production 2007 [ktoe]	0	0	2	0	0	0	8	0	1	0	2	0	80	491	-	0
Production 1999 [ktoe]	0	0	0	0	0	0	0	0	0	0	1	0	68	428	-	0
Ø annual production growth 2007-2009	-	-	18%	-	-	-	44%	-	-27%	-	292%	-	26%	3%	-	-
Ø annual production growth 1999-2009	-	-	21%	-	-	-	-	-	-	-	38%	-	6%	2%	-	-
Realisable potential by 2020 [ktoe]	1	0	3	26	0	21	114	8	36	6	125	245	256	874	59	61
Realisable potential by 2030 [ktoe]	11	0	3	102	0	159	281	100	46	6	148	416	270	874	167	278

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

There were no important policy changes in 2011. However, the Estonian Ministry of Economy intends to reduce renewable energy subsidies starting 2013, because the market price and thus profitability is too high as compared to the burden on consumers [8]. The ministry hopes the bill will reach parliament at the beginning of next year and the cuts take effect at the start of 2013 along with full opening of the electricity market. The ministry's plan would make the size of support dependent on the free market price of electricity. In that case hydroelectric power plants and cogeneration plants would be entitled to a subsidy of 7.4 €cents minus the free market price. Support for wind turbines would be 8.6 €cents minus the free market price. Another aim of the bill is to set a ceiling on renewable energy generation. In January-August 800 GWh of electricity was produced from renewable sources. The bill caps annual output of renewable energy entitled to support at 1,200 GWh. [9]

1 Summary: RES Support Policy

RES-E

The key support instrument for RES-E production is feed-in premium which has been available since 2010. The feed-in premium does not differ for the individual technologies and it amounts to 53.7 €/MWh. In 2010 the level of support for electricity and heat cogeneration from RES was reduced (the feed-in tariff was revoked). 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 were submitted. About 4,000 MW of wind power plant were proposed to join Estonia's energy system, while Estonia's peak consumption is only about 1,500 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 and heat is produced in an efficient cogeneration regime.

RES-T

Currently there is no direct support scheme for RES-T in Estonia. The exemption of biofuels from fuel excise duty is not applied after the expiration 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 Renewable Energy Sources (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 €/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 €/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 CO_2 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 CO_2 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 m^2 alternative heating systems should be considered.

Minimum energy performance requirements for existing (larger than 1000 m^2) 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 32 €/MWh is applied if electricity is produced in an efficient cogeneration regime using fossil fuels, and 53.7 €/MWh when produced from renewable sources, with a capacity not exceeding 10 MW.

4 Details RES-Transport Support Policy

Tax exemption

The exemption of biofuels from fuel excise duty is not applied after the expiration 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.

In March 2011 the government decided to launch the Electric Mobility Programme for Estonia (it is not based on renewable electricity). It will be financed from the sale of emission allowances to the amount of 10 million Assigned Amount Units (AAU) to the Mitsubishi Corporation. The Programme includes three parts: the Ministry of Social Affairs will take into use 507 Mitsubishi iMiev electric cars as samples, the Ministry of Economic Affairs and Communications will develop the grant scheme to support acquisition of electric cars, and charging infrastructure for electric cars will be built [10].

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.

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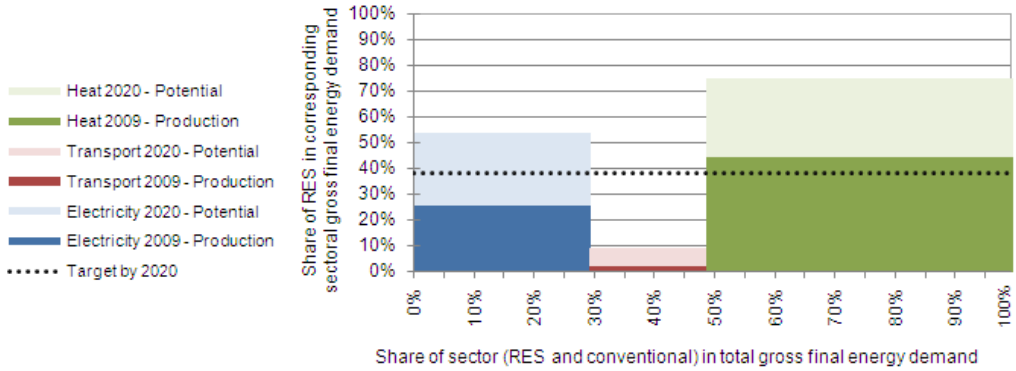
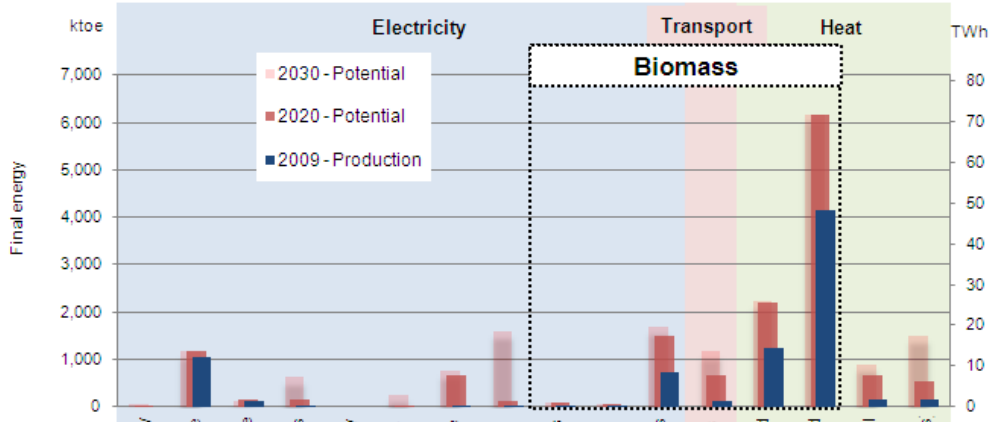
FINLAND - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	26%	2%	45%	31%
Share of total sector consumption in total final energy consumption	29%	19%	51%	100%
Production 2009 [ktoe]	1,865	90	5,686	7,641
Production 2007 [ktoe]	2,090	1	6,177	8,268
Production 1999 [ktoe]	1,823	0	5,160	6,982
Average growth 2007-2009 [%/a]	-6%	849%	-4%	-4%
Average growth 1999-2009 [%/a]	0%	-	1%	1%
Realisable potential until 2020 [ktoe]	3,897	668	9,574	14,140
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	2%
Realisable potential until 2030 [ktoe]	6,045	1,172	10,809	18,026



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	1,061	120	0	0	0	19	6	3	25	723	101	1,231	4,154	150	150
Production 2007 [ktoe]	0	1,054	120	0	0	0	16	0	2	25	827	1	1,248	4,673	128	128
Production 1999 [ktoe]	0	974	116	0	0	0	4	0	2	0	717	0	594	4,550	8	8
Ø annual production growth 2007-2009	-	0%	0%	10%	-	-	8%	-	3%	1%	-7%	905%	-1%	-6%	8%	8%
Ø annual production growth 1999-2009	-	1%	0%	12%	-	-	16%	-	3%	-	0%	-	8%	-1%	34%	34%
Realisable potential by 2020 [ktoe]	3	1,159	133	155	0	27	676	116	97	41	1,490	668	2,200	6,176	662	536
Realisable potential by 2030 [ktoe]	66	1,171	135	622	0	255	759	1,604	105	46	1,684	1,172	2,222	6,176	904	1,507

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

There are no significant policy changes in Finland since March 2011.

1 Summary: RES Support Policy

RES-E

The new Law on support of RES-E production entered into force on 25 March 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 (effective from 25 March 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 plants is 83.50 €/MWh. Target price for biogas electricity is set to be at 133.5 €/MWh [11]. 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 CO_2, the support would be 18 €/MWh, and when the cost of an emission permit was 23 €/t CO_2, the support would be 0 €/MWh.

Total ceiling for wood based CHP electricity production is set to 750 000 Euros per annum.

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 ehdoista) 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. There is no indication on continuity of this program.

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 20% of eligible costs. Such eligible costs might include material and equipment costs but not the cost of work. Last call ended on 8 April 2011 [10].

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).

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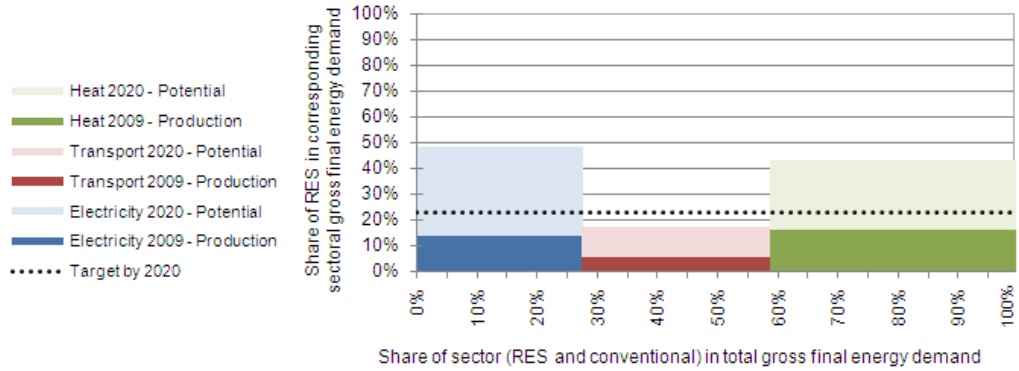
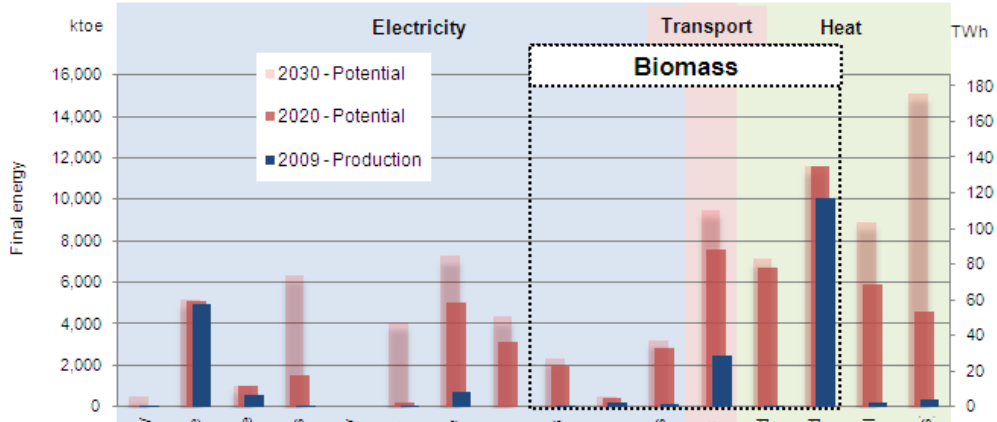
8. Law on Energy Grants for Residential Buildings No.1059/2008 (Laki asuntojen korjaus-, energia- ja terveyshaitta-avustuksista annetun lain muuttamisesta)// http://www.finlex.fi/fi/laki/alkup/2008/20081059
9. Draft of law on guarantees of origin (21 September 2011) http://www.tem.fi/files/30838/HE_MKi_14.9.2011.pdf
10. Energy Grants for Residential Buildings // http://www.hel.fi/wps/wcm/connect/a69254004a17253c816ce93d8d1d4668/KVAS_AvOhjAsoyHaku2011.pdf?MOD=AJPERES&lmod=1737737323&CACHEID=a69254004a17253c816ce93d8d1d4668
11. Ministry of employment and economy // http://www.tem.fi/?s=2471&89519_m=102404

FRANCE - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	14%	6%	16%	12%
Share of total sector consumption in total final energy consumption	27%	31%	41%	100%
Production 2009 [ktoe]	6,022	2,454	10,698	19,174
Production 2007 [ktoe]	5,724	1,447	9,723	16,893
Production 1999 [ktoe]	6,494	275	9,329	16,098
Average growth 2007-2009 [%/a]	3%	30%	5%	7%
Average growth 1999-2009 [%/a]	-1%	24%	1%	2%
Realisable potential until 2020 [ktoe]	21,236	7,606	28,797	57,639
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	6%
Realisable potential until 2030 [ktoe]	32,557	9,512	42,787	84,856



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	7	4,981	527	14	0	42	704	0	73	170	110	2,454	84	10,056	214	344
Production 2007 [ktoe]	7	4,876	520	1	0	45	328	0	54	154	117	1,447	250	9,042	161	270
Production 1999 [ktoe]	0	5,413	0	0	0	50	3	0	10	71	120	275	284	8,919	7	120
Ø annual production growth 2007-2009	0%	1%	1%	218%	-	-3%	46%	-	16%	5%	-3%	30%	-42%	5%	15%	13%
Ø annual production growth 1999-2009	-	-1%	-	-	-	-2%	74%	-	22%	9%	-1%	24%	-11%	1%	41%	11%
Realisable potential by 2020 [ktoe]	44	5,116	1,012	1,524	0	226	4,990	3,103	1,954	427	2,839	7,606	6,707	11,609	5,911	4,570
Realisable potential by 2030 [ktoe]	514	5,168	1,022	6,382	0	4,081	7,268	4,349	2,348	474	3,229	9,512	7,133	11,609	8,914	15,131

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

Some major changes have taken place in the electricity sector; heating/cooling policies experienced minor changes; there were no changes in transport policies.

In March 2011, the Ministry of the Environment and the Ministry of Economy passed a new decree on the support of photovoltaics power that brought major changes to the tariff structure. Tariffs for all sizes of installation were lowered significantly by 20 % after having been one of the highest in Europe. Policymakers introduced an automatic, recurring degression of up to 9.5% for photovoltaic tariffs that occurs four times a year and depends on the capacity additions in the previous quarter. If huge quantities are added, tariffs can potentially decrease by up to 33 percent annually. The revision of the policy also brought a new categorization to the tariffs that distinguishes between fully integrated and integrated installations, location (mounted to private, commercial, and public buildings; ground-mounted), and size.

In the heating/cooling sector, policies largely remained unchanged. Since the beginning of 2011, the tax deduction benefits for investments in heating/cooling installations that use renewable energy ("Eco-Pret à Taux Zero") can no longer be combined with the zero interest loan ("Credit d'Impot Developpement Durable").

There were no changes to transport policies since March 2011.

1 Summary: RES Support Policy

RES-E

A fixed feed-in tariff and a public competitive bidding scheme for biomass and offshore wind power plants are the key instruments for RES-E support in France. The feed-in tariff covers all major renewable energy technology and provides support for periods of 15 and 20 years depending on the technology. Tariffs are differentiated by technology and size of installation. Except for wind and solar photovoltaic power, they are not subject to annual degression; policymakers reduce them on an ad-hoc basis every few years. Additional bonuses are paid for the compliance with certain quality criteria. Over the last three years (2009-2011), several modifications to the legislation have been made, particularly what concerns the support of power production from solar photovoltaic, biomass, geothermal and wind energy.

RES-H&C

France has three major instruments for the support of renewable energy sources in the heating and cooling sector. The Heat Fund ("Fonds Chaleur") is the most important instrument for large-scale installations. It enables heat producers to receive a region-specific feed-in premium for every MWh of heat they feed into the network. For small-scale installations of households and municipalities two main incentives are in place, which are a zero interest loan (the "Eco-Pret à Taux Zero") and a tax deduction policy (the "Credit d'Impot Developpement Durable"). Some regions provide investors of small scale projects with additional fiscal incentives.

RES-T

Renewable energy sources in the transport sector receive support through several policies. A quota obligation forces retailers to blend their fuel with a minimum share of biofuels. Blended fuels and pure biofuels also benefit from reduced taxes. There is a bonus malus system, which encourages the replacement of inefficient vehicles with low-emission vehicles. France also provides buyers of electric and hybrid vehicles with a premium.

2 Details RES-Electricity Support Policy

Feed-in Scheme

Support for RES-E is provided by a feed-in tariff scheme. The scheme is not regulated by an own law but is integrated into the Law on the Modernisation and Development of the Public Electricity Supply (Law N° 2000-108) as Article 10[85]. Implemented in 2000, there is both a purchase obligation ("obligation d'achat") as well as a provision on tariffs ("tarifs d'achat") for renewable energy. The height of tariffs for each technology is regulated in decrees ("arrêtés tarifaires"), of which several have been issued since the enactment of the law. The last decree was passed in March 2011[86] and introduced new tariffs and provisions for power produced from photovoltaic installations.

Two ministries are responsible for the elaboration and issuance of the decrees on tariffs, which are the Ministry of the Environment (MEDDTL)[87] and the Ministry of the Economy (MINEFI)[88]. Tariffs for solar photovoltaic installations are issued by the Energy Regulation Commission (CRE)[89]. Detailed information on the instrument and tariffs is available at the MEDDTL's website (http://www.developpement-durable.gouv.fr/).

Tariffs are differentiated by technology and project size and guaranteed for 15 years for onshore wind, biogas and geothermal energy plants, and for 20 years for off-shore wind, solar PV and hydro power plants. There is no annual degression of tariffs such as in Germany except for wind and solar power. Rather, tariffs are adjusted (increased) annually to inflation; decrees, which are issued every few years, adapt (decrease) tariffs on an ad-hoc basis. Since the passing of the solar photovoltaics decree in March 2011 there is a degression of photovoltaic tariffs, which now decrease in quarterly intervals. The rate of the degression depends on the capacity added in the preceding quarter. The maximum plant size that is eligible for support under the feed-in scheme is 12MW, whereas there is a special regulation for wind energy. There are also environmental restrictions regulated in the "Grenelle II" law[90] that apply to certain renewable energy technologies.

The electricity law does not include targets for renewable energy in electricity production. The Directive 2009/28/EC, however, requires France to reach a share of 23% from renewable energy sources in final energy demand by 2020. In its National Renewable Energy Action Plan (NREAP) submitted to the European Commission in June 2010 to report on its progress towards the RES directive, France defined a non-binding RES-E target of 27% by 2020.

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85 Electricity Law: http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000750321 (French)

86 Photovoltaics Decree: http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000023661449 (French)

87 Le ministère de l'Ecologie, du Développement durable, des Transports et du Logement: http://www.developpement-durable.gouv.fr/ (French)

88 Le ministère l'Économie, des Finances et de l'Industrie: http://www.economie.gouv.fr/ (French)

89 Commission de Régulation de l'Energie: http://www.cre.fr/ (French)

90 Grenelle II Act: http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000022470434 (French)

Table 1: Overview on tariffs differentiated by technology granted by the French feed-in tariff scheme (Updated November 2011)[91].

Tariffs incl. bonuses	**Support level 2011 (€/MWh)**	**Additional information**		
Hydro	60.7 (available bonuses: 0-41.8)	Last decree issued on 1 March 2007	No Degression	Annual Inflation Correction
Wind onshore	82.0 (in the first 10 years; 28.0-82.0 in the last 5 years)	Last decree issued on 17 November 2008	2% annual degression	
Wind offshore	130.0 (in the first 10 years; 30.0-130.0 in the last 10 years)	Last decree issued on 17 November 2008		
Solid Biomass	43.3 (available bonus: 77.1-125.3)	Last decree issued on 27 January 2011	No Degression	
Biogas	81.2-97.5 (available bonus: 0-40.0) 111.9-133.7 (available boni: 0-66.0)	Last decree issued on 19 May 2011; higher tariffs for plants fed with agricultural residues.		
Geothermal	200.0 (available bonus:0-80.0)	Last decree issued on 23 July 2010		
Solar PV[92]	*01/10 - 31/12/11*	Tariffs in brackets refer to tariffs valid from March to July; "++ criteria" = category "Intégration au bâti" with high criteria; "+ criteria" = category "Intégration simplifiée au bâti" with lower criteria; special tariffs for educational buildings and hospitals;	Quarterly degression review depending on capacity additions in the preceding quarter ("Breathing Cap")	
Residential Buildings				
<9kW (++ criteria) *(T1)*	406.3 (460.0)			
9kW-36kW (++ crit.) *(T1)*	355.5 (402.5)			
<36kW (+ crit.) *(T4)*	248.5 (303.5)			
36kW-100kW (+ crit.) *(T4)*	236.1 (288.3)			
Commercial Buildings				
<9kW (++ crit.) *(T3)*	288.2 (352.0)			
<36kW (+ crit.) *(T4)*	248.5 (303.5)			
36-100kW (+ crit.) *(T4)*	236.1 (288.3)			
Ground-mounted/large-scale				
0-12000kW *(T5)*	113.8 (120.0)			

Wind

A wind plant is only eligible to receive support under the feed-in tariff if it is part of a wind park with at least five turbines and located within a Wind Energy Development Zone (Zone de Développement Eolien, ZDE). ZDEs are determined at the local level and must comply with national and regional guidelines. The tariff is guaranteed for 15 years, whereas power producers receive 82 €/MWh in the first 10 years of operation. In

91 Tarifs d'achats – All tariffs: http://www.developpement-durable.gouv.fr/Les-tarifs-d-achat-de-l,12195.html (French) Add date of consultation – idem for other footnotes

92 Tarifs d'achats – phtovoltaic tariffs: http://www.photovoltaique.info/Aujourd-hui-arrete-du-4-mars-2011 (French)

the last five years, the height of the tariff depends on the productivity of the plant, ranging between 28€/MWh (if the park operates 3600 full load hours or more per year) and 82 €/MWh (2400 full load hours or less per year).

On 25 August 2011, the French government issued a decree on the regulatory procedures for wind power plants[93]. While it aims to facilitate the administrative process to build wind power plants, it also targets environmental question, such as the protection of the landscape, decommissioning and civil involvement in such projects.

Offshore wind power plants receive a tariff of 130 €/MWh in the first 10 years of operation, followed by a variable rate of between 30 €/MWh (if the park operates 3900 full load hours or more per year) and 130 €/MWh (2800 full load hours or less per year) in the last 10 years. In addition to adapting to annual inflation, rates decrease by 2% per year. In January 2011, the French government announced to call for tenders for offshore wind parks with a total capacity of 6 000GW to be completed by 2020. In July 2011, the government opened the first round of auctions, tendering 3 000MW of offshore wind power capacity. Successful bidders are scheduled to start construction of these plants by 2015. Tariffs for these offshore parks will not exceed 150 to 160 €/MWh according to the government.

Biogas & Biomass

In May 2011, the tariffs for biogas have been increased significantly. Tariffs for biogas plants fed with agricultural residues now range between 111.9 and 133.7 €/MWh depending on the size of the plant. Named “methanisation” in the feed-in scheme, rates for this technology are roughly 4 € higher than in previous years. Operators can also benefit from bonuses of up to 66 €/MWh. Biogas plants that use domestic waste receive a tariff of 81.2 and 97.5 and are eligible for bonuses of up to 40€/MWh under the new tariff regime.

To support the development of biomass power plants, the French government is regularly calling for tenders. Four auctions have been conducted so far, in 2003 (315 MW), 2006 (300 MW), 2009 (250 MW), and 2011 (420 MW). Investors bid on signing power purchase agreements for a 20 year period for both biogas and biomass power plants. The tariffs concluded in the 2006 call were on average 128€/MWh, whereas those in 2009 stood at an average 45€/MWh. The fourth call for tenders was terminated in February 2011; the next is scheduled to open in mid-2012.

Photovoltaics

After a three-month moratorium in the beginning of the year, the Decree on the Purchase Conditions for Electricity Produced from Installations Using Solar Radiation Energy on 4 March[94] reintroduced support for power production from photovoltaic plants. The decree brought a one-time reduction of 20% to all tariffs. Even though the French government had announced introducing a hard cap of 500MW annually, no such cap was enacted (500MW is an objective, though). Instead, tariffs are now reduced quarterly and the height of the degression depends on the amount of capacity applied for support under the feed-in scheme in the previous three months (“breathing cap”). It can vary between 0 % (less than 5MW added in the last three months) and 9.5 % (more than 65MW added in the last three months).

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[93] MEDDTL: Press release on new regulations for wind power plants: http://www.developpement-durable.gouv.fr/IMG/pdf/2011-08-26_CP_-_Eolien_terrestre-1.pdf (French)

[94] See Footnote 2.

Tariffs for photovoltaics are differentiated by size, location (residential, other/commercial buildings, educational/health buildings; ground-mounted), and the compliance to certain quality criteria. In total, there are 7 distinct tariffs in five categories (T1 to T5), whereas small installations on residential buildings receive the highest and ground-mounted, large-scale installations the lowest tariff. The French feed-in tariff also distinguishes between fully integrated and integrated installations ("intégration simplifiée"). While both need to provide a certain level of sustainability, fully integrated installations need to provide a stronger integration into the building (installed on the rooftop, provide a watertight sealing of the building). Provisions for integrated installations are less strict and therefore receive lower tariffs. There are also special tariffs for educational buildings and hospitals, the level of these tariffs range between those of residential and commercial installations.

Tariffs for large-scale appliances with a capacity greater than 100kW (and for all those which do not comply with any quality criteria) have been lowered significantly, now being at 113.8 €/MWh (after 328 €/MWh in 2010). However, the government has begun holding tenders for plants with capacities greater than 250kW that potentially provide investors with higher tariffs.The tendering scheme replaces the FiT.

Between March and October 2011, tariffs decreased by 11.7 and 18% for integrated and fully integrated installations respectively. The tariff for non-integrated installations (T5) dropped by 5.2%. The next round of adaption will be done on 1 January 2012.

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, and municipality) or by the regional entity of the French Environment and Energy Management Agency (ADEME)[95].

3 Details RES-Heating and Cooling Support Policy

Feed-in Premium

In order to support renewable energy in heating and cooling, France created a heat funds in 2008, the so called "fonds chaleur". Varying between regions, project size, and sector (agricultural/industrial, public sector), it provides operators of heating and cooling installations with a feed-in premium. Eligible projects include solar thermal energy, geothermal power (direct or using heat pumps), biomass (boiler), recovery of energy (biogas and incineration) and district heating. Installations need to comply with certain levels of energetic and environmental performance to benefit from the incentive. The instrument is coordinated and supervised by ADEME. The budget provided by the heat fund is 1.2 billion € between 2008 and 2013.

Large scale biomass heat production plants (with an annual heat production above 1000 tons of oil equivalent (toe) per year or approximately 11,630MWh) in the industrial and agricultural sector are not automatically eligible to benefit from the premium but

[95] Agence de l'Environnement et de la Maîtrise de l'Energie: http://www2.ademe.fr/servlet/getDoc?id=38480&m=3&cid=96

need to apply for commission through calls for tenders. These auctions are organized on the national level and conducted by ADEME one time a year[96].

The tariffs of the feed-in premium for biomass heat production plants vary significantly according to the size of the installation, as shown in tables 2 and 3.

Table 2: Regional feed-in premium for public service[97]

Energy production in toe/year (output) (indicative MWh)	Regional subsidy for public service[98] (€/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 an installation with a capacity of 1100 toe the premium is 1750*250+1250*250+600*500+300*100€=1080000€.

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

The "Crédit d'impôt développement durable"[99] is a tax deduction scheme dedicated to promote renewable energy sources in heating and cooling of private households. The instrument is revised only upon legislation, but has experienced several amendments during the last few years. The Ministry of the Environment (MEDDTL) is responsible for the policy's implementation; it is executed by ADEME.

In 2011, tax deductions cover 13% to 45% of costs of eligible equipment and can be combined with other public fiscal incentives. The tax deduction has a ceiling of € 8,000 for individuals and € 16,000 for married or registered couples. There is a supplement of 400 € per dependant person. Deductions are available both for new and renovated houses.[100]

Tax deductions are available for energy saving equipment for private dwellings or collective dwellings. Depending on the system, conditions differ by the age of the buildings (under construction, constructed after 1977, constructed before 1977). The equipment eligible for tax deduction and the levels of tax deduction are listed in Article

96 ADEME: Biomass auctions: http://www2.ademe.fr/servlet/getDoc?cid=96&m=3&id=71756&p1=1 (French)

97 ADEME: Fonds Chaleur info paper: http://www2.ademe.fr/servlet/getBin?name=342D82A034F6EA378681F520A51484DD1290159269282.pdf

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

99 MEDDTL: Le crédit d'impôt développement durable: http://www.developpement-durable.gouv.fr/Le-chapitre-II-Le-credit-d-impot.html (French)

100 ADEME: Crédit d'impôt développement durable: http://ecocitoyens.ademe.fr/financer-mon-projet/construction/credit-dimpot-developpement-durable (new houses); http://ecocitoyens.ademe.fr/financer-mon-projet/renovation/credit-dimpot-developpement-durable (renovated houses) (French)

90 of the Finance Law of 2005 and were reviewed twice in the Article 83 of the Finance Law of 2006 and in article 109 of the Finance Law of 2009.

Generally, 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 larger than 3kW.

Zero Interest Rate Loan

The "Eco-prêt à Taux Zero"[101] is a zero interest loan implemented by the MEDDTL, and executed by ADEME[102]. The instrument has been in place since April 2009 and has no dedicated budget restriction. The loan is available to all land owners for the financing of construction works for energy saving in their principal dwelling or in a dwelling of theirs under lease. The zero interest loans are 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.[103]
- For houses consuming less than 150 WhEP/m²/yr, consumption must go below the threshold of 80 kWhEP/m²/yr.[104]

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 20 000€ or 30 000€, depending on the type of work undertaken. The pay-back time of the loan is 10 years.[105]

The loan can be combined with other incentives from local governments. Since 2011, however, investors can no longer benefit from the loan if they have already received funding under the "Crédit d'impôt développement durable".

Regional Incentives

A number of regional incentives exist for small scale projects[106]. They differ greatly from region to region and can include support for 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 ADEME and are attributed on an

101 MEDDTL: L'éco-prêt à taux zero: http://www.developpement-durable.gouv.fr/L-eco-pret-a-taux-zero-en-13.html (French)
102 ADEME: L'éco-prêt à taux zero: http://ecocitoyens.ADEME.fr/financer-mon-projet/renovation/eco-pret-a-taux-zero (French)
103 Does not apply to dwelling built before 1 January 1948.
104 Values are corrected depending on climatic conditions and altitude on site.
105 Pay-back time can exceptionally be increased to 15 years to reduce the reimbursement burden.
106 ADEME: Regional incentives: http://ecocitoyens.ADEME.fr/financer-mon-projet/construction/aides-des-collectivites-territoriales (French)

individual basis. Regional incentives can be implemented by ADEME, the regional administration, the administration of the department or even at the municipality level.

4 Details RES-Transport Support Policy

Quota and Blending Obligations

Since 2005, all fuel retailers are obliged to achieve a minimum share of biofuels in the amount they release for consumption. Law n° 2005-781 on the Programme Determining the Development of Energy Policy[107] initially defined a share of 1.2% to be achieved until 31 December 2005. Since 31 December 2010, retailers are obliged to include at least 7% of biofuels in the overall amount of fuel. By the end of 2015, this share shall rise to 10%. All retailers, who do not blend their fuel with the minimum shares defined in the law, are charged with an additional tax under the General Tax on Polluting Activities ("La taxe générale sur les activités polluantes", TGAP).

In France consumers can also choose between several blended fuels. While conventional gasoline can be blended with up to 5% ethanol (SP95 and SP98) or with up to 10% (SP95-E10), there is also a so-called super-ethanol (E85) that contains between 65 and 85% by volume ethanol. Diesel can contain up to 7% biofuel.

Tax Deduction

France implemented the National Tax on the Consumption on Energy Products, the so called "Taxe Intérieure de Consommation sur les Produits Energétiques" (TICPE)[108]. This law regulates the taxation of energy products, including conventional fuels and those blended with biofuels. Under the TICPE policy super-ethanol fuel (B85; conventional fuel blended with 65-85% biofuel) benefits from a reduced tax of 17.29€/100l. Gasoline and diesel, on the other hand, are taxed with 60.69€/100l and 42.84€/100l respectively. Enacted in 2011, the TICPE policy replaced the National Tax on the Consumption on Petrol Products which had been in place between 2003 and 2011.

Biofuels in pure form benefit from superior tax deduction, ranging from 8 to 14€/100l[109]. Only biofuels verified by certified production centres are eligible to receive this fiscal support.

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.

The "Bonus and Malus Ecologique" was revised during 2010 and 2011, and will be revised once again in 2012. The conditions to receive the bonus have been made

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107 Act on the Programme Determining the Development of Energy Policy: http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000813253&dateTexte= (French)

108 MEDDTL: Taxe Intérieure de Consommation sur les Produits Energétiques : http://www.developpement-durable.gouv.fr/La-fiscalite-des-hydrocarbures,11221.html (French)

109 MEDDTL: Tax deduction on biofuels: http://www.developpement-durable.gouv.fr/La-defiscalisation-partielle-des.html (French)

stricter, while the penalty has increased. The instrument is implemented by MEDDTL[110].

The “Bonus Ecologique” is available for all newly bought vehicles, and ranges from 400€ to 800€ depending on its certified CO_2 emission. On the other hand, a vehicle with high CO_2 emission rate will be penalized by a “Malus Ecologique” ranging from 200€ to 2600€ depending in its CO_2 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 CO_2 emission rate under 110 gCO_2/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 CO_2 emission rates if they have a consumption below 250 gCO_2/km.

Since January 2011, the “Super-Bonus” has replaced the “Super Prime”. 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.

110 MEDDTL: Bonus malus system: http://www.developpement-durable.gouv.fr/Evolution-du-bonus-malus.html (French)

Table 4: Investment premiums and penalties for vehicles in 2011

Investment premium 2011	
CO_2 emission	Investment Premium (in €)
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 penalty 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 5: Penatly for vehicles in 2012

Investment malus 2012	
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

5 RES-E Grid Integration

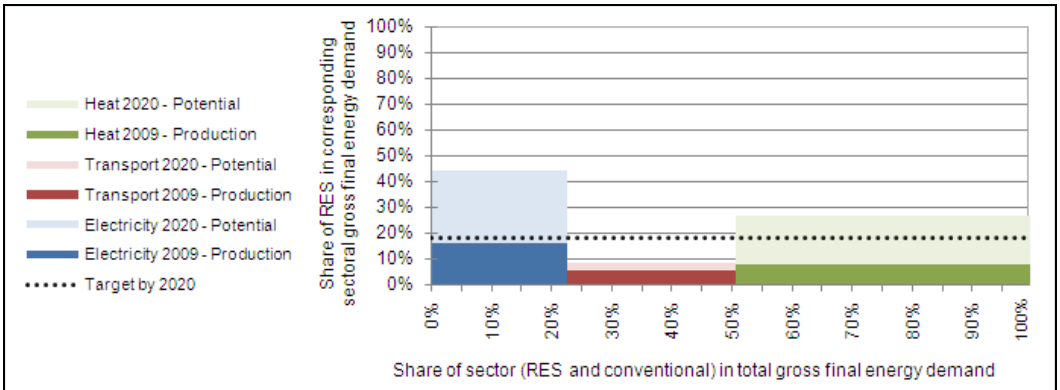
The grid connection of all important RES-E installation is arranged by a standardised contract (“convention de raccordement”) between the developer and the distribution system operator (which is mostly Électricité Réseau Distribution France, ErDF) or in rare cases, the transmission system operator (Réseau de Transport d'Électricité, RTE). The developer connects to the closest point on the network and the grid reinforcement costs are borne by the distribution or transmission system operator.

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

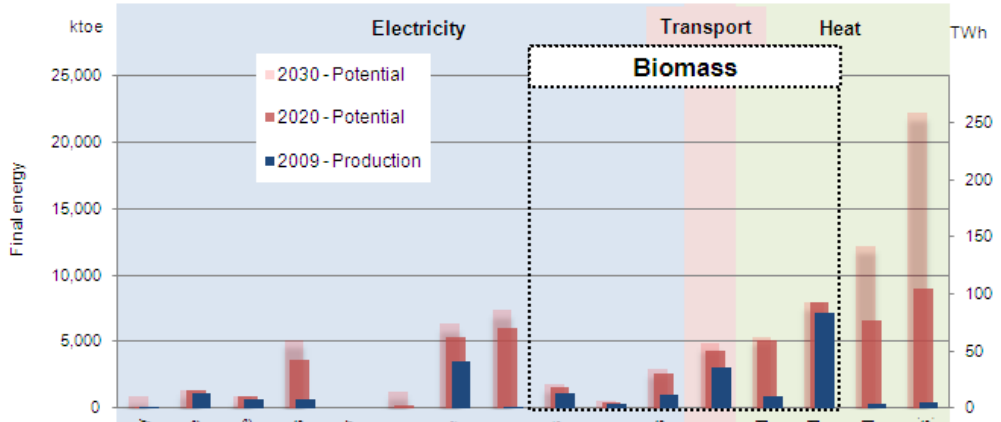
Some exceptional cases, force majeure, and other special cases, stipulated in the contract, can require the RES operator to reduce their production, leading to a momentary loss of earning. There is no priority of dispatch.

The request for connection to the distribution/transmission system operator enters a waiting list. There is no priority given to RES-E producers on this waiting list.

GERMANY - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	16%	6%	8%	9%
Share of total sector consumption in total final energy consumption	22%	28%	49%	100%
Production 2009 [ktoe]	7,869	3,040	8,731	19,640
Production 2007 [ktoe]	7,305	3,103	9,107	19,514
Production 1999 [ktoe]	2,468	114	4,688	7,270
Average growth 2007-2009 [%/a]	4%	-1%	-2%	0%
Average growth 1999-2009 [%/a]	12%	39%	6%	10%
Realisable potential until 2020 [ktoe]	21,942	4,313	28,757	55,011
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	6%
Realisable potential until 2030 [ktoe]	26,141	4,858	47,832	78,831



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	2	1,049	700	626	0	0	3,541	19	1,080	358	936	3,041	900	7,147	313	371
Production 2007 [ktoe]	0	928	619	243	0	0	2,993	2	718	389	720	3,103	706	8,032	177	191
Production 1999 [ktoe]	0	871	618	4	0	0	510	0	82	150	71	114	320	4,197	48	123
Ø annual production growth 2007-2009	-	6%	6%	60%	-	-	9%	221%	23%	-4%	14%	-1%	13%	-6%	33%	39%
Ø annual production growth 1999-2009	-	2%	1%	64%	-	-	21%	-	29%	9%	29%	39%	11%	5%	21%	12%
Realisable potential by 2020 [ktoe]	43	1,375	861	3,602	0	133	5,354	6,049	1,518	444	2,563	4,313	5,153	7,969	6,637	8,998
Realisable potential by 2030 [ktoe]	869	1,389	870	5,153	0	1,269	6,343	7,400	1,763	493	2,893	4,858	5,367	7,969	12,260	22,237

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

Significant changes have taken place in the electricity and heating/cooling sectors; transport policies remained unchanged.

In June 2011, the German Bundestag passed a new amendment of the Renewable Energy Sources Act (EEG), which will come into effect on 1 January 2012. Being its third major revision, the law aims to make renewable energy more competitive. In parallel to the existing fixed feed-in tariffs, it introduces a market premium that allows power producers to sell RES-electricity on the electricity market. The amendment also revises the tariff structure of several renewable energy technologies, including biomass, geothermal and offshore wind power. For solar photovoltaics, a dynamic degression of tariffs based on capacity increase was already introduced in 2010/11. This mechanism is continued in the EEG 2012.

On 1 May 2011 an amendment of the Act on the Promotion of Renewable Energies in the Heat Sector (EEWärmeG) came into effect, implementing the objectives of the Directive on the Promotion of the Use of Energy from Renewable Sources (2009/28/EC). While refraining from introducing strict standards for private buildings, the act adopted norms for heating and cooling in existing public building that undergo major renovations.

In the transport sector, no major changes occurred since the last publication of this country profile. As reported in the previous version, the new Biofuels Sustainability Ordinance introduced additional quality criteria for biofuels in order to benefit from tax reductions and to be an eligible source to fulfil the blending target. On 1 January 2011, Germany increased the mandated E5 fuel blend to E10 (10 % ethanol).

1 Summary: RES Support Policy

RES-E

The main support instrument for RES-E is a feed-in tariff scheme (Renewable Energy Sources Act, EEG). All relevant technologies are eligible, except for co-firing in conventional power plants. The scheme grants fixed feed-in tariffs and as option – as of 2012 – sliding feed-in premiums for a period of 20 years. Tariffs are differentiated by technology and size of installation, and are subject to annual degression for new installations. Additional bonuses are paid for the compliance with distinct 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 (EEWärmeG). The Act introduces the obligation to use RES-H in new buildings >50m^2 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 exempted from taxes until 2015. The tax reduction for all other biofuels will gradually (in steps of approx. 6€ct/litre and year) phase out until 2014.

2 Details RES-Electricity Support Policy

Feed-in Scheme

Support for RES-E is provided by the EEG, a feed-in tariff scheme. Responsibilities are divided between the Federal Ministry of Environment (BMU) and the Federal Grid Agency[111]. Detailed information on the instrument is available at the BMU's website dedicated to renewable energies (http://www.erneuerbare-energien.de/).

The EEG and the tariffs are reviewed regularly by the BMU, in accordance with the Federal Ministry of Food, Agriculture and Consumer Protection[112], as well as the Federal Ministry of Economics and Technology[113]. The scheme is regulated by the Renewable Energy Sources Act (EEG)[114] which came into force on 1 April 2000. The currently effective amendment dates back from 2009 but will be replaced by a modification on 1 January 2012. Evaluations of the law are carried out at three to four-year intervals; the next evaluation report is scheduled for 31st December 2014.

The act aims to increase the share of RES in electricity consumption to 35 % not later than by 2020 and to 80 % by 2050. There is no end-date set for the feed-in scheme.

Tariff levels are differentiated by technology and project size. No support is granted for biogas plants >5 MW_{el} based on sewage and landfill gas, 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 current (2011) feed-in scheme, fixed tariffs are paid that include both the support payment and the electricity price. As of 2012, RES-E producers can choose between the fixed tariff and a feed-in premium option (see below). 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.

111 Bundesnetzagentur: http://www.bundesnetzagentur.de/EN

112 Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz: http://www.bmelv.de/EN

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

114 Renewable Resources Act (EEG): http://www.bmu.de/erneuerbare_energien/downloads/doc/47585.php (German)

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

Tariffs incl. bonuses	Support level 2011 (€/MWh)[115]	Support level 2012 (€/MWh)[116]	Annual Degression*
Hydro	34.3 (>50MW)-126.7 (<500kW)	34.0 (>50MW)-127.0 (<500kW)	1 % (from 2013 onwards)
Wind onshore	90.2 (in the first 5-20 years, depending on yield; after that 49.2 base tariff; available bonus: 4.9-9.8)	89.3 (in the first 5-20 years, depending on yield; after that 48.7 base tariff; available bonus: 4.8-9.8)	1.5 % (from 2013 onwards)
Wind offshore	150.0 (in the first 12 years; after that 35.0 base tariff)	150.0 (in the first 12 years; after that 35.0 base tariff)	7 % (from 2018 onwards)
Biomass (incl. biogas)	76.3-114.4 (available bonus: 19.6-107.8; higher bonuses for biogas)	60.0-143.0 (available bonus: 25.0-80.0; higher bonuses for biogas)	2 % (from 2013 onwards)
Sewage and landfill gas	59.8-87.3 (available bonus: 19.4)	58.9-86.0 (available bonuses: 10.0; 20.0; 30.0)	1.5 % (from 2013 onwards)
Solar PV	*Tariff (direct use)*	*Tariff (direct use)*	1.5 % - 24 % (from 2013 onwards; depending on capacity additions during a 12-months period starting in September of the previous year; "Breathing Cap")
<30kW	287.4 (123.6-167.4)	244.3 (805.0-124.3)	
30kW -100kW	273.3 (109.5-153.3)	232.3 (685.0-112.3)	
>100kW	258.6 (94.8-138.6)	219.8 (560.0-998.0)	
>1000kW	215.6	183.3	
Ground-mounted installations	211.1-220.7	179.4-187.6	
Geothermal	142.1-196.0 (available bonus for >10MW: 29.4-68.6)	250.0 (available bonus: 50.0)	5 % (from 2018 onwards)

*for 2012 tariffs; affects tariffs and bonuses

Different additional bonuses 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 than modernized or retrofitted installations.

Tariffs are guaranteed for a period of 20 years (except for modernized hydropower plants which receive the tariff for 15 years) plus the year of commissioning. Tariffs and bonuses for new installations are reduced by a fixed relative rate on a yearly basis in order to stimulate technological learning. The pre-defined degression rates are differentiated by technology. For solar PV a "breathing cap" was introduced in 2009, which allows the degression rate to be adapted to PV market development in the preceding year. Tariffs for offshore wind energy will only be reduced after 2015 and 2018 respectively, depending on if the plant has been commissioned before or after 1 January 2012. All new geothermal power plants commissioned in 2012 or later will also benefit from a constant tariff until 2018.

The German Bundestag passed the third amendment of the EEG in June 2011. The new version will come into effect on 1 January 2012 and will bring some major changes

115 EEG Tariffs 2011: http://www.bmu.de/files/english/pdf/application/pdf/eeg_2009_verguetungsdegression_en_bf.pdf
116 EEG Tariffs 2012: http://www.bmu.de/files/english/pdf/application/pdf/eeg_2012_verguetungsdegression_en_bf.pdf

to renewable energy support in Germany. Most importantly, the amendment aims to incentivise a stronger market orientation of renewable electricity producers, introducing an optional market premium that allows RES power producers to sell RES-electricity directly on the electricity market. If plant operators decide to opt for this premium, they do not receive a fixed tariff but a sliding premium on top of their electricity market revenues. The sliding premium is calculated as the difference between the fixed feed-in tariff and the average monthly spot market price, corrected by a technology specific profile factor. In addition to the sliding premium, RES power producers receive a management premium for managing the sale of the electricity. Power producers are allowed to change between the fixed and the premium tariff options on a monthly basis. By 2014, the market premium scheme will become obligatory for operators of biogas plants of capacities greater than 750 kW.

The amendment also extended the incentives for direct use (auto consumption) until 2013. Operators of solar photovoltaic plants are eligible to receive a governmental bonus for all electricity they consume from their installation. If the share of the consumption is higher than 30 % of the total output of the installation, the bonus increases. This option aims to incentivize changes in consumption patterns and absorb harmful peaks in electricity production.

Until 2011, power suppliers that supplied more than 50 % of their electricity from renewable sources sold on the market were exempted from paying the allocation for RES-E (35.3 €/MWh in 2011). Known as the “Grünstromprivileg”, this exemption will be limited to 20.0 €/MWh from 2012 onwards. The amendment of the policy has also brought some important changes to the structure of the tariffs. The degression of the off-shore wind power tariff will now decrease three years later, in 2018, but at faster speed of 7 % annually (instead of 5 %). The tariff structure for biomass power plants has slightly changed: on average, basic tariffs are higher and bonuses are stronger oriented towards the quality of the raw material used to operate the plant. Moreover, tariffs will decrease by 2 % (instead of 1 %) from 2013 onwards. The support of geothermal power has been improved and simplified significantly. Basic tariffs for all geothermal plants connected in 2012 or later were lifted to 250.0 €/kWh and remain constant until 2018.

Even though there has been much discussion about a further reduction of the tariffs for solar photovoltaic installations, the 2012-amendment continues with the dynamic degression of PV tariffs introduced in 2010/11. Rates continue being cut by between 1.5 % and 24 % at year end and optionally by up to 15 % at midyear depending on the PV capacity additions in the previous period. By 1 January 2012, the PV tariff will drop by 15 %.

Further support instruments - KfW

A renewable energy power project can benefit from additional fiscal support apart from the EEG. Low interest loans for different technologies are available from state-owned bank KfW[117]. The support from the single KfW programmes cannot be cumulated, but a project can profit from the feed-in tariff scheme in combination with low interest loans. Further information on KfW support programmes can be accessed through the website of the bank.

117 KfW Website: http://www.kfw.de/kfw/en/index.jsp

3 Details RES-Heating and Cooling Support Policy

RES-H law

The Act on the Promotion of Renewable Energies in the Heat Sector (EEWärmeG)[118] was enacted in 2009 and last amended in May 2011. It mandates building owners to use renewable energies for heating and cooling purposes in new buildings with an effective surface greater than 50 m^2. The law includes residential as well as commercial buildings.

On 1 May 2011 an amendment of the EEWärmeG came into effect, which transposed objectives of the Directive on the Promotion of the Use of Energy from Renewable Sources (2009/28/EC) into domestic law. Most importantly, the act aims to make public buildings prototypes for sustainable heating and cooling. Depending on the technology used renewable energy sources have to provide between 15 % and 50 % of heating and cooling demand of newly built and 15 % to 25 % of renovated public buildings. New private buildings need to provide 15 to 50 % of heating and cooling demand from renewable energy sources as well; yet, there are no provisions for renovated private buildings. Municipalities can also rely on districting heating/cooling or solar thermal installations from other public buildings to provide for demand.

While there are no mandates for existing private buildings, states can implement their own standards. Buildings with an actual annual period of use below four months are exempted from the obligation. The share from renewable energy of total heating and cooling demand depends on the technology and is lowest for solar thermal installations:

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

Technology	Obligation
Solar thermal	15 % for all new buildings (15 % for renovated public buildings) *or* 0.04 m² of solar collectors per m^2 of total effective area for single/double family houses (0.03 m² for apartment houses)
Geothermal, heat pumps, solid and liquid biomass	50 % for all new buildings (15 % for renovated public buildings)
Biogas	30 % for all new buildings (25 % for renovated public buildings)

Combinations of RES-H&C sources and technologies may be used for quota fulfilment. Building owners who do not want to use renewable energy may comply with the obligation by using other climate protecting measures such as using waste heat (50 % of heat demand), using 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)[119]. Compliance is monitored by receiving certification. Certificates need to be presented upon request and are checked by authorities on a random basis. In case of non-compliance, building owners have to pay fines of up to € 50,000. Owners of commercial buildings usually pay much higher fees than private home owners.

118 Heat Act (EEWärmeG): http://www.bmu.de/english/renewable_energy/downloads/doc/42351.php
119 Energy Saving Ordinance: http://www.bmu.de/energieeffizienz/downloads/doc/38209.php (German)

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 periods 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 Federal Office of Economics and Export Control's (BAFA) is managing the execution of the law. The programme is financed from the federal government budget. 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 website of BAFA[120]. 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 RES 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. Bonuses for solar collectors for water 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

BAFA provides investment grants and subsidies for the extension of existing installations with RES-H&C technologies. Eligible technologies are[121]:

- Solar collector installations up to 40 m² collector surface
- Solar collector installations with more than 40 m² collector surface on single or double-family homes if they are providing a large heat storage volume
- Automatically fed installations for the incineration of solid biomass for heat supply up to 100 kW heat power
- Manually fed installations 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 greenhouse gas emissions and for the increase of efficiency in plants for the incineration of solid biomass up to 100 kW heat power.

120 Bafa Website: http://www.bafa.de/bafa/de/energie/erneuerbare_energien/foerderampel.html (German)

121 Bafa Website – Available support for renewable energy : http://www.bafa.de/bafa/de/energie/erneuerbare_energien/index.html (German)

With the new programme of July 2010 there is no longer any support for installations on new buildings (only new buildings that provide process heat are eligible to receive support under the program). Moreover, in 2012, many of the existing support rates (and bonuses) will decrease.

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

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 Ordiance 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 bonuses 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.

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

Example Measures	**Base support (existing buildings)**	**Max. accumulated bonuses (existing buildings)**
Solar collectors (hot water/cooling demand) <40m^2	120 €/m^2 for innovate use only	
Solar collectors (hot water & heating)<40m^2	120 €/m^2	180 €/m^2 innovation bonus **or** one of the following options: € 600 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 website[122].

MAP Part B: KfW Renewable Energies Programme

For large RES-H plants, 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

122 Bafa Website - Support for Solar Thermal Installations: http://www.bafa.de/bafa/de/energie/erneuerbare_energien/solarthermie/index.html (German)

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 million. 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-combined heat and power (CHP) installations <2MW, RES heating networks with > 500 kWh/a*m, as well as large heat storage installations fed with RES-H (>20m^3) and biogas lines for untreated biogas. Detailed information can be accessed through the website of KfW[123].

The accumulation 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.

CHP Support

With the new effective amendment of the EEG of 2012, the law will not only encourage the use of CHP in biomass installations but will oblige operators to produce at least 60 % of the annual produced electricity in CHP mode. In the first year of operation, the mandate for the use of CHP is set at 25 %. The bonus for using CHP that has existed in the past will be replaced by this obligation.

Under the RES-H Act, buildings that cover 50 % of their heat demand from CHP installations or local heat grids fed by a considerable share of RES are exempted from the obligation under the law. The MAP programme (Part B) also provides support to the extension of heat grids that are fed with heat from RES-H installations. If CHP is used, the support increases 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[124].

4 Details RES-Transport Support Policy

Quota

Since the amendment of the Federal Emission Control Act (BImSchG)[125] in 2006 and the amending Act to Change the Support for Biofuels in 2009[126], fuel suppliers are mandated to blend all fuel placed in the market with biofuels. The blending mandate for the total fuel quantity is currently set at 6.25 % (and will remain at this level until 2014), whereas there are also fuel-specific blending mandates. Between 2010 and 2014, gasoline must be blended with at least 2.8 % ethanol; the blending requirement for

123 KfW Website - Renewable Energies Programme – Premium: http://www.kfw.de/kfw/en/Domestic_Promotion/Our_offers/Renewable_energy.jsp#KfWRenewableEnergiesProgramme-Premium (German)

124 Ministry for Environment, Climate and Energy Industry of Baden-Württemberg – EFRE Programme: http://www.uvm.baden-wuerttemberg.de/servlet/is/37809 (German)

125 Federal Imission Control Act (BImSchG): http://www.bmu.de/english/air_pollution_control/downloads/doc/45372.php

126 Act to Change the Support for Biofuels: http://www.buzer.de/gesetz/8864/index.htm (German)

diesel is set at 4.4 % to be reached until 31 December 2014. Importantly, these amounts refer to energy content, not volume, which is usually lower in biofuels than in conventional gasoline or diesel fuels. From 2015 onwards, the mandate will switch to minimum reductions in greenhouse gas (GHG) emissions to determine the blending objective. GHG-emission reduction targets (compared to reference diesel or ethanol fuel) will be set at 3 % by 2015, 4.5 % by 2017, and 7 % by 2020. Agencies responsible for the monitoring and control of quota-fulfilment are authorized and supervised by the Federal Ministry of Finance.

All sources that comply with the Biomass Ordinance and the Biofuels Sustainability Ordinance are eligible to be used for biofuels production[127]. Energy products that are only partly made from biomass are counted as biofuels for the share of biofuels contained. Since 1 January 2011, when a new Biofuels Sustainability Ordinance was adopted, biofuels need to meet various quality criteria (§4-8) to obtain certification to fulfil the quota and to enjoy tax benefits. The Ordinance on the Recognition of Certification (Biokraft-NachVwV)[128], adopted on 12 March 2010, specifies eligible certificates and agencies allowed to issue certification.

On the basis of the 10th Ordinance on the Implementation of the Federal Immission Control Act[129], Germany introduced a new gasoline type with a blending of up to 10 % of ethanol (E10) in 2011. Since 2009, diesel is blended by up to 7 % of biodiesel.

There is no specific support for electric vehicles that use renewable electricity but the government has allocated corresponding funds for research.

Tax Exemption

Pure conventional biofuels that are not mixed with conventional fossil fuels (biodiesel B100 and crude vegetable oil), benefit from a partial tax exemption under the Energy Tax Act (§ 50). While initially high, the tax exemption for these fuels is gradually phased out until the end of 2015. Since the amendment of the Act on the Support of Biofuels[130] in 2009, the tax reduction will phase out slower than originally planned. The tax burden on biodiesel and vegetable oil will increase in steps of 33 €ct/litre in 2011 to 45 €ct/litre in 2013[131]. 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 10th Ordinance on the Implementation of the Federal Emission Control Act, biofuels can enter the market only if their characteristics comply with the respective DIN norms.

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127 Biomass Ordinance: http://www.bmu.de/english/renewable_energy/downloads/doc/5433.php; Biofuels Sustainability Ordinance: http://www.bmu.de/files/english/pdf/application/pdf/nachv_verordnung_en_bf.pdf

128 Ordinance on the Recognition of Certification: http://www.gesetze-im-internet.de/bundesrecht/biokraft-nachv/gesamt.pdf (German)

129 10th Ordinance on the Implementation of the Federal Immission Control Act: http://www.gesetze-im-internet.de/bundesrecht/bimschv_10_2010/gesamt.pdf (German)

130 Act on the Support of Biofuels: http://www.bmu.de/gesetze_und_verordnungen/gesetzesentwuerfe/parlamentarisches_verfahren/doc/42435.php (German)

131 Union zur Förderung von Oel- und Proteinpflanzen e.V. – Paper on Changes of the Act of Support on Biofuels: http://www.ufop.de/downloads/RZ_Steuerinfo_190609.pdf (German)

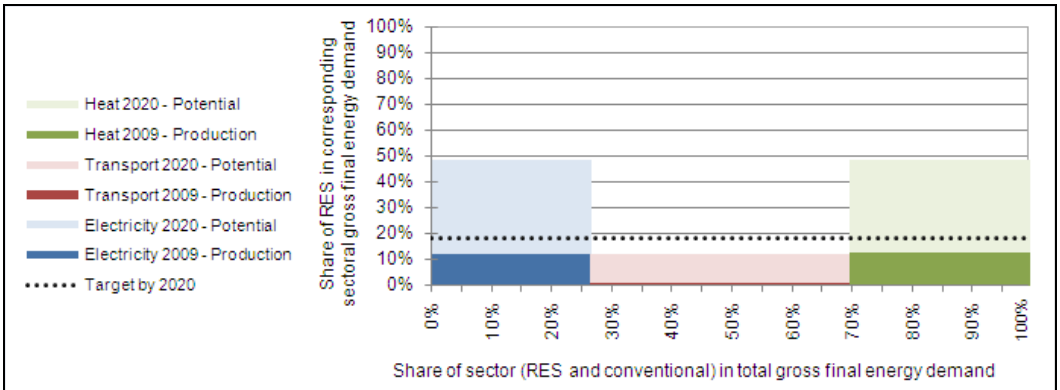
5 RES-E Grid Integration

There is a “shallow” connection charge philosophy in Germany. According to the EEG, grid operators are obliged to connect, transport and dispatch RES-E with priority over conventional generators.

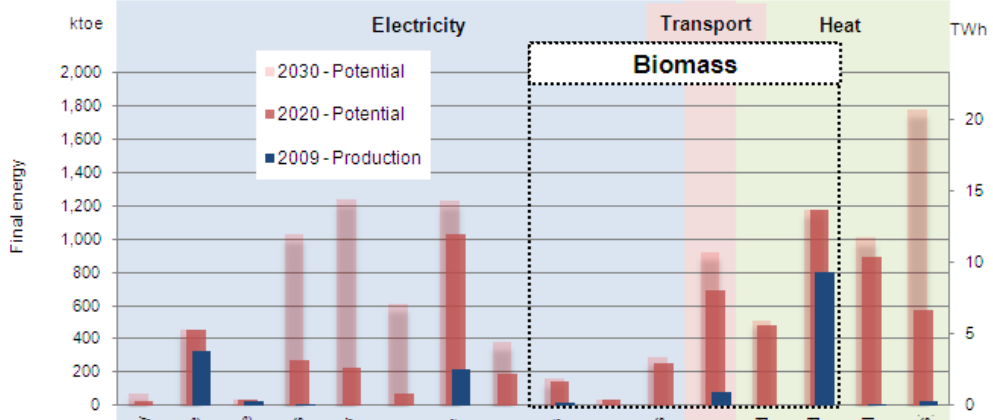
Extension measures in the grid that are necessary for the connection and integration of RES-E are paid by the grid operator and charged to consumers through the network tariffs. The RES-E investor bears the costs of grid connection to the economically next-best connection point. This includes the costs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

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.

GREECE - Summary: RES Target, Penetration and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	12%	1%	13%	7%
Share of total sector consumption in total final energy consumption	26%	43%	30%	100%
Production 2009 [ktoe]	694	78	824	1,596
Production 2007 [ktoe]	395	85	1,020	1,500
Production 1999 [ktoe]	409	0	914	1,323
Average growth 2007-2009 [%/a]	33%	-4%	-10%	3%
Average growth 1999-2009 [%/a]	5%	-	-1%	2%
Realisable potential until 2020 [ktoe]	2,731	690	3,132	6,554
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	9%
Realisable potential until 2030 [ktoe]	5,235	924	4,483	10,641



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	329	27	4	0	0	212	0	19	0	0	78	0	799	5	21
Production 2007 [ktoe]	0	336	19	1	0	0	179	0	16	0	0	85	0	1,007	0	13
Production 1999 [ktoe]	0	333	7	0	0	0	11	0	0	0	0	0	0	912	0	2
Ø annual production growth 2007-2009	-	-1%	18%	126%	-	-	9%	-	9%	-	-	-4%	-	-11%	413%	28%
Ø annual production growth 1999-2009	-	0%	14%	-	-	-	34%	-	71%	-	-	-	-	-1%	62%	26%
Realisable potential by 2020 [ktoe]	22	454	38	269	227	69	1,033	191	143	35	251	690	486	1,180	892	575
Realisable potential by 2030 [ktoe]	74	458	38	1,030	1,244	611	1,236	381	160	38	289	924	514	1,180	1,009	1,780

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

Greek policies regarding RES remained stable. Law, 3851/2010 introduced changes in the definition of tariffs and administrative processes in order to enact the 2009/28/EC Directive.

Despite generous subsidies, the Greek RES sector encountered in the past several difficulties because of a cumbersome regulation that requires several permits (see paragraph 3) from different authorities making the authorization process painfully slow. Law 3851/2010 tried 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 electricity[132].

[132] 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 (FiT), a specific FiT scheme for photovoltaic introduced in 2009 and investment subsidies. 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.

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 for biofuels which is updated every year. To help fulfil the quota, there are investment subsidies available.

2 Details RES-Electricity Support Policy

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 article 5:

- The electrical energy produced by a producer or self-producer of electrical energy from RES or from CHP or through a Hybrid Station, where the electricity is absorbed by the system or by the network, is renumerated 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, is carried out on the basis of the table below. For electrical energy produced by solar (photovoltaic) stations, separate prices have been specified by law No 3734/2009 (8A').

Table 1: Feed-in tariffs €/MWh 2011

	Source	Interconnected system	Non Interconnected 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 – ΚΥΑ 12323/ΓΓ 175/4.6.2009, 1079 B')	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 biodisposal part of municipal wastes)	200	
i	Biomass exploited by stations with installed capacity >1MW and ≤5MW (excluding the biodisposal part of municipal wastes)	175	
i-1	Biomass exploited by stations with installed capacity >5MW (excluding the biodisposal 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 ≤3MW	220	

	Source	Interconnected system	Non Interconnected Islands
i-5	Biogas emanating from biomass (organic remnants of animal farming and of agricultural processed remnants and refuse) with installed capacity of >3MW	200	
i-6	CHP[133]	87.85*Σp	99.45*Σp
i-7	Other RES (including stations which exploits the biodisposal part of municipal wastes which fulfill the specializations of European legislation as applies	87.85	99.45

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

- Are revised annually by a decision of the Minister of Development following an opinion from the Regulatory Authority for Energy (RAE). The revision is based on the weighted adjustment of the approved bills of the Public Power Corporation (PPC S.A.). By the "weighted adjustment" of the bills of PPC S.A., the average of the separate changes per category of pricing is meant. This 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 in the table above shall be adjusted by a decision of the Minister of 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 from the sale contract.

The law provides a premium on the recognised 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 must 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

133 Σp is a factor dependant on natural gas prices: Σp = 1+(ΜΤΦΑ-26)/(100 x ηel)
ΜΤΦΑ = 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).
ηel = 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 >1MWe.

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 the plant operator must submit a connection offer which leads to a connection and a sale contract.Tthe 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	<1MWe
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 follows:

- 1% to consumers;
- 0.3% to a special fund for the implementation of "Regulatory and Environmental Plans";
- The rest to local authorities.

<u>Specific Feed-in scheme for solar PV</u>

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				
	August		441.05	392.04	441.05
2011	February		419.43	372.83	419.43
	August		394.88	351.01	394.88
2012	February	522.5	375.53	333.81	375.53
	August		353.53	314.27	353.56
2013	February	496.38	336.23	298.38	336.23
	August		316.55	281.38	316.55
2014	February	417.56	302.56	268.94	302.56
	August		293.59	260.97	293.59

The incentive lasts 25 years for small rooftop systems and 20 years for the larger ones. During this period the tariffs are readjusted every year[134].

The 2010 law abolished several barriers for 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;
- 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 revenues from the sale of energy is also exempted from the income tax.

Investment Incentives fund

RES investments (except PV) are eligible for receiving subsidy from the Investment Incentives fund (Law 3908/2011). 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.

[134] The adjustment is 25% of the consumer price index of the preceding year, as defined by the Bank of Greece.

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 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 installments paid. The leasing subsidy shall be granted for no longer than seven (7) years.

RES-investments fall in the "regional cohesion" category[135] and are eligible to subsidies capped at 70% for existing enterprises and 80% for new ones compared to the same amount of other investment categories.

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 also supports the RES-H&C market with investment subsidies. 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 and 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)

[135] Art. 6 Law 3908/2011

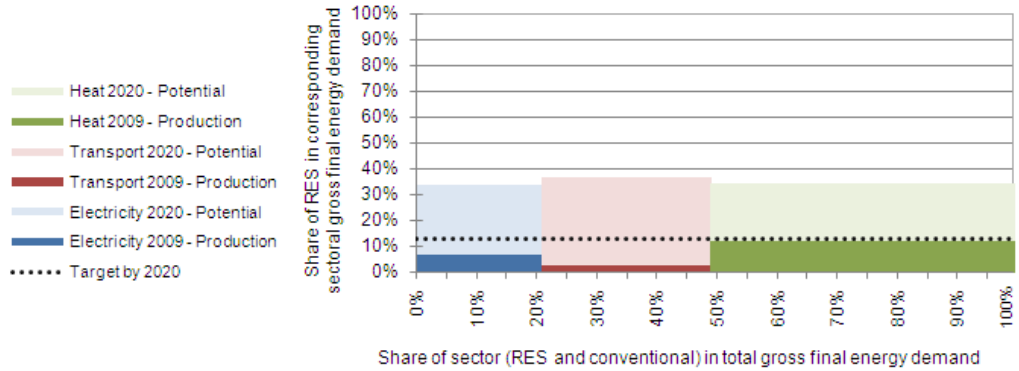
biofuel quantities are allocated every year, after a relevant call for tenders and an evaluation and allocation procedure, to stakeholders, producers or importers, who are interested in participating in this quota system. Every year the Ministry of Environment, Energy and Climate Change allocates, through 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

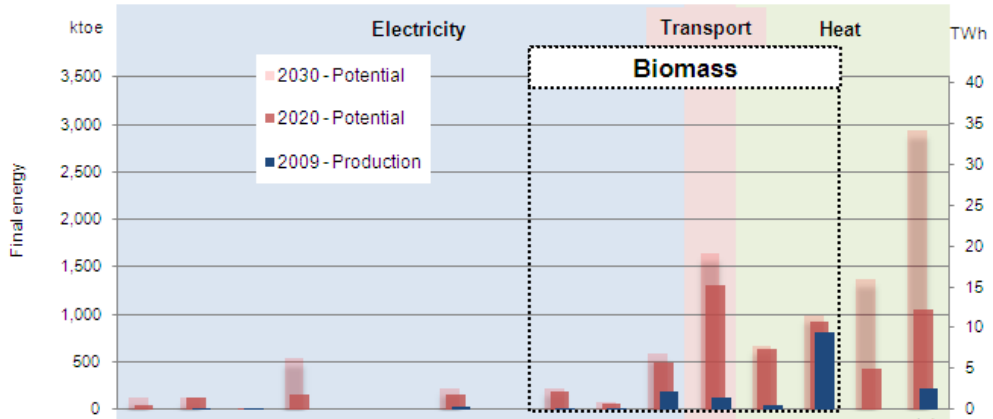
The plant operator is entitled to preferential connection at the connection point that is most economically and technically suitable. The costs for grid connection are the responsibility of the power producer and the date of connection depends on the contractual terms; if a grid expansion is required to fulfil the obligation, the grid operator has to cover related costs.

The transport of electricity generated from all renewable energy sources is given priority in the interconnected system and on non-interconnected islands. As far as hydro-electric systems are concerned, priority is only given to systems whose capacity does not exceed 15 MWe.

HUNGARY - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	7%	3%	12%	8%
Share of total sector consumption in total final energy consumption	21%	28%	51%	100%
Production 2009 [ktoe]	249	123	1,064	1,436
Production 2007 [ktoe]	162	29	952	1,143
Production 1999 [ktoe]	21	0	793	814
Average growth 2007-2009 [%/a]	24%	106%	6%	12%
Average growth 1999-2009 [%/a]	28%	-	3%	6%
Realisable potential until 2020 [ktoe]	1,204	1,304	3,039	5,547
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	5%
Realisable potential until 2030 [ktoe]	1,822	1,642	5,978	9,443



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	13	5	0	0	0	29	0	8	10	183	123	40	803	-	221
Production 2007 [ktoe]	0	12	4	0	0	0	8	0	4	12	118	29	30	732	-	190
Production 1999 [ktoe]	0	13	3	0	0	0	0	0	0	5	1	0	14	707	-	72
Ø annual production growth 2007-2009	-	3%	8%	-	-	-	90%	-	41%	-10%	24%	106%	15%	5%	-	8%
Ø annual production growth 1999-2009	-	0%	5%	-	-	-	-	-	-	7%	73%	-	11%	1%	-	12%
Realisable potential by 2020 [ktoe]	36	117	10	149	0	0	152	0	191	64	485	1,304	631	929	431	1,048
Realisable potential by 2030 [ktoe]	120	118	10	541	0	0	224	0	228	71	584	1,642	665	996	1,375	2,941

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

- The general framework of the new FIT scheme was published by the National Development Ministry in September 2011 under the name of METÁR.
- The introduction of the new FIT scheme is behind schedule and is expected to come into force no earlier than July 2012. No agreement is yet reached between stakeholders. There have been no prices announced for discussion.
- The FIT at premium price for cogenerated fossil fuel based district heaters has completely stopped, but takeover of electricity to the grid is still mandatory at market prices indexed to the Hungarian Power Exchange
- Both the State Secretary (Mr. János Bencsik) Deputy State Secretary (Mr. Péter Olajos) responsible for Renewable Energy and Energy Efficiency have stepped down from their positions in late 2011, which will further jeopardize the planning and execution of renewable policies.
- The budgets available from EU co-financed 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 48.6% have been used till end of October, 2011 with 2 years remaining in the program.

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 the 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 by July 2012.

Key parameters of the new FIT System are:
- Differentiated FIT by technologies
- Periodical review of support
- 15-year eligibility period
- Bonus system, with additional bonus for:
  - social sustainability (bonus in high poverty regions)
  - renewable heat generation
  - new developments in technology and innovations
- Brown tariff (for former coal based fuel switched plants >10MW)
- Quotas by technologies for two year periods
- FIT prices for new systems are reviewed every 2 years (in case of PV every year)
  - Inflation consideration
  - Cost of Capital Expenditure and residual value consideration
- Minimum requirements for generation efficiency
- Biomass sustainability
- Maximum plant capacity by technology

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 has been limited to investment grants in the past.

However the new FIT scheme will pay a heat and cooling bonus on top of general feed in tariffs for cogeneration based renewable energy projects (especially in case of biomass and geothermal based RES-H&C projects).

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.

RES-T

Biofuel production is mostly aimed at export markets. Due to the capital intensive nature of production and a lack of, or increased cost of financing (associated with financial crisis), most of the planned biofuel projects have never reached the completion stage.

The Hungarian Government in its new tax regulation passed on November 21, 2011 has increased the excise tax on biofuels by HUF 40 per (13 EUR cents) liter to HUF 70 per liter (23 EUR cents) which further hinders the domestic use of bioethanol based fuels.

Currently there

Such 2020 target of 10% could be jeopardized.

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 digressive, 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 introduced for public debate in 2011 but most likely to take effect not before July 2012 as is a renewable heat price regulation. Until the new levels are established, the old tariffs will apply.

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.

Based on the former policy (to be replaced by the new policy) the Office calculates the pay-back time separately for each supported plant based on the sources of energy, technologies taking into consideration the site, 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 in FIT penalising and making the construction of the plant economically questionable.

Power plant size limits for new FIT support proposed by the Ministry (MW)

Fuel	Minimum size	Maximum size
Biomass	0,05 MW	10 MW 20 MW (with district heating)
Biogas	0,05 MW	5 MW
PV	0,05 MW	0,5 MW
Wind	0,5 MW	-
Hydro	0,05 MW	4 MW
Geothermal	0,1 MW	10 MW

This means that plants above maximum or below minimum are to have no or discounted FITs.

The PVs under 50 kW (mainly residential) are to be supported by other means of support. However, this also a plan only, and there are no support mechanisms in place yet as of today.

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 and 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 new 2011/12 regulations planned to take effect in July 2012)

	Peak period 06 am- 22 pm		Valley period 22 pm-1:30 am		Deep valley period 1:30 am-06 am	
	HUF/kWh	€/kWh[136]	HUF/kWh	€/kWh	HUF/kWh	€/kWh
Photovoltaics	28,72	0,091	28,72	0,091	28,72	0,091
Under 20 MW RE plant*	32,10	0,102	28,72	0,091	11,72	0,037
20-50 MW RE plant**	25,67	0,082	22,98	0,073	9,37	0,030
20-50 MW wind plant	32,10	0,102	28,72	0,091	11,72	0,037
5-50 MW hydro	19,96	0,064	12,77	0,041	12,77	0,041

* excluding solar plants
** excluding wind and solar plants

The new FIT is expected to have a significant increase in case of PVs.

The new FIT will also maintain a differentiation by day periods (peak, valley, and deep valley) to have correction mechanism for stabilising the system from the TSO point of view.

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). The typical period of payment is around 10 years, which is expected to increase to 15 years under new FIT scheme.

Quotas by Technologies

First wind RES-E projects were only 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.

Based on the new FIT scheme all technologies will have two year quotas that gives consideration to the following:

- RE energy out per FIT support (MJ output / HUF support);
- Reduction of GHG (CO2 t / HUF support);
- Employment effect (# of jobs / HUF support);
- Cost of connection to the grid.

RES-E from Biomass

The planned new regulation under new FIT scheme aims to limit the use of round wood for energy purposes, which apply to all new power plants are likely to apply to fuel switched power plants as well. The new law under proposition calls for a special feed-in-tariffs applicable only to generators using biomass meeting the following sustainability criteria:

- Certificate of sustainable origin;

136 Exchange rate used: €1 = 0,003181 HUF

- Stricter certification and tracking procedure planned to be carried out by the Hungarian Energy Office and the Agricultural Directorate Office. The cost of certification will be 1-2% of biomass sale price;
- Clear definition of firewood (preliminary proposal was wood with less than 8 cm in diameter;
- Brining supply and demand for biomass in balance by regions, capping the generation capacity licenses by regions within a close proximity.

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;
- Bonus for developments in high poverty regions;
- Bonus premium in FIT for cogenerated RE base heat;
- Bonus for cooling purpose energy generation.

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.[137]	

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.

RES-E from Biogas

Differentiation into sewage sludge gas, landfill gas, and biogas

Bonuses for the following parameters:

- Bonus for development in high poverty regions;
- Installation in combination with sterilization and neutralization units;

137 http://www.kormany.hu/download/6/b9/30000/RENEWABLE%20ENERGY_REPUBLIC%20OF%20HUNGARY%20NATIONAL%20RENEWABLE%20ENERGY%20ACTION%20PLAN%202010_2020.pdf

- Chemical and thermochemical based artificial gas generation;
- Biogas storage capacity allowing for system control;
- Balancing bonus.

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.

3 Details RES-Heating and Cooling Support Policy

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.

The new FIT scheme will pay heat and cooling bonus on top of general feed in tariffs for cogeneration based renewable energy projects (especially in case of biomass and geothermal based RES-H&C projects).

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 (250 €M) of which only HUF 33.30 bn (48.6%) has been committed till the end of 2011 (including HUF 19.83 bn contracted, and HUF 5.96 bn actual payment).

Heat and/or electricity production from renewable sources and bio-methane production (EEOP 4.4.0)

The supported activities within the EEOP 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 by renewable sources.

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 €).

Green Investment Scheme (GIS)

Based on the Kyoto Protocol the state proceeds from the sale of CO_2 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.

In October 2011, the National Development Ministry has announced HUF 2.97 billion (€10 million) worth of funding under GIS New Széchenyi Plan for solar heat projects at

private family houses and condominiums with up to 12 flats. The grant participation can reach up to 50% and HUF 800,000 (€3,000) per flat.

- Official governmental page of the GIS: http://zbr.kormany.hu/

Subsidy - Panel Programme for Prefabricated Blockhouses (national fund)

In the Hungarian support system the other major subsidy available for the residential sector is the "Panel Programme" for blockhouses managed by the Ministry of Local Government and Regional Development.

The prefabricated panel houses represent closes to 20% of the total housing units. The q often 30 – 40 year old , multi-storey buildings are in run-down condition, with bad thermal insulation, with old doors and windows, where gas and electricity bills are much higher compared to newly built houses, though the panel buildings are inhabited by lower wage-earners. Such this sector represents the main focus for political support.

The programme promotes the modernization and renovation of pre-fabricated block 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.

Than in mid 2011 the excise tax per liter has been first raised to HUF 40 per liter (13 EUR cents), and than further raised to HUF 70 per liter (23 EUR cents) based on tax regulation passed on November 21, 2011.

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%.

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.

5 RES-E Grid Integration

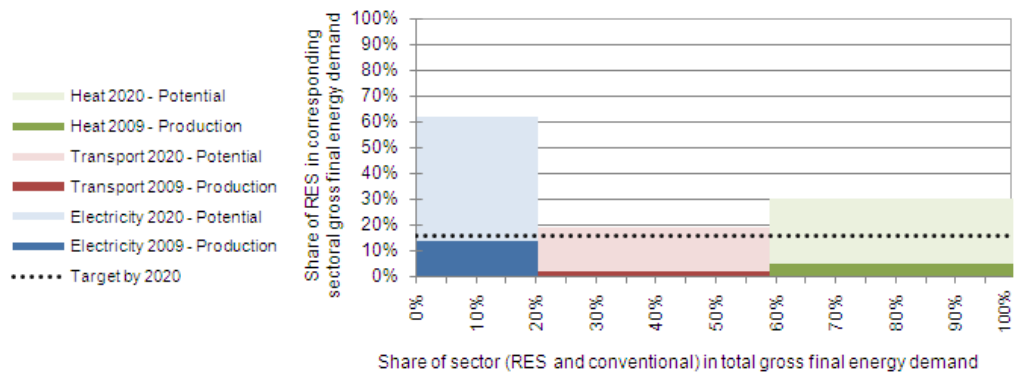
Plant operators are contractually entitled to connection to the grid. The grid operator is obligated to enter into a grid connection contract. (§§ 35 (1), 58 (1) and (2) Act Nr. LXXXVI of 2007). The contract shall be in line with the conditions and procedures stipulated by other legal provisions or by 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).

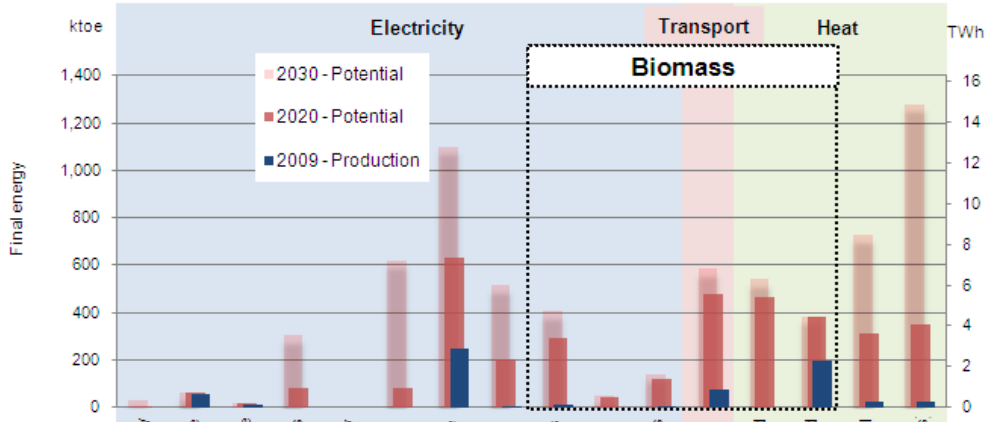
In the original law, the grid operator was allowed to refuse to buy energy from RES power plants below 100 kW. This situation has changed: the grid operator cannot refuse to buy energy from power plants below 100 kW anymore. RES-E systems shall be connected to the grid at a priority (§ 35 (3) Act Nr. 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.

IRELAND - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	14%	2%	5%	5%
Share of total sector consumption in total final energy consumption	20%	39%	41%	100%
Production 2009 [ktoe]	347	75	241	664
Production 2007 [ktoe]	237	22	216	475
Production 1999 [ktoe]	97	0	109	206
Average growth 2007-2009 [%/a]	21%	85%	6%	18%
Average growth 1999-2009 [%/a]	14%	-	8%	12%
Realisable potential until 2020 [ktoe]	1,531	475	1,510	3,517
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	11%
Realisable potential until 2030 [ktoe]	3,030	585	2,933	6,548



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Bioweste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	54	12	0	0	0	246	7	10	0	6	75	0	198	22	22
Production 2007 [ktoe]	0	54	10	0	0	0	166	6	10	0	1	22	0	183	16	17
Production 1999 [ktoe]	0	57	9	0	0	0	15	0	8	0	0	0	0	109	-	0
Ø annual production growth 2007-2009	-	0%	5%	-	-	-	21%	0%	-1%	-	124%	85%	-	4%	16%	14%
Ø annual production growth 1999-2009	-	0%	3%	-	-	-	33%	-	3%	-	-	-	-	6%	-	63%
Realisable potential by 2020 [ktoe]	2	63	18	80	0	79	633	203	294	43	118	475	463	385	310	352
Realisable potential by 2030 [ktoe]	33	64	18	303	0	621	1,102	516	406	47	143	585	540	385	727	1,281

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

Ireland's overall renewables target remains at 16% of total final consumption by 2020. A draft Climate Change Bill that would have established a legally binding emissions reduction target of 80% by 2050 was shelved following the general election in February this year. The new government is undertaking a review of all national climate policies before reopening the debate on the Bill.

A delay in EU approval for the extended renewables feed-in tariff (REFIT) scheme is causing some renewable projects to not be realised. It is not yet clear when the new scheme will be able to be launched.

A programme called 'Better Energy Workplaces' was in place from May to September 2011 giving financial support toavailable a range of sustainable energy measures in the workplace.

1 Summary: RES Support Policy

RES-E

The Government's 2007 White Paper[138] set RES-E targets of 15% in 2010 and 33% in 2020 (increased to 40% in October 2008). Ireland successfully met its 2010 target and is on track to meet its 2020 target. 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. The REFIT scheme closed to new applicants in December 2009. Two new feed in tariff schemes have been designed covering different categories of technologies. REFIT 2 will cover large scale onshore wind, biomass landfill gas and hydro projects less than 5MW. This scheme is still awaiting EU state aid clearance. A REFIT 3 scheme covering biomass technologies received EC state aid clearance in October 2011, and is now awaiting government approval to launch.

RES-H&C

Ireland's Energy White Paper sets RES-H targets of 5% in 2010 and 12% in 2020. Ireland's main support instrument for RES-H was previously the "Greener Homes Scheme", a grant scheme for domestic applications. This scheme closed to new applications on the 9th May 2011. 33,000 renewable energy heating systems were installed via the scheme. On the 16th May 2011 a new scheme called the Home Energy Saving Scheme was opened. The scheme mainly focuses on supporting energy efficiency measures but does provide an € 800 grant for the installation of solar hot water heating systems.

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 (4.166%) of biofuels into their sales. 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. The National Energy Crop Premium which provided farmers with financial support for growing energy crops was closed in 2010.

Ambitious targets are in place for the electrification of the vehicle fleet. This is as part of aims to develop a smart grid where cars are charged at the cleanest points of the day or night. The objective is for electric vehicles to make up 10% of the transport fleet by 2020. This target is supported by a range of measures. The government gives a € 5,000 grant per vehicle and exempts them from registration tax. Additionally a partnership between the government, the Energy Supply Board and Renault-Nissan aims at supplying the necessary infrastructure and vehicles.

138 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 projects, although it has been closed to new applications since the end of 2009[139]. Two new versions of the scheme are currently waiting to obtain government and EC state aid approval respectively. REFIT 2 will provide support for onshore wind (small and large scale), small scale hydro and landfill gas. REFIT 3 will cover biomass technologies such as anaerobic digestion, CHP, biomass combustion and biomass cofiring. REFIT 2 is still awaiting EC state aid clearance. REFIT 3 received EC approval in October 2011 and is now awaiting Irish government approval to launch. Separate state aid applications for schemes supporting offshore wind, wave and tidal energy have been discussed but not yet submitted.

Under the REFIT schemes 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. In order to be eligible for the schemes proof of planning permission, grid connection and a power purchase agreement (PPA) with a registered supply company must be provided. 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. The specific terms of the schemes have not yet been made public, although it is likely that only projects that began construction after the expiry date of the first scheme will be eligible. Furthermore the same project cannot be supported by more than one support measure.

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%. State aid clearance for the 1st REFIT scheme was for 1,450MW of new renewable generation. For REFIT 2 Ireland has applied for state aid clearance for 4,000MW of new generation from wind, landfill gas and small hydro projects. REFIT 3 has applied for 310 MW generation capacity covering biomass technologies.

The 2011 reference prices for REFIT are listed below in Table 1. For technologies included in REFIT I and II the updated price in REFIT II is equal to the REFIT I tariff, adjusted for inflation.[140] Applicant projects must prove they have planning permission, a grid connection in order to receive an offer to join the scheme. Once this has been achieved applicants must show they meet the REFIT terms and conditions sent to all applicants.

139 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

140 The Effect of REFIT on Irish Electricity Prices, ESRI Working Paper No. 374, February 2011 https://www.econstor.eu/dspace/bitstream/10419/50072/1/654681430.pdf

Table 1: Summary of the FITs per technology type in the REFIT schemes

Technology	**Tariff duration**	**2011 (€cts/kWh)**141
REFIT		
Onshore wind > 5MW	15 years	6.6
Onshore wind < 5MW		6.9
Biomass (landfill gas)		8.1
Anaerobic digestion (CHP) < 5MW		15
Anaerobic digestion (CHP) > 5MW		13
Anaerobic digestion (non-CHP) <5MW		11
Anaerobic digestions (non-CHP) >5MW		10
CHP from biomass (≤ 1.5MW)		14
CHP from biomass (> 1.5MW)		12
Biomass combustion using energy crops		9.5
Biomass combustion from all other biomass		8.5
Hydro		8.4
Offshore wind (provisional)		14
Wave & Tidal (provisional)		22

* Co-firing of biomass in power stations with biomass is eligible for support under REFIT.

Support for existing projects is guaranteed to remain at the same level for the whole 15 year support period.

REFIT tariffs are subject to an annual inflationary rise according to the consumer price index (CPI) published by the Central Statistics Office[142]. This does not mean that tariffs are higher for new plants entering in later years to existing plants, but that all participants will be paid the same tariff that increases every year in line with inflation. 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. REFIT 3 tariffs will be indexed to CPI.

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. It is not clear when or if this Bill will be retabled.

141 http://www.dcenr.gov.ie/Energy/Sustainable+and+Renewable+Energy+Division/REFIT.htm

142 http://www.cso.ie/statistics/conpriceindex.htm

Renewable Energy Research Design & Development (RERDD)

The government has also funded some renewable energy R&D programmes. Proposals for all types of renewables R&D can be submitted to be considered for funding. Grants are administered by the Sustainable Energy Authority Ireland. Financial support is available in three categories:

Category 1: Shared-cost Demonstration (grant support of up to 25% of eligible costs)

Category 2: Shared-cost R&D (grant support of up to 45% of eligible costs)

Category 3: Commissioned Public Good Activities (grant support of up to 100%)

One R&D program was the Miscanthus Pilot Demonstration Programme. This programme aimed to support the development of miscanthus-fired demonstration boilers (up to 15) in order to boost market confidence in the feedstock. The programme is now closed to further applications.

Another R&D program is the Ocean Energy Development Unit, which provides grants for the development of ocean energy systems. Interested parties must fill out an application form

3 Details RES-Heating and Cooling Support Policy

The Government's White Paper sets RES-H targets of 5% in 2010 and 12% in 2020. The number of grant funding schemes available to promote RES-H in Ireland has decreased in 2011. There is currently only one programme offering financial support for renewable heating and cooling measures:

Better Energy Homes scheme (superseded by Greener Homes Scheme)

The Greener Homes Scheme[143] offered grant funding for domestic RES-H. The scheme, administered by SEI, is now closed to new applications. Grants were available for a range of technologies from solar heating systems, boilers, heat pumps and pellet stoves.

Grants are no longer available for these measures with the exception of solar heating systems. Solar heating systems have been incorporated into a new scheme called the Better Energy Homes scheme, which opened to the public in May 2011. This scheme provides a cash grant for measures improving energy performance in homes built before 2006. Eligible measures all relate to energy efficiency with the exception of solar heating, for which an € 800 fixed grant is available. The Better Energy Homes scheme is scheduled to run until 2013. SEI manages a list of registered installers of RES-H systems.

A Better Energy Workplace scheme was also launched in May 2011, although this was focused almost entirely on supporting energy efficiency measures. This scheme has already closed following a large number of applications.

143 http://www.sei.ie/Grants/GreenerHomes/

Previous renewable heat schemes:

Renewable Heat Deployment Programme (ReHeat): 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.

Biomass CHP/Anaerobic Digestion (AD) CHP Call for Proposals[144] : An € 11 million fund that began in 2006 that provided grants for the deployment of CHP systems fuelled by biomass. This programme was closed in early 2011 due to budgetary constraints. High efficiency CHP will be supported in the REFIT II scheme[145]. With the closure of other schemes, this will become an important focus in Ireland meeting its 2020 RES-H target.

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 and is open until 2012. 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 € 1,300 per hectare, with the balance to be invested by the applicant. In 2011 89 applications were received.

Biofuels Obligation Scheme[146]

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.

144 http://www.sei.ie/Grants/Biomass_CHP_Anaerobic_Digestion_CHP_Call_for_Proposals/

145 Refer to page 5: http://www.dcenr.gov.ie/NR/rdonlyres/3B13ECAA-9351-41E0-8B44-7C02E98E4F50/0/AdditionalREFITcetegories.pdf

146 Energy (Biofuel Obligation and Miscellaneous Provisions) Act 2010 http://www.irishstatutebook.ie/2010/en/act/pub/0011/index.html

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.

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. Electricity generators using gasoil or heavy fuel oil are not subject to the obligation; only motor fuels are covered by the scheme. The obligation requires suppliers to include 4.166% 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, ligno-cellulosic 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 initial obligation level is 4.166% (by volume) in 2010 and 2011 at least. The target is expected to increase in time in line with EU targets, but there has been no announcement on increasing the tariff.

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 2009 the government launched A Sustainable Transport Future[147] policy document, which provided a set of actions to be implemented to increase transport sustainability up to 2020. This included measures such as behavioural change and increasing vehicle efficiency, but also included some measures related to renewable energy. These measures were the implementation of the Biofuels Obligation in 2010 and support for the uptake of electric vehicles.

In April 2010 the government announced an Electric Vehicle Grant Scheme. Since January 2011 consumers have been able to benefit from grants of up to € 5,000 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 € 2,500 for plug in vehicles. The objective of the scheme is to achieve 6,000 electric passenger vehicles in Ireland by 2012. The subsidy applies at the retail level and is paid directly to car dealerships following the sale of the electric vehicle.

5 RES-E Grid Integration

In 2008 Eirgrid published “GRID 25”, its national grid development strategy. The strategy sets out plans for the construction of 1,150 km of new power lines and upgrading to circa 2,300 km of existing lines.

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).

[147] http://www.transport.ie/upload/general/11284-0.pdf

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 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)[148].

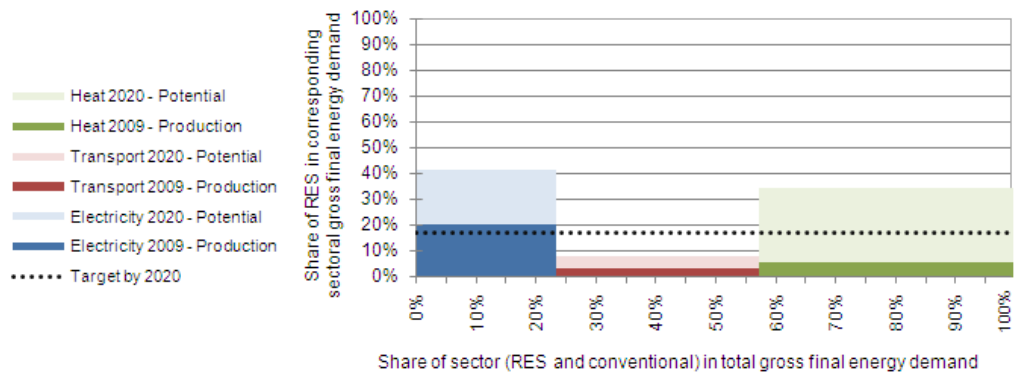
Autonomous generators are not required to pay for the balancing of energy.

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[149].

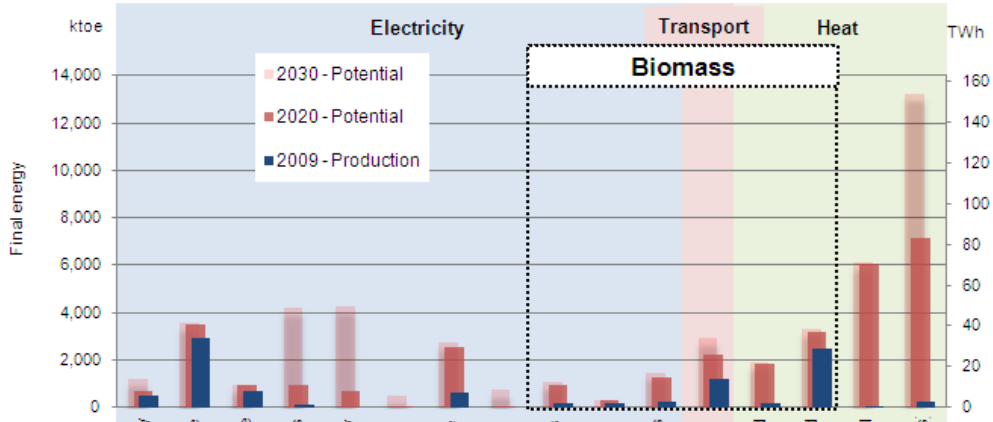
148 Ireland Country Report, Innovative Electricity Markets to Incorporate Variable Production to IEA – Renewable Energy Technology Deployment, 2008, http://www.iea-retd.org/files/IEMVP_Ireland%20Country%20Report.pdf

149 http://www.eirgrid.com/renewables/facilitationofrenewables/

ITALY - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	20%	3%	6%	8%
Share of total sector consumption in total final energy consumption	23%	34%	43%	100%
Production 2009 [ktoe]	5,838	1,180	2,923	9,941
Production 2007 [ktoe]	4,103	180	1,875	6,158
Production 1999 [ktoe]	4,413	0	1,526	5,939
Average growth 2007-2009 [%/a]	19%	156%	25%	27%
Average growth 1999-2009 [%/a]	3%	-	7%	5%
Realisable potential until 2020 [ktoe]	11,847	2,218	18,194	32,259
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	8%
Realisable potential until 2030 [ktoe]	20,006	2,952	24,579	47,537



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Bioweste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	459	2,950	679	86	0	0	587	0	150	139	243	1,180	164	2,498	23	238
Production 2007 [ktoe]	479	2,916	647	7	0	0	344	0	125	130	198	180	162	1,506	15	192
Production 1999 [ktoe]	379	2,944	578	1	0	0	29	0	50	28	19	0	0	1,313	0	213
Ø annual production growth 2007-2009	-2%	1%	2%	262%	-	-	31%	-	10%	3%	11%	156%	1%	29%	24%	11%
Ø annual production growth 1999-2009	2%	0%	2%	51%	-	-	35%	-	12%	17%	29%	-	-	7%	69%	1%
Realisable potential by 2020 [ktoe]	653	3,504	936	957	656	55	2,535	53	959	284	1,255	2,218	1,803	3,187	6,051	7,154
Realisable potential by 2030 [ktoe]	1,207	3,539	946	4,208	4,296	470	2,756	738	1,082	315	1,490	2,952	1,895	3,301	6,121	13,263

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

In March 2011 the Italian Government approved Legislative Decree 28/2011 that transposes Directive 2009/28/EC into Italian law. The decree reforms the whole system of incentives for RES and introduces some changes in the administrative procedures.

The legislative decree 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 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. As of December 2011, none of the announced decrees has been adopted yet except for one on PV incentives.

Nevertheless there are a few changes that have 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 of the so called “Terzo Conto Energia” (the third revision of the mechanism that just came into force in January) from 31 May 2011 that provides incentives for PV with a new ministerial decree that was adopted in May 2011;
- 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).

The Legislative Decree No. 28 also introduces an obligation that covers the energy consumption of new buildings from 2012 onwards.

Law 148/2011 adopted by Parliament on 11 November 2011 abolished the deduction of 55 % of investment in RES-H technologies. However, the new Government announced its reintroduction on 4 December 2011.

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 for electricity produced from renewable energy sources with a maximum power output of 1 MW (0.2 MW for wind energy) as an alternative to the green certificates (contract duration is 15 years);
- An incentive scheme ("Conto Energia") for photovoltaic and solar thermal plants through a 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.

RES-H

The main measure to support RES-H in Italy is a fiscal policy ruled by central government that allows for the qualification of RES-H systems to white certificates, and energy efficiency certificates (TEE). Investments in RES-H systems (heat pumps, solar thermal systems or biomass systems) qualify for an income tax deduction of 55% throughout 3 to 10 years. The scheme is valid till the end of 2012.

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. A certain number of tons is exempt from the excise tax of fossil fuels. Such a tax free biofuel amount is set every year, giving a large uncertainty to the market.

2 Details: RES-Electricity Support Policy

Quota Obligation (Certificati Verdi)

An obligation for electricity suppliers to feed a given proportion of RES-E into the grid. Electricity suppliers can fulfil their obligation by using tradable green certificates (TGCs) of 15 years duration[150] issued by the Italian Energy Service Provider (Gestore dei Servizi Energetici, 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, ocean, biomass and waste power plants with an annual production of more than 50 MWh and commissioned after 31 March 1999. The certificates can be traded on a market managed by the Italian Electricity Market Administration (Gestore dei Mercati Energetici, GME) or exchanged through bilateral contracts (tracked by GME as well).

Table 1: Italy's TCG Quota and duration

	TGC Quota increase	New RES-E Quota	TGC Duration (years)
2001-2003	--	2.00 %	8
2004	+ 0.35 %	2.35 %	8
2005	+ 0.35 %	2.70 %	6
2006	+ 0.35 %	3.05 %	12
2007	+ 0.75 %	3.80 %	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

On the one hand, Article 25 cc. 2,3, 11 (letter C, paragraph 1) of Legislative Decree 28/2011 establishes that from 2013 onwards the quota, from the 2012 value, is going to be linearly decreased each year till 2015. From 2013, the Green Certificate system will be progressively replaced by a feed in system for schemes under 5 MW (or above, as it will be stated in a forthcoming decree) and by a tendering scheme for plants above the threshold.

On the other hand, the decree repeals all the exemptions on the coverage with green certificates for non renewable electricity imports except for those that comply with the provisions of the European objective under provision of the Directive 2009/28/EC. In fact, in order to avoid green certificates purchases almost all the imported electricity was defined form renewable sources by foreign grid operators, so that in 2010, only 0.7 TWh of 50 TWh of electricity imported was subjected to the obligation. If this provision had come into force in 2010, 37 TWh would have been under obligation and the demand for green certificates would have been much higher. Combining both provisions, the actual electricity under the obligation would remain almost constant until 2015. Importantly, GSE must buy all certificates that exceed demand.

Since 2008 the TGCs are differentiated by technology, taking into consideration different generation costs (see table 2).

[150] In 2006, the duration of TGC was increased to 12 years for plants that came online before 31 December 2007 and to 15 years for those that started after that date. Banking of TGC is allowed for 3 years.

With resolution 280/07, specified by Law 387/03 and 239/04, the electricity regulator (Autorità per l'energia elettrica e il gas, AEEG) defined the procedures for RES-E purchase for source type and size of the plant as follows:

Table 2: Procedures for RESE purchase

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
	>= 10 MVA	- Sold on Electricity Market - Market prices
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

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 compliancy, 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. This price is calculated, according to art. 25 paragraph 4 of the Legislative Decree 28/2011 as the 78 % of the price of certificates sold by GSE. In case of shortage of certificates (short market), GSE can sell those certificates coming from the former feed-in (CIP6[151]) 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 defined in Table 2. The Legislative Decree 28/2011 confirmed all the values.

PV is not included in the feed-in tariff, because it has a specific program based on a premium.

[151] The CIP6 scheme is a feed-in tariff system introduced in 1992 to incentivise power generated from renewable sources or 'assimilated' sources. In 2001 the CIP6 scheme was replaced by a green certificate system. Though abolished ,it is still operational for the projects commenced under it (CIP6 contracts guaranteed for 15 years a special contributions as “Avoided Costs”, and an “Additional Incentive” for 8 years from entry into commercial operation), was therefore overlapped.

Table 3: 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 by a Premium (named Conto Energia), initially introduced in 2005 and modified in 2007 (D.M. 28/07/2005, 06/02/2006, 19/02/2007, AEEG deliberation 188/05 and its updates), in 2010 (DM 6/08/2010) and in 2011 by Legislative Decree 28/2011 and DM 05/05/2011. The last revision, the so called 4th Conto Energia, rules the support system between 2011 and 2016. The scheme has been hugely successful since 11.7 GW of capacity have been installed since its launch.

Conto Energia is a premium for PV production differentiated by size and ground vs rooftop installation. Specific tariffs are foreseen for concentration solar plants and for integrated plants with innovative characteristics. The premium is constant for 20 years. The electricity produced remains on the availability of the investor and can be auto consumed, sold or exchanged with the network (net metering up to 200 kW installed capacity).

The most recent decree rules that plants that start operating after 31 December 2012, the feed-in premium system of 2011-2012 is being replaced by a feed-in tariff scheme, in which the level of the tariff already includes the price at which GSE purchases the electricity directly from the producers.

The new decree sets a goal of 23,000 MW of installed capacity at 2016 when it ends. It foresees a system of ceilings:

- A € 6/7 billion annual global cost ceiling of the incentive (adding up the three prior Conto Energia editions), whose amendment triggers the redefinition of the incentive. Since the estimated cost is already at € 5.2 billion annually, only an additional € 2 billion are left until 2016 in order to avoid the overwhauling of the whole system.
- An annual cost cap of the incentive for the 2011 to 2012 applying only to large plants (plants with a power capacity of >200 kW if non integrated or >1 MW if building-integrated, these limits don't apply to plants built by public authorities or on areas owned by public bodies). If the 2011 ceiling is overcome there would be a proportional reduction of the 2012 ceiling, leading to a blocked access to the incentive. The cap for 2011 has probably been reached in November already.

- A six-months cost ceiling from 2013 onwards applying to all kind of plants whose overcoming does not restrict access to the incentive, but trigger an automatic reduction in the following six-months incentive period.
  - The cost of incentives is given by:
    - the sum of the products of the power capacity of each PV system admitted to the incentive,
    - and is multiplied by the incentive, known or foreseen or by the actual annual production, where available, or by annual plant productivity calculated by the GSE on the basis of the site average insulation, the type of installation and as specified by the responsible entity.

In order to get the incentive, large plants need to be inscribed into a register (inscriptions are open twice a year) until 2012. Once they are inscribed they are ranked according to criteria defined by the ministerial decree. The incentive is granted following the ranking until it is reached the cost cap. Plants that are excluded need to reregister. From 2013 onwards, those limitations will abolished.

In the following tables tariffs applying to “normal” PV plants are reported (as already stated high concentration plants and integrated plants with innovative characteristics enjoy specific tariffs).

Table 4: PV Premium “Conto Energia” 2012 tariffs

	1st semester		2nd semester	
€/kWh	integrated	other	integrated	other
1≤P≤3	0,274	0,24	0,252	0,221
3<P≤20	0,247	0,219	0,227	0,202
20<P≤200	0,233	0,206	0,214	0,189
200<P≤1000	0,224	0,172	0,202	0,155
1000<P≤5000	0,182	0,156	0,164	0,14
P>5000	0,171	0,148	0,154	0,133

Table 5: PV Premium "Conto Energia" 2013 tariffs

	integrated		other	
€/kWh	feed-in tariff	self-consumption	feed-in tariff	self-consumption
1≤P≤3	0,375	0,23	0,346	0,201
3<P≤20	0,352	0,207	0,329	0,184
20<P≤200	0,299	0,195	0,276	0,172
200<P≤1000	0,281	0,183	0,239	0,141
1000<P≤5000	0,227	0,149	0,205	0,127
P>5000	0,218	0,14	0,199	0,121

Table 6: PV Premium "Conto Energia" tariff digression after 2013

	1st semester	2nd semester
2013		9 %
2014	13 %	13 %
2015	15 %	15 %
2016	30 %	30 %

Under certain conditions, the tariff may be increased. Where more than one condition applies, only one of the corresponding benefits may be received. Up to 31 December 2012, the increased tariff will be based on the full tariff. From 1 January 2012, it will be calculated on the basis of the self-consumption tariff (Art. 12, c. 3 in connection with Annex 5 DM 05/05/11):

- PV systems not mounted on buildings and located in industrial or commercial areas, in exhausted quarries or landfills, or in contaminated areas are eligible for a 5 % increase in the applicable tariff (Art. 14, c. 1, l. a DM 05/05/11).
- Small PV systems implemented in municipalities with less than 5,000 inhabitants (which are also responsible for the PV system) are eligible for an increase of 5 % in the applicable premium tariff (Art. 14, c. 1, l. b DM 05/05/11).
- Building-mounted PV systems substituting building parts containing asbestos receive a premium of € 0.05 per kWh (Art. 14, c. 1, l. c DM 05/05/11).
- PV systems whose investment costs (not accounting for labour) relate for at least 60 % to a production realized within the EU are eligible for an increase of 10 % in the applicable premium tariff (Art. 14, c. 1, l.d DM 05/05/11).

The operators of small building-mounted systems receive a bonus ("premio") of up to 30 % of the applicable tariff if they implement additional energy saving measures in the building (Art. 13 DM 05/05/11).

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.

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 1 January 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 doesn't provide actually many details about this new regime, postponing its definition to further Ministerial Decrees to be approved by six months from its publication.

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 first time after two years from their definition, then each three years;
  - 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 of 55 % for the renovation of buildings, aiming to improve energy efficiency. The law includes installation of RES-H systems such as condensing boilers or solar thermal collectors, and provides support for each technology up to an overall budgetary ceiling. Support ends as soon as the predetermined budget is used. Law 148/2011 adopted by Parliament on 11 November 2011 abolished the deduction of 55 % of investment in RES-H technologies, however the new government announced its reintroduction on 4 December 2011 and confirmed the rebate for 2012.

Building Obligation

Even though there is an obligation to install renewable energy systems in new buildings since 20 years, the policy has largely been ignored. The first attempt to make the integration of RES into buildings mandatory was made by law 10/1991, then by the Legislative Decree 192/2005, the Decree 311/2006, Law 296/2006, and the President of Republic Decree 59/2009. All these policies, however, demanded additional legislative steps so that they become effective, such as the enactment of corresponding ministerial decrees, regional laws or communal regulations. None of these policies have been passed, however.

For the first time Law 244/2007 set a mandatory quota of energy consumption of new buildings to be covered by renewable energy sources starting from 1 January 2009. However, the starting date has been postponed to 1 January 2010 by Decree 207/08 converted in Law 14/09. Law 25/2010 postponed the starting date to 2011. Legislative decree 28/2011, which introduced new provisions, introduced a new quota and postponed the obligation to 1 January 2012.

The new text states that cooling and heating plus water heating energy consumption in new buildings, or buildings where a relevant renovation takes place, should be covered by renewable energy sources as follow:

- 20 % from the 31 May 2012 to 31 December 2013;
- 35 % from the 1 January 2014 to 31 December 2016;
- 50 % from the 1 January 2017.

Buildings connected to district heating are exempted from the obligation.

White Certificate System

Another support policy is represented by the white certificate system (TEE), introduced by D.M. on 24 April 2001 and updated by D.M. on 20 June 2004 and D.M. on 21 December 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 3 March 2011 finally foresees new initiatives for RES-H. 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 will be paid through the gas bill;
- The incentives could not last 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 1 January 2007
- 2 % from 1 January 2008
- 3 % from 1 January 2009;
- 5 % from 1 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.

5 RES-E Grid Integration

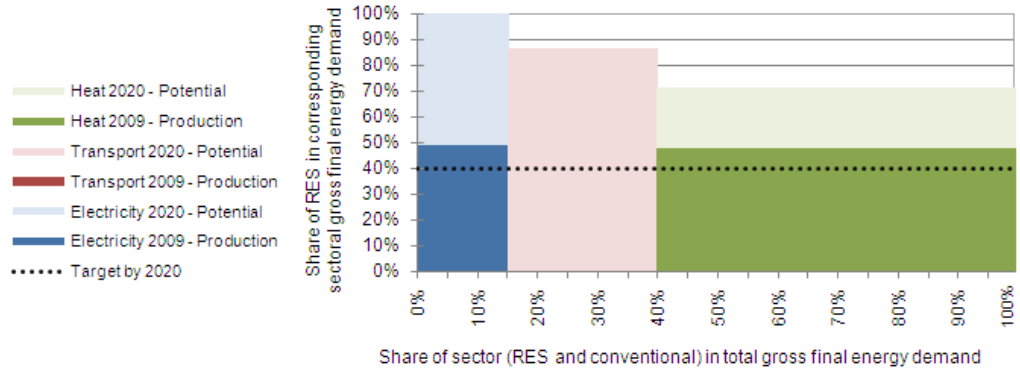
There is no grid connection priority for RES producers, although they are granted priority in transmission. If there are more offers of electricity at the same price, the transmission priority will be granted, as long as grid security can be maintained. Electricity generated from fluctuating and non-dispatchable 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.

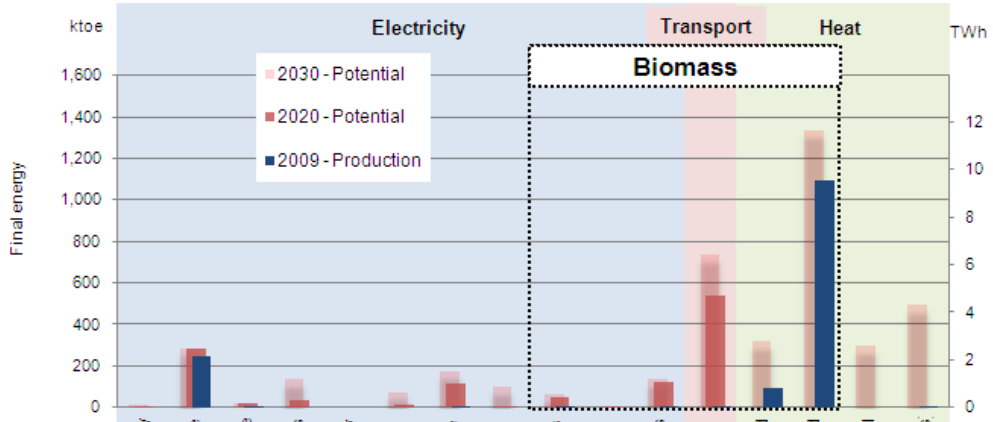
Costs associated with grid usage are borne by the electricity producer and in areas where new installations are concentrated, TERNA is required to share connection between different investors. This negotiated procedure sometimes delays investments.

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).

LATVIA - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	49%	1%	48%	36%
Share of total sector consumption in total final energy consumption	15%	25%	60%	100%
Production 2009 [ktoe]	306	5	1,189	1,500
Production 2007 [ktoe]	243	2	1,094	1,339
Production 1999 [ktoe]	237	0	986	1,223
Average growth 2007-2009 [%/a]	12%	58%	4%	6%
Average growth 1999-2009 [%/a]	3%	-	2%	2%
Realisable potential until 2020 [ktoe]	636	537	1,769	2,941
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	3%
Realisable potential until 2030 [ktoe]	947	735	2,447	4,129



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	248	4	0	0	0	5	0	4	0	0	5	96	1,092	-	1
Production 2007 [ktoe]	0	248	4	0	0	0	4	0	3	0	0	2	103	991	-	0
Production 1999 [ktoe]	0	246	1	0	0	0	0	0	0	0	0	0	108	878	-	0
Ø annual production growth 2007-2009	-	0%	0%	-	-	-	5%	-	10%	-	-11%	58%	-3%	5%	-	-
Ø annual production growth 1999-2009	-	0%	14%	-	-	-	41%	-	-	-	-	-	-1%	2%	-	-
Realisable potential by 2020 [ktoe]	1	284	21	31	0	9	112	6	45	2	123	537	-	-	-	-
Realisable potential by 2030 [ktoe]	11	287	21	134	0	74	175	98	64	2	135	735	317	1,339	296	494

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

There have been no significant policy changes in Latvia since March 2011.

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. Since 2010 a feed-in tariff is 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 2011, a climate change financial instrument, which is the Latvia's Government budget program**,** was introduced; tenders for RES-E promotion in household entities of various sizes were organized. A draft of the Law on RES is prepared. It was expected that this Law will come into force in July 2011, however until now it is not effective. Payment of premiums for RES-E generation are planned to be implemented.

RES-H&C

A climate change financial instrument was introduced to support RES utilization in a heating sector in 2011. 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 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 was foreseen in the Budget Law for 2011, but no details are known yet. However, support for 2011 will be paid in 2012.

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 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.

Regulation No. 262 sets the rules regarding the acquisition of the right to sell RES-E based on mandatory procurement. According to this regulation, a power plant that has received the right to take part in the framework of a mandatory procurement of RES-E, 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 generation 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 from 1 April of the respective year and 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 Installed capacity of biogas PP > 2 MW	$C = \frac{T_g * k}{9.3} * 4.5$ **Biomass** At a price 130 LVL/thous. Nm^3 91.05-116.99 €/MWh At a price 230 LVL/thous. Nm^3 137.74-176.99 €/MWh **Biogas** At a price 130 LVL/thous. Nm^3 75.48-93.60 €/MWh At a price 230 LVL/thous. Nm^3 114.19-141.60 €/MWh	$C = \frac{T_g * k}{9.3} * 3.4$ **Biomass** At a price 130 LVL/thous. Nm^3 68.79-88.40 €/MWh At a price 230 LVL/thous. Nm^3 104.07-133.73 €/MWh **Biogas** 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 own or use a unit that produces electricity in cogeneration and uses RES;
- who plan to build a unit that produces electricity in cogeneration and uses RES;
- who plan to increase its ownership or use an existing power plant capacity, if the power plant produces electricity in cogeneration using RES.

The mandatory procurement price formulas for cogeneration plants are presented in Table 2. The support level is differentiated 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;

CO_2 – 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. *The energy component*: $C_E = \frac{T_g * 1.2}{9.3} + CO_2 * 0.17$ 2. *The capacity component* 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. It can be mentioned that the supported share of RES-E (54.57%) in 2020 will be lower than the RES-E share expected in National Renewable Energy Action plan (59.8%). 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
TOTAL	*54.57*

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 actual 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/month[152]). Guaranteed fee for installed capacity in plants is paid on the basis of an agreement between the operator of plants and the System Operator (SO) for 15 years from the date the agreement was enforced. The SO shall discontinue payments for the electric capacity installed in a power plant, if the power plant is not operational for more than six months. On 17 May 2011 the amendment No. 365 of Regulation No. 262 was adopted. It determines that tenders for the acquisition of rights to sell biomass, biogas, wind and solar electricity will be organized from 26 May 2011 till 1 January 2013. The producer cannot qualify for the sale of electricity within the framework of a mandatory procurement (i.e. he/she has a right to receive feed-in tariff) and at the same time acquire the right to receive a guaranteed payment for installed capacity.

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 $M = \frac{95{,}712 * P}{12}$.

152 Exchange rate 1 €=0.7098 LVL

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).

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 till now 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 are 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 LVL 3,000 (€ 4,227) per kW for capacities up to 500 kW. Total eligible expenditure for one support applicant may not exceed LVL 1 500 000 (€ 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 was expected that the Law on RES could come into force in July 2011, however, until now it is not effective.

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. In 2012 RES related projects are funded under the following public tender:

Greenhouse gas emissions reducing technology development. The tender is based on the Regulation No 608 of 2 August 2011 [7]. It will be valid till 1 February 2012. The following activities are supported: purchase or adaptation of technologies that use RES, as well as the pure electric-powered vehicles and the purchase or use of the charging system for the acquisition and installation; additional investment in the renewable energy promotion; additional investment in the environment, which saves heat or electricity. The total budget is of LVL 2,793,646 LVL (€ 3,935,821). The minimum amount per project is LVL 3 000(€ 4,227) while the maximum is LVL 250,000 (€ 352,221).

The four following tenders have already taken place during 2011:

Renewable energy for household sector (1st round) [8]: The total budget of the tender was LVL 11.4 mln (€ 16 mln). There were submitted 1460 applications and the requested financial support was LVL 5 mln (€ 7 mln). 1219 projects were approved and 241 projects were rejected because of administrative non-compliance. The purchase and installation of wood chips or straw boilers, pellets or wood-fired boilers and biomass fireplaces, as well solar system, heat pumps, wind generators and solar cells were supported.

Renewable energy for household sector (2nd round) [9]: The total budget of the tender was LVL 7218,785 (€ 10,170,168) and LVL 7,000 (€ 9,862) per project. Funding shouldn't exceed 50 % of the total project costs. The same activities as it were during 1st round was supported.

Low-energy buildings [10]: The total budget of the tender was LVL 7 mln (€ 10 mln). 82 applications were submitted. The required financial funding was LVL 17 mln (€ 24 mln). After the process of application evaluation, 31 projects were approved (12 projects were rejected because of administrative non-compliance and 39 projects – because of lack of funding). Support was provided for the installation of solar collectors, wood pellets or wood chip boilers, air or ground heat pumps in new or reconstructed buildings.

Renewable energy, reduction of GHG [11]: The total budget of the tender was LVL 28 mln (€ 39 mln). 265 applications were submitted with LVL 114 mln (€ 160 mln) total required financial funding. 60 projects were approved (99 projects were rejected because of administrative non-compliance and 106 – because of lack of funding). Support was provided for the acquisition, construction, installation, reconstruction or replacement of RES technologies (heating, electricity generating, and cogeneration). The following projects were 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.

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 aim to substantially increase 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 (the latest amendment was on 26 October 2011) [12]. The scheme is valid since 12 March 2009 and until 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 LVL 100,000 (€ 140,885) and the maximum amount is LVL 4 million (€ 5.6 million). The total budget of the scheme is LVL 21 365 500 (€ 30.1 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.

Based on Regulation No 796 on Heating System Efficiency [13], the Latvian Investment and Development Agency will announce invitations to submit applications for investments for development of more efficient heating systems (including use of RES). The applications will be submitted from 1 December 2011 until 1 February 2012. The fund will cover up to 40 % of the project costs. It will be possible to receive support for acquisition of heat production equipment with a capacity greater than 3 MW. The support per project might not exceed LVL 5 mln (€ 7.4 mln). Total funding from EU Cohesion Fund is LVL 13 mln (€ 18 mln).

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 must sum up to 5.75 % by 2010 [14].

In order to promote the biofuel quota obligation, direct state support, fiscal measures (tax reductions and exemption from tax) have 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 [15]. 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 for 2011. However according to the Law on the 2011 State Budget [16], state aid is provided for the production of biofuels. The amount of the support will remain as it was in 2010, i.e. LVL 3.3 mln (€ 4.7 mln) [17]. The support to biofuels for 2011 will be paid in 2012.

Direct state support is provided in the form of subsidy for each unit of biofuel produced under quota obligation. There is a differentiation according to the 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 30.5 million litres of bioethanol and 40 million litres of biodiesel.

Regulation No. 648 of 25 June 2009 on amendment of Regulation on Conformity Assessment of Petrol and Diesel [18] 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 LVL 164 (€ 231) to LVL 223 (€ 314) depending on the quantity of additives. If biodiesel is fully derived from rapeseed oil, the excise tax is at a rate of LVL 0 [19].

5 RES-E Grid Integration

RES projects do not have priority in grid connection. The RES project is entitled to non-discriminating treatment [20]. 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.

References

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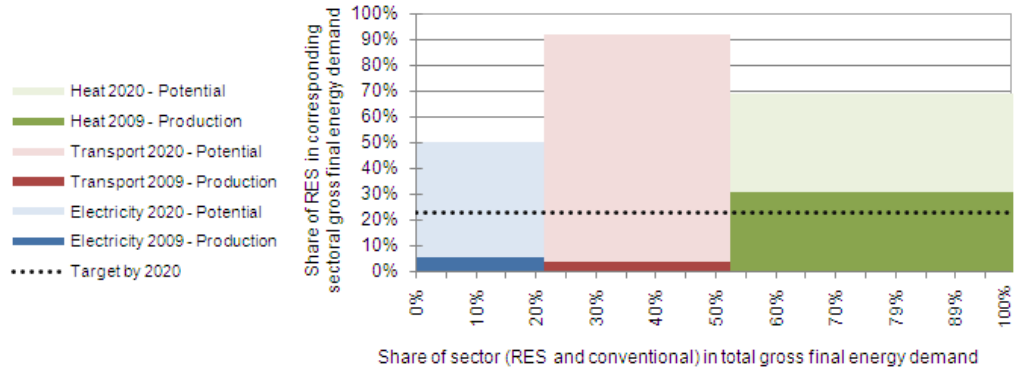
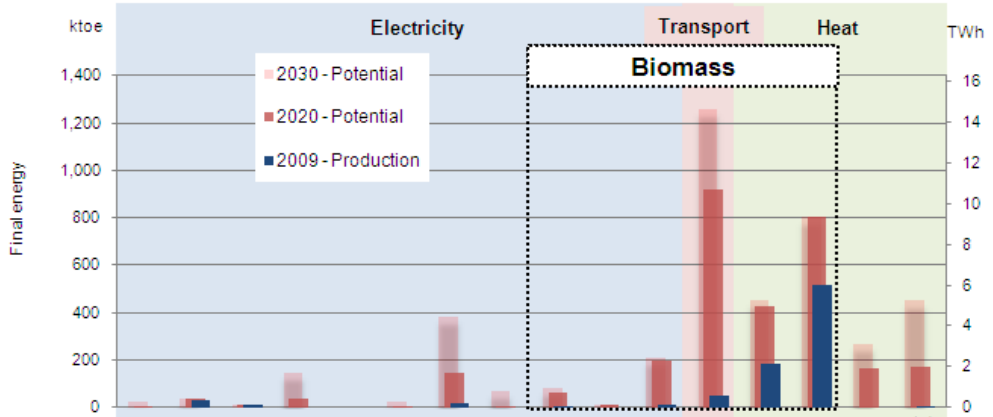
LITHUANIA - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	6%	4%	31%	17%
Share of total sector consumption in total final energy consumption	21%	31%	47%	99%
Production 2009 [ktoe]	59	52	697	807
Production 2007 [ktoe]	50	53	673	776
Production 1999 [ktoe]	36	0	589	625
Average growth 2007-2009 [%/a]	9%	-1%	2%	2%
Average growth 1999-2009 [%/a]	5%	-	2%	3%
Realisable potential until 2020 [ktoe]	507	922	1,560	2,989
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	5%
Realisable potential until 2030 [ktoe]	919	1,259	1,976	4,154



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Bioweste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	28	8	0	0	0	16	0	1	0	7	52	181	513	-	3
Production 2007 [ktoe]	0	28	8	0	0	0	8	0	1	0	4	54	135	529	-	9
Production 1999 [ktoe]	0	28	3	0	0	0	0	0	0	0	0	0	12	577	-	0
Ø annual production growth 2007-2009	-	0%	2%	-	-	-	48%	-	58%	-	35%	-2%	16%	-2%	-	-46%
Ø annual production growth 1999-2009	-	0%	10%	-	-	-	-	-	-	-	-	-	31%	-1%	-	-
Realisable potential by 2020 [ktoe]	1	34	11	38	0	3	144	4	64	9	198	922	425	802	164	169
Realisable potential by 2030 [ktoe]	22	35	11	148	0	22	384	69	81	10	211	1,259	454	802	270	450

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

The new Law on Renewable Energy was approved by decision No. XI-1375 on 24 May 2011 [3].The level of feed-in tariffs for power plants with more than 30 kW installed capacity will now be allocated by tenders. Feed-in tariffs for power plants with an installed capacity of up to 30 kW and a maximum level of feed-in tariff for producers participating in the tenders will by defined by the National Control Commission for Prices and Energy. Regulations on tenders for the allocation of the promotion quota for power plants with more than 30 kW installed capacity will come into force on 1 January 2012.

1 Summary: RES Support Policy

RES-E

According to the new Law on RES (approved on 24 May 2011) RES-E will be supported by a feed-in tariff. Renewable energy power plants with capacities of up to 30 kW will be supported through the feed-in tariff and a purchase obligation. The level of feed-in tariffs for power plants with more than 30 kW installed capacity will be allocated by tenders. Feed-in tariffs for power plants with an installed capacity of up to 30 kW and a maximum level of feed-in tariff for producers participating in the tenders will by defined by the National Control Commission for Prices and Energy.

Feed-in tariffs will be differentiated by technology, installed capacity, meteorological data and power plant location . Feed-in tariffs will we paid for 12 years.

RES-H&C

There are a number of 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 projects in form of interest subsidies and soft loans. For RES promotion it is foreseen to establish RES development funding programmes both on the national and municipal level.

RES-T

There are a number of 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)).

2 Details RES-Electricity Support Policy

Feed-in tariff

Since 1 April 2002, Lithuania has a feed-in tariff and a purchase obligation for electricity produced from renewable energy sources. A new Law on RES was approved by decision No. XI-1375 on 24 May 2011 [3]. According to this law the feed-in tariff support and the purchase obligation for RES-E will be continued.

Table 1: Feed-in tariff level in Lithuania since 1st January 2009 and valid for 2011 [4, 5, 6]

RES technology	Support level		Duration
	LTL/MWh	€/MWh	years
Hydro	260	75.3	12
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			

Renewable energy power plants with capacities up to 30 kW for all RES technologies will be supported through a feed-in tariff and a purchase obligation for electricity produced from renewable energy sources. The common promotion quotas and tenders areas will be determined and approved by the Government. The Government will determine the quotas to increase the installed capacity by 2020: wind up to 500 MW (excluding power plants with capacities up to 30 kW); PV connected to the grid up to 10 MW (excluding power plants with capacities up to 30 kW); hydro up to 141 MW; biomass up to 355 MW. Tenders will be organized according to the power plant connection area for each group of producers. The participant who submits the lowest price per kilowatt hour will win the tender. If two or more participants submit proposals with the same price level, the project with the larger capacity will win the tender. Regulations on tenders for allocation of quotas for power plants with more than 30 kW installed capacity will come into force on 1 January 2012 [7]. The National Control Commission for Prices and Energy will announce and organize the tenders.

Feed-in tariffs, for power plants with an installed capacity up to 30 kW, and the maximum rate of the feed-in tariff for producers participating in the tenders will be defined by the National Control Commission for Prices and Energy.

Feed-in tariffs will be differentiated by technology, installed capacity, meteorological data and location. According to the methodology of the feed-in tariff level estimation approved by the National Control Commission for Prices and Energy on 29 July 2011 the rates of the feed-in tariff will differentiated as presented in Table 2 [8].

Table 2: Feed-in tariff level differentiation according to the RES technology and installed capacity

RES technology	Differentiation according the capacity
Wind	< 30 kW
	< 350 kW
	> 350 kW
PV	< 30 kW
	< 100 kW
	> 100 kW
Hydro	< 30 kW
	< 1000 kW
	> 1000 kW
Biomass	< 30 kW
	< 5000 kW
	> 5000 kW
Biogas	< 30 kW
	< 1000 kW
	> 1000 kW

The National Control Commission for Prices and Energy will define feed-in tariffs and maximum rate of feed-in tariffs each year until 1 July. Feed-in tariffs will be payed for 12 years.

The National Control Commission for Prices and Energy approved decision on 26 September 2011 on determination of the maximum level of feed tariffs. According to this decision the maximum rate of feed-in tariffs for 2011 are set the same level as the feed-in tariffs for 2010 (as presented in Table 1) [9].

According to the Law on RES the Ministry of Energy is responsible for the implementation of support mechanisms, the monitoring of the law's implementation, state supervision and control.

Energy suppliers are obligated to receive, transmit and distribute all RES-E according to the transparent and not discriminatory tariffs.

Existing national regulations require the usage of certified equipment and certified installers.

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 the realization of environmental projects. The amount of subsidy to one beneficiary may not exceed LTL 690,000 (€ 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 last call of applications for investment projects was announced in spring 2011.[153]

153 The call was announced 27 May 2011, application deadline is 1 August 2011 http://www.laaif.lt/index.php?-1898870797

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 LTL 345,280 (€ 100,000) or LTL 1,381,120 (€ 400,000) if the applicant is a recognized agricultural cooperative under Measure 6. The maximum amount of support per beneficiary cannot exceed LTL 690,560 (€ 200,000) under Measures 1 and 2 [10].

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 [11]. The procedure for the use of this fund was adopted on 6 April 2010 [12]. 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 projects 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 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 is? 5 million LTL (1.45 million €), for an applicant engaged in economic and commercial activities – LTL 690.000 (€ 199.800), 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. LTL 240

million (€ 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 [13].

More information about the measure can be found on website of Ministry of Environment (http://www.am.lt).

3 Details RES-Heating and Cooling Support Policy

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 [14]. 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.

Law on Renewable Energy

Heat and cool production from RES is one of Lithuania's strategic objectives. According to the Law on RES heat suppliers are obligated to connect RES technologies of independent heat producers to the heat supply network [3]. Independent heat suppliers need to ensure that supplied heat satisfies quality, supply security and environmental requirements. Heat suppliers must purchase heat produced from RES from independent heat producers at priority right.

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.

The national and municipal RES development funding programmes

For RES promotion it is foreseen to establish RES development funding programmes both on the national and municipal level [3]. The sources to fund this programmes are received through parts of excise taxes, income received from statistical transfers, allocation of state budget, finance of the Special Programme for Climate Change, voluntary finance of natural and legal entities, etc.

The national RES development funding programme will finance heating and cooling projects from biomass, biogas and other renewable energy sources. The programme will also promote the production, extraction, purification and preparation of biogas for utilization projects as well as geothermal, biofuel and other renewable energy research projects. RES development funding programmes on a municipality level will, among others, support the purchase of equipment for RES utilization in the residential and public sector.

The Ministry of Energy will be responsible for the implementation of the National RES development funding programme; administrations of municipalities will be in charge of the implementation of municipal RES development funding programmes.

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 biomass? consumption are exempt from taxes on pollution from stationary sources [15].

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 the economical situation in the country. The last call for acceptance of applications was announced in spring 2011.[154]

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 LTL 127 million (€ 36.8 million) [16].

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 currently no building obligations that require the use of RES.

According to the Law on RES [3], the government or its authorized institution are responsible for the preparation and implementation of measures assigned to promote RES utilization in buildings. After 1 January 2012 new governmental and municipal buildings, other public and commercial buildings and existing buildings that undergo major renovation, need to comply with certain standards of RES utilization. After 31 December 2014 all new - and existing buildings undergoing major renovation will be affected by the regulation.

154 The call was announced 27 May 2011, application deadline is 1 August 2011 http://www.laaif.lt/index.php?-1898870797

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 [17]. 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) [18]. 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. The maximum reimbursed amount of raw materials to each recipient is calculated by the pressure of rapeseed oil or dehydrated ethanol production capacity according to the following minimum output: from 1 ton of cereal grains at least 0.29 tons of bioethanol need to be produced; from 1 ton of rapeseed grains – 0.32 tons of biodiesel or 0.33 ton rapeseed oil [19].

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 [20]. It is foreseen, however, that means of the National RES development funding programme could be used for the purchase of electric, hydrogen and hybrid vehicles. Funds provided by the municipal RES Development Funding Programmes, on the other hand, will be possibly dedicated to the development of infrastructure for RES utilization in the transport sector, implementation of infrastructure for charging of electric vehicles and hydrogen filling stations [3].

5 RES-E Grid Integration

Grid access, balancing responsibility and associated costs for RES-E projects

RES-E projects have priority in grid connection according to the provisions of the Law on RES. The costs of grid connection are distributed between producers and grid operator considering property limits.

The charges for RES-E projects on the connection of a RES-E plant are reduced by 40 % when the installed capacity is more than 350 kW; by 20 % when the installed capacity is more than 30 kW; by 0 % when the installed capacity is up to 30 kW [3]. The system operator bears these costs.

The grid operators need to guarantee the preferential transmission of RES-E. They are obligated to expand their grids in order to ensure a safe and reliable transmission and distribution of RES-E. Producers must reimburse not more than 10 % of grid expansion or reconstruction expenditures

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.

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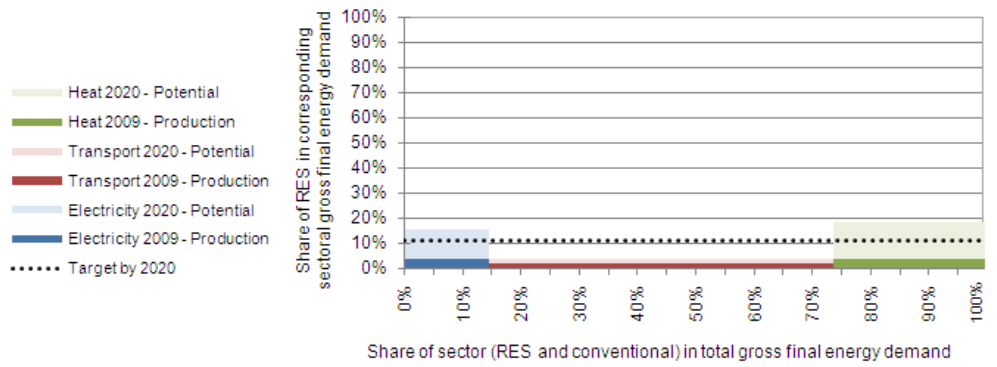
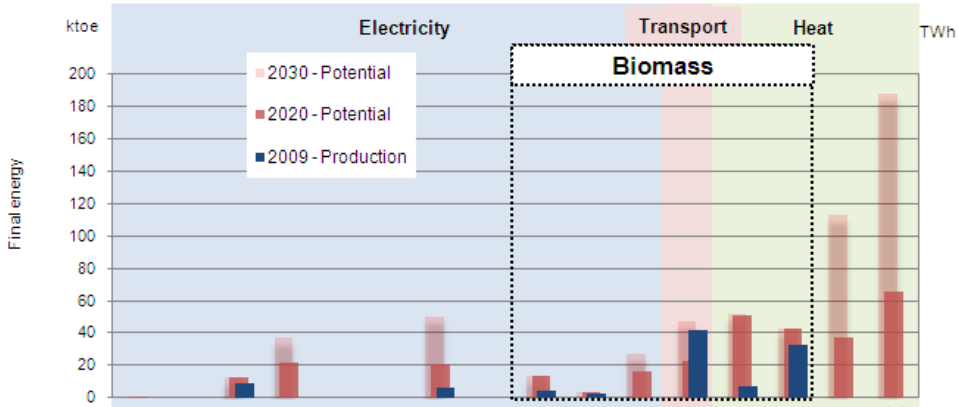
LUXEMBOURG - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	4%	2%	4%	2%
Share of total sector consumption in total final energy consumption	14%	59%	27%	100%
Production 2009 [ktoe]	21	41	40	102
Production 2007 [ktoe]	21	35	41	97
Production 1999 [ktoe]	10	0	15	25
Average growth 2007-2009 [%/a]	1%	8%	-1%	3%
Average growth 1999-2009 [%/a]	7%	-	10%	15%
Realisable potential until 2020 [ktoe]	87	22	197	306
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	15%
Realisable potential until 2030 [ktoe]	131	48	396	575



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Bioweste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	0	9	0	0	0	6	0	5	2	0	42	7	33	-	0
Production 2007 [ktoe]	0	0	9	0	0	0	5	0	3	2	0	34	5	36	-	0
Production 1999 [ktoe]	0	0	9	0	0	0	2	0	0	2	0	0	0	15	-	0
Ø annual production growth 2007-2009	-	-	0%	-	-	-	11%	-	20%	0%	-	11%	18%	-4%	-	-
Ø annual production growth 1999-2009	-	-	0%	-	-	-	15%	-	49%	4%	-	-	-	8%	-	-
Realisable potential by 2020 [ktoe]	0	0	12	22	0	0	21	0	13	3	16	22	51	43	37	65
Realisable potential by 2030 [ktoe]	0	0	12	37	0	0	51	0	13	4	27	48	52	43	113	188

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

No changes occurred in the RE policy framework of Luxembourg since the last version of RE-Shaping country profiles.

During 2011 Luxembourg has been drafting its second CO_2 action plan through a stakeholder process with members of the “Climate Partnership” and a draft list of 35 measures was published in April 2011. A final proposal of the action plan is expected to be adopted mid 2012 and will probably contain a review of current RE support, although no major changes are foreseen.

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 current tariffs are valid for installations starting after the beginning of 2008. Tariffs for new installations decline annually (by 3% for PV and 0.25% for other technologies) according to the calculation method fixed at the start of the instrument in 2008. 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.

During 2011 Luxembourg has been drafting its second CO_2 action plan through a stakeholder process with members of the “Climate Partnership”. The final proposal of the action plan is expected to be adopted mid 2012 and will probably contain a review of current RES-E support, although no major changes are foreseen.

RES-H&C

The key support instruments for RES-H are investment incentives for the use of renewables in buildings. In previous years, 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 result in the expected amount of biofuels used. 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 Tariff[155]

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"[156] 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 characterised as follows:

- There is no end date set for this support instrument; it will be in place until further notice. Revision of the tariffs could be part of the second CO2 action plan, which is expected to be adopted mid 2012.
- 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 below).
- 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: 3% for PV and 0.25% for all other technologies. The calculation of the tariff is included in the current law (RGD 08.02.2008) and differs between technologies.
- The expected budget for 2011 was € 12.5 million, although the budget is not capped157. The costs of the feed-in tariff are borne by final consumers.

155 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.

156 See legislation via: http://www.legilux.public.lu/leg/a/archives/2008/0016/a016.pdf#page=2

157 2011 budget: http://www.legilux.public.lu/leg/a/archives/2010/0249/a249.pdf

Table 1: Feed-in tariffs for RES-E in 2008 until 2012 (€/MWh)

Technology		Linear annual regression factor	2008	2009	2010	2011	2012
Wind		0.25%	82.7	82.5	82.3	82.1	81.9
Solar	≤ 30 kW	3.00%	420	407.4	394.8	382.2	369.6
	> 30 kW; ≤ 1 MW	3.00%	370	358.9	347.8	336.7	325.6
Hydro	≤ 1 MW	0.25%	105	104.7	104.5	104.2	104.0
	> 1 MW; ≤ 6 MW	0.25%	85	84.8	84.6	84.4	84.2
Biogas	≤ 150 kW	0.25%	150	149.6	149.3	148.9	148.5
	> 150 kW; ≤ 300 kW	0.25%	140	139.7	139.3	139.0	138.6
	> 300 kW; ≤ 500 kW	0.25%	130	129.7	129.4	129.0	128.7
	> 500 kW; ≤ 2500 kW	0.25%	120	119.7	119.4	119.1	118.8
Sewage gas		0.25%	65	64.8	64.7	64.5	64.4
Solid biomass	≤ 1 MW	0.25%	145	144.6	144.3	143.9	143.6
	> 1 MW; ≤ 5 MW	0.25%	125	124.7	124.4	124.1	123.8
Waste wood	≤ 1 MW	0.25%	130	129.7	129.4	129.0	128.7
	> 1 MW; ≤ 5 MW	0.25%	110	109.7	109.5	109.2	108.9

Investment incentive – PRIMe House scheme for 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 rationelle de l'énergie et la mise en valeur des energies renouvelables". The focus of this support instrument, also referred to as PRIMe House[158], is on 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_p.

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_p. The budget for the

[158] http://www.legilux.public.lu/leg/a/archives/2009/0083/a083.pdf

instrument is not capped and the budget for 2011 was estimated at € 0.9 million[159]. The scheme is set up for the period of 1 January 2008 until 31 December 2012. 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 - PRIMe House

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 rationelle de l'énergie et la mise en valeur des energies renouvelables", also called the PRIMe House scheme[160]. The focus of this scheme is on measures regarding energy efficiency and the use of renewable energies in buildings, mainly for heating purposes. The grants apply to investments between 1 January 2008 and 31 December 2012.

The Ministry of Environment and the Ministry of Finance are responsible for the execution of this instrument. Applications are to be addressed at the "Admisitration de l'environnement".[161] Applications can be handed in continuously.No periodical revision is foreseen, and the amount that is to be subsidised is fixed in the current system.

The grant is paid irrespectively of certified equipment or installers. However, the installed technology has to meet certain technical requirements.[162].

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). The budget for the scheme is not capped, neither annually nor in total. The budget for 2011 was estimated at € 0.9 million.[163]

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[159] 2011 budget: http://www.legilux.public.lu/leg/a/archives/2010/0249/a249.pdf

[160] http://www.legilux.public.lu/leg/a/archives/2009/0083/a083.pdf

[161] http://www.environnement.public.lu/energies_renouvelables/index.html

[162] ,Specified in Annex II of RGD 20.04.2009: http://www.legilux.public.lu/leg/a/archives/2009/0083/a083.pdf

[163] 2011 budget: http://www.legilux.public.lu/leg/a/archives/2010/0249/a249.pdf

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 multi-family houses: number in front of the slash: amount to be multiplied by the number of apartments; number after the slash: maximum amount per house.

Subsidies for CHP

The subsidy support scheme PRIMe House also 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 € 3,000. This applies to CHP in the range of 1 – 6 kW.

Heating grids connecting at least two residential buildings can be supported with subsidies totalling 30% of the investment costs with a maximum of € 7,500.

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 at 2%. In case the quota is not fulfilled, a penalty called “pollution tax” has to be paid. The penalty amounts to 1,200 €/1,000 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€/1,000 litres for unleaded petrol and 10€/1,000 litres for diesel.

The budget law is revised annually; in the last years, the quota has not changed.

Premium for low-emission vehicles (PRIMe CARe)

A once-only premium is in place for new low-emission vehicles; the level of the premium varies between€ 750 and € 3,000, depending on the emissions of the car. The € 3,000 premium can be obtained for fully electric vehicles, but only, if the owner of the car has at the latest 6 months prior to the application for the premium signed a contract to fully use renewable electricity. The budget extension of this premium support scheme from 2012 is part of the second CO_2 action plan.

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.

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- Rapport d'activité 2006 de Ministre de l'économie et du commerce extérieur du grand-duché de Luxembourg (2007) http://www.eco.public.lu/documentation/rapports/rapport_ministere/rapport2006.pdf
- Website of the Ministry for economy and foreign trade: http://www.eco.public.lu/index.html
- Règlement grand-ducal du 20 avril 2009 instituant un régime d'aides pour la promotion de l'utilisation rationelle de l'énergie et la mise en valeur des energies renouvelables: http://www.legilux.public.lu/leg/a/archives/2009/0083/a083.pdf
- Règlement grand-ducal du 8 février 2008 relatif à la production d'électricité base sur les sources d'énergie renouvelables: http://www.eco.public.lu/documentation/legislation/reglements/2008/02/energies.pdf
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- Loi de 19.12.2008, Budget de l'Etat 2009: http://www.legilux.public.lu/leg/a/archives/2008/0200/a200.pdf
- Loi de 23.12.2005, Budget de l'Etat 2006: http://www.legilux.public.lu/leg/a/archives/2005/0217/a217.pdf
- Loi de 22.12.2005, Budget de l'Etat 2007: http://www.legilux.public.lu/leg/a/archives/2006/0236/a236.pdf
- http://www.car-e.lu/
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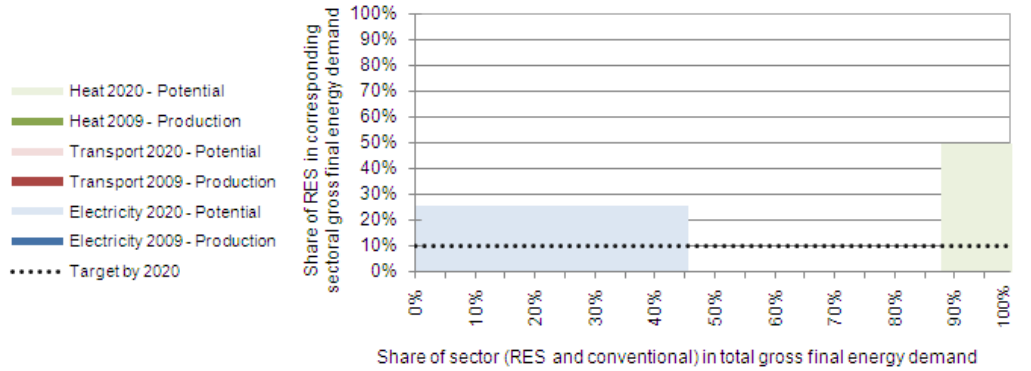
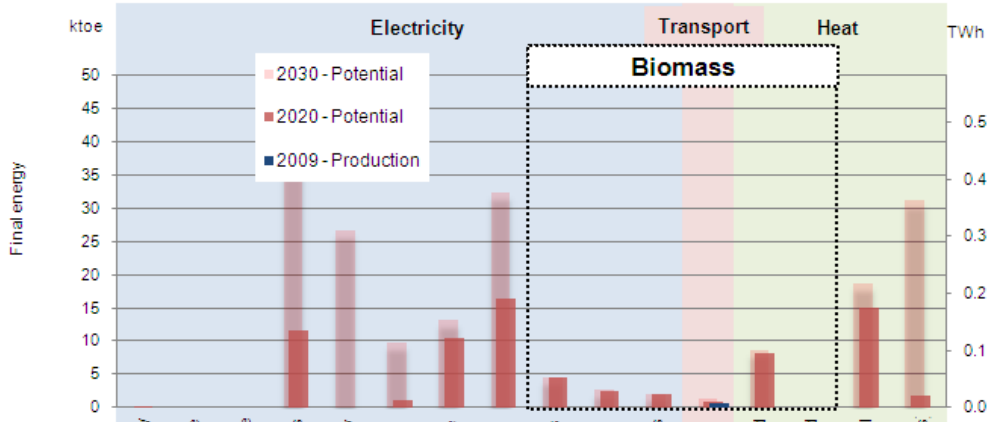
- Loi de 18.02.2010, "Régime d'aides à la protection de l'environnement et à l'utilisation rationnelle des ressources naturelles":
- http://www.legilux.public.lu/leg/a/archives/2010/0044/a044.pdf#page=2

MALTA - Summary RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	0%	0%	0%	0%
Share of total sector consumption in total final energy consumption	45%	42%	12%	100%
Production 2009 [ktoe]	0	0	0	0
Production 2007 [ktoe]	0	0	0	0
Production 1999 [ktoe]	0	0	0	0
Average growth 2007-2009 [%/a]	-	-	-	-
Average growth 1999-2009 [%/a]	-	-	-	-
Realisable potential until 2020 [ktoe]	48	1	25	74
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	-
Realisable potential until 2030 [ktoe]	125	1	59	185



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Bioweste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	0	0	0	0	0	0	0	0	0	0	1	0	0	-	0
Production 2007 [ktoe]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0
Production 1999 [ktoe]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0
Ø annual production growth 2007-2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø annual production growth 1999-2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Realisable potential by 2020 [ktoe]	0	0	0	12	0	1	10	16	4	2	2	1	8	0	15	2
Realisable potential by 2030 [ktoe]	0	0	0	45	27	10	13	32	5	3	2	1	9	0	19	31

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

No major policy changes have taken place since the last update in March 2011.

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 solar PV and small-scale wind for households. Small solar PV installations also receive a guaranteed tariff based on net metering for every kWh of solar electricity that is fed back into the grid. The 2010 solar PV feed-in-tariffs are kept constant in 2011 at 25-28 €ct/kWh and they are guaranteed for 8 years. Non-domestic use of RES has a feed-in-tariff of 20 €ct/kWh and is guaranteed for 7 years.

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 to a maximum grant of € 2,500.

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 Malta[164]. 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[165]).

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.

Solar PV

50% of eligible costs are funded up to a maximum of € 3,000 per family / installation[166]. There is a cap on the budget and up to 200 families can benefit from the scheme. The applicant is required to ask the retailer to include a 5 year warranty on the system[167].

If the system exceeds 3.68kW the applicant should also fill out a notification (if the system is less than 16A per phase) or authorisation form (if the system exceeds 16A per phase)[168].

The 2011 call (Call 2011/PV/1) was open between 25 July to 3 August 2011[169].

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.

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'[170].

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164 A 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

165 http://www.mra.org.mt/support%20scheme.shtml

166 http://www.mra.org.mt/Downloads/Grants/2011%20Schemes/PV2011%20Guidelines20110930v2.pdf

167 http://www.mra.org.mt/Downloads/Grants/2011%20Schemes/PV2011%20Guidelines20110930v2.pdf

168 http://www.mra.org.mt/Support%20Schemes%202011-PV.shtml

169 http://www.mra.org.mt/Downloads/Grants/2011%20Schemes/617.pdf

170 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; 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.[171]

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[172]. 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'[173]. The support is not conditional to certified equipment and installers.

To meet its 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 of 65 – 87 MW[174], depending on the type of turbines and the available area. The wind farm would be set up through private investments totalling € 300 million[175]. Wied Rini (maximum capacity of 10 MW[176]) and Hal Far (maximum capacity of 4.25 MW[177]) 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 viable[178]. Studies on environmental impact and the suitability of the site are still pending. 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.

Scotland and Malta are joining their efforts on deep offshore wind energy. In Scotland developments in this area are going at a fast pace. Malta is interested in increasing research collaboration with the University of Aberdeen, Scottish European Green Energy Centre and the Scottish Development International[179].

Wave energy

In July 2011 a wave energy pilot has started in the waters east of Gozo. Wave energy is providing a good alternative for Malta, because land is scarce and the surrounding waters are often too deep for offshore wind farms[180]. The scale model of the wave

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171 http://www.mra.org.mt/Downloads/Grants/2011%20Schemes/Applicants%20list%202011-ERDF.pdf

172 http://www.mra.org.mt/microwind.shtml

173 Promotion directive of the Ministry of Finance. Government notice No. 136. http://www.mra.org.mt/Downloads/Grants/GN2006_136%20wind%20grant.pdf

174 http://www.mrra.gov.mt/htdocs/docs/renewableenergycredentialsjan2009.pdf

175 http://www.offshorewind.biz/2011/02/02/maltas-offshore-wind-farm-economically-viable/

176 http://www.mrra.gov.mt/htdocs/docs/wiedriniprojectdescription.pdf

177 http://www.mrra.gov.mt/htdocs/docs/halfarprojectdescription.pdf

178 http://www.offshorewind.biz/2011/02/02/maltas-offshore-wind-farm-economically-viable/

179 http://www.timesofmalta.com/articles/view/20111001/local/malta-and-scotland-discuss.387227

180 http://www.timesofmalta.com/articles/view/20110605/local/uk-firm-launches-wave-energy-project-in-malta.369062

converter (1:10) is similar to one that was previously tested in Denmark. The data that is collected through this test is analyzed by a Danish-Maltese consortium. The pilot project extends until the end of 2012[181].

The tests should contribute to the development of long lasting, low impact, contaminant free wave energy converters, each producing around 250 kW/hour. The design will be in the form of a barge, which will not be visible from the land. Risks for marine life will be practically non-existant[182].

Feed-in Tariff

Since 2004, Malta has promoted the generation of electricity by domestic PV systems through a net-metering system[183]. 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 pays 6.99 EURct/kWh for every kWh of solar energy fed into the grid. PV installations that are already connected to the Maltese electricity grid can still use net-metering. For new PV installations or expansion of existing PV-installations, net-metering is no longer offered as an option; now everything is regulated by the Feed-in-Tariff (FiT). The FiT for solar PV for domestic premises amounts 25 €ct/kWh (Malta) or 28 €ct/kWh (Gozo), guaranteed for 8 years, with a maximum of 4.8 MWh per year. If an applicant benefits from a grant larger than 50%, the feed-in tariff is decreased by 0.2 €ct/kWh for every 1% they benefit more than 50%[184]. For non-residential and institutional premises the FiT amounts 20 €ct/kWh, guaranteed for 7 years with a maximum of 160 MWh per year[185].

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%20Scheme.shtml) in cooperation with Enemalta (http://www.enemalta.com.mt).

The scheme is regulated by Legal Notice 422 of 2010 as amended by LN 70 of 2011[186], [187].

The tariff may be combined with the once-only grant.

Soft Loans

To encourage owners of tourist accommodations to invest in renewable energy the Maltese government offers low interest loans. The interest rate of these loans will be 1.5% for a maximum amount of € 400,000 or 80% of the investment costs[188].

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181 http://www.offshorewind.biz/2011/07/06/dexawave-begins-wave-energy-project-at-malta/

182 http://www.timesofmalta.com/articles/view/20110605/local/uk-firm-launches-wave-energy-project-in-malta.369062

183 Reg. 7 (7) Promotion of Electricity produced from Renewable Energy Sources (PRESR). http://www.erec.org/fileadmin/erec_docs/Projcet_Documents/RES2020/MALTA_RES_Policy_Review__09_Final.pdf .

184 E.g. if the grant on Gozo is 60%, the FIT reaches € 23 cent/kWh instead of € 25 cent/kWh: http://www.mra.org.mt/Downloads/licences/FIT%20Scheme%202011.pdf.

185 http://www.mra.org.mt/Downloads/licences/FIT%20Scheme%202011.pdf

186 http://www.mra.org.mt/Downloads/licences/FIT%20Scheme%202011.pdf.

187 http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=11430&l=1

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 € 560 per family/installation[189]. There is no more than one grant available per technology, but families are eligible to receive subsidies for more than one technology[190]. Persons that have already benefitted from a similar system or scheme are not eligible for grants from this scheme [191]. 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)[192].

In 2011 the government presented a new scheme for the domestic sector (2011/SWH/ national call). Applicants can apply between 25 April 25 and 31 December 2011[193]. 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.

The scheme is regulated through Government notice No. 347 published on 15 April 2011 in the Government Gazette[194].

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.

Soft loans

The Maltese government has made soft loans available for investments in renewable energy, including solar thermal. These soft loans are only available for owners of tourist accommodations. See RES-E section for more information.

Building Obligations

There are no building obligations regarding heating and cooling in Malta.

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188 http://www.timesofmalta.com/articles/view/20110504/local/soft-loans-to-help-tourism-industry-invest-in-energy-conservation.363604

189 http://www.mra.org.mt/Downloads/Grants/2010%20Schemes/ Application_Guidelines_SWH_2010.pdf

190 See previous section: there are also grants for small wind turbines and solar PV.

191 http://www.mra.org.mt/Downloads/Grants/2011%20Schemes/Notice%20in%20GG_110415.pdf

192 http://www.mra.org.mt/Support%20Scheme.shtml.

193 http://www.mra.org.mt/Downloads/Grants/2011%20Schemes/Notice%20in%20GG_110415.pdf

194 http://www.mra.org.mt/Downloads/Grants/2011%20Schemes/Notice%20in%20GG_110415.pdf

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%.

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)[195].

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 € 2,500. Applicants that have received a grant from a similar system since 2006 are not eligible for this scheme[196]. 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.

The most recent scheme was announced on 9 September 2011[197]. In this scheme only the level of the grant has changed (increased from 2329 to 2500 Euro???). The rest of the scheme is regulated through Government notice No. 840 of 2011[198]. There is no cap on the budget.

5 RES-E Grid Integration

Electricity generated from renewable energy sources shall be granted priority transmission (Art. 13(4) LN 166/2011)[199]. The plant operator is contractually entitled to

195 http://www.mra.org.mt/Support%20Scheme.shtml

196 http://www.mra.org.mt/Downloads/Grants/GG%202011-9.9..pdf

197 http://www.mra.org.mt/Downloads/Grants/GG%202011-9.9..pdf

http://www.mra.org.mt/Downloads/Grants/GG%202011-9.9..pdf

199 http://www.res-legal.de/en/search-for-countries/malta/single/land/malta/instrument/subsidies/ueberblick/netznutzung.html?bmu[lastShow]=5&cHash=d87db1dbeb47d65d1126d5f240fb99d9

the conclusion of an agreement of connection with the grid operator Enemalta. The contractual terms shall comply with the network code[200].

Enemalta is not obliged to grant priority dispatch where the security and reliability of the grid is at risk (Reg. Art. 13 (4) LN 166/2011). If the grid operator has to shut down plants in case of capacity shortage, he has to avoid shutting down renewable energy systems where possible[201].

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 reinforcements[202]. 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 connection[203]. All other costs arising from the preferential treatment of RES-E (e.g. forecast of production and balancing) are borne by the grid operator.

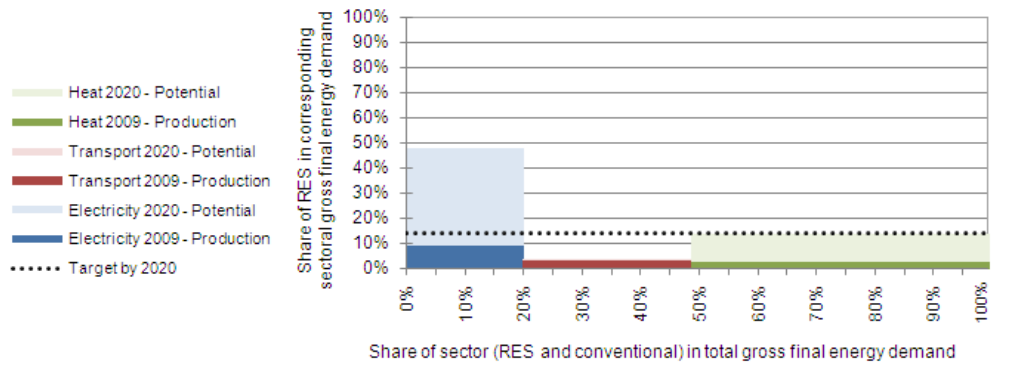
200 Reg. 17 (1) ER in connection with. NC. Subsidiary Legislation 423.22, Electricity Regulations (ER), 16th December, 2004, Legal Notice 511 of 2004, as amended by Legal Notice 17 of 2007. http://res-legal.de/index.php?id=170&L=1&bmu[show]=3&bmu[land]=14&bmu[lastPid]=318&bmu[lastShow]=6&bmu[uid]=132

201 http://www.res-legal.de/en/search-for-countries/malta/single/land/malta/instrument/subsidies/ueberblick/netznutzung.html?bmu[lastShow]=5&cHash=d87db1dbeb47d65d1126d5f240fb99d9

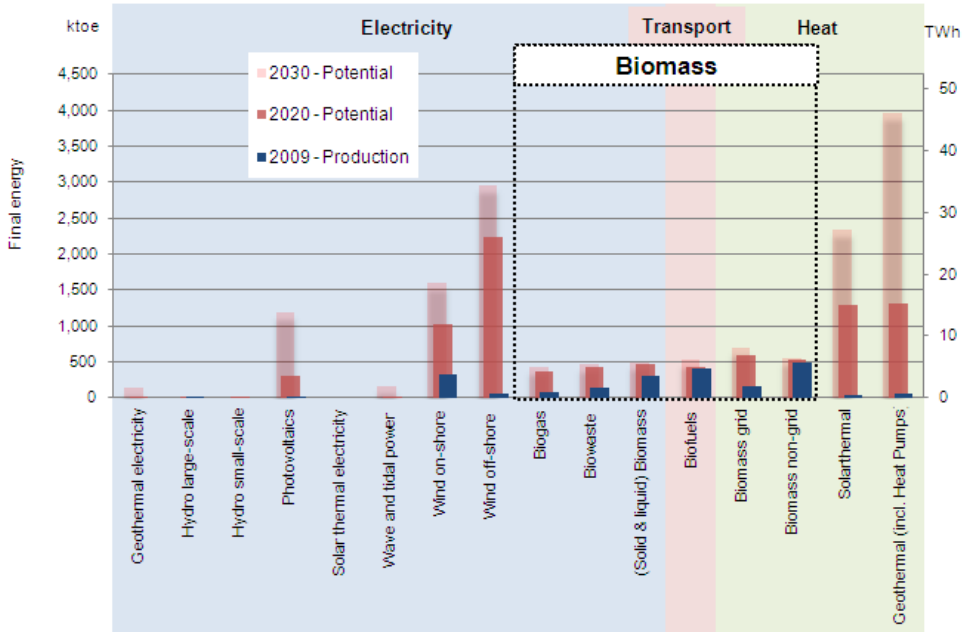
202Reg 7 (6) PRESR http://res-legal.de/index.php?id=170&L=1&bmu[show]=3&bmu[land]=14&bmu[lastPid]=318&bmu[lastShow]=6&bmu[uid]=132

203 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

NETHERLANDS - Summary RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	9%	4%	3%	4%
Share of total sector consumption in total final energy consumption	20%	29%	51%	100%
Production 2009 [ktoe]	922	404	749	2,074
Production 2007 [ktoe]	638	309	637	1,585
Production 1999 [ktoe]	215	0	422	637
Average growth 2007-2009 [%/a]	20%	14%	8%	14%
Average growth 1999-2009 [%/a]	16%	-	6%	13%
Realisable potential until 2020 [ktoe]	4,862	420	3,718	9,000
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	12%
Realisable potential until 2030 [ktoe]	6,739	524	7,557	14,820



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	9	0	6	0	0	328	63	79	135	305	404	164	492	43	50
Production 2007 [ktoe]	0	9	0	5	0	0	242	28	44	120	169	309	129	455	27	27
Production 1999 [ktoe]	0	9	0	0	0	0	47	8	24	108	20	0	85	335	1	1
Ø annual production growth 2007-2009	-	0%	-	13%	-	-	16%	49%	34%	6%	34%	14%	13%	4%	27%	37%
Ø annual production growth 1999-2009	-	0%	-	-	-	-	21%	23%	13%	2%	32%	-	7%	4%	46%	48%
Realisable potential by 2020 [ktoe]	7	9	5	311	0	18	1,016	2,245	372	417	464	420	599	535	1,283	1,300
Realisable potential by 2030 [ktoe]	132	9	5	1,193	0	163	1,603	2,956	427	462	493	524	692	553	2,343	3,969

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

No major changes that have taken place since the introduction of the amended feed-in scheme (SDE+) for renewable energy in January 2011. However, more details regarding the scheme, the support levels especially, are now clear and included in this update.

For 2012 some changes to the SDE+ scheme have been announced[204]:

- The budget will be raised from € 1.5 billion in 2011 to € 1.7 billion in 2012;
- An extra support round will be added with a maximum required support level of 7 €ct/kWh for RES-E , 48,3 €ct/Nm3 for biogas and 19,4 €/GJ for RES-H;
- From 2012 onwards, RES-H projects are eligible for support. Also, innovative technologies projects such as geothermal CHP and biomass gasification will become entitled for support.
- Projects that do not deliver energy to the grid (own use) are also eligible for support;

Regarding RES-H&C, from 2012, RES-H projects are eligible for support under the SDE+ scheme.

Subsidies for renewable heat in households were cancelled prematurely as of February 2011. Of the overall reserved budget of € 66 million for the years 2008 to 2011, € 40 million was spent before the scheme ended. Also, the subsidy programme for industrial (waste) heat (Subsidieregeling Industriële Warmtebenutting) was discontinued in 2011. In 2010, € 10.5 million was available and used.

[204] Changes need yet to be approved by Parliament.

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 of all eligible technologies that expect to realise their projects with a comparatively low level of subsidy. This category can in theory also be used for non-defined longer term and innovative technologies, as long as they can realise their projects with the maximum level of subsidy that is available.
- From 2012, 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 is effective since July 2011. For 2012 some changes have been announced.

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 renewables.

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 July 2011, the feed-in premium for RES-E SDE (Stimulering Duurzame Energieproductie - Stimulating Renewable Energy Production) was replaced by the new feed-in premium system SDE+[205]. The legal basis for the SDE was the Order Incentivising Sustainable Energy Production[206] 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 onwards[207].

Also the new instrument is controlled by the ministry of Economic Affairs, Agriculture and Innovation (Ministerie EL&I), but 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 such as innovation subsidies will be used[208].

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; II: 13ct/kWh; IV: 15 ct/kWh). In each round, lower than the maximum subsidy levels are defined for cheaper technologies, e.g. incineration in Round 1 or incineration and onshore wind in Round 2. Technologies with no predefined price in the respective bidding round can participate under the free category and will then receive the maximum base price for each round. The table below shows an overview of the reference prices for 2011[209].

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205 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

206 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

208 http://www.rijksoverheid.nl/onderwerpen/duurzame-energie/subsidieregeling-duurzame-energie-sde

209 Reference prices for 2012 are expected late December 2011. For an overview of reference prices for 2011, see: http://www.agentschapnl.nl/sites/default/files/bijlagen/Overzicht%20categorie%C3%ABn%20basisbedragen%20SDE%202011.pdf

Table 1: SDE+ reference prices for renewable energy (2011)

Phase	I	II	III	IV
Electricity: Maximum base price per phase	9 €ct/kWh	11 €ct/kWh	13 €ct/kWh	15 €ct/kWh
Biogas: Maximum base price per phase	79 €ct/Nm^3	97 €ct/Nm^3	114 €ct/Nm^3	132 €ct/Nm^3
Renewable electricity (€ct/kWh)				
Sewage treatment plants, landfill gas, electricity	6	6	6	6
Waste incineration plants	11 – 13.1	11 – 13.1	11 – 13.1	11 – 13.1
Manure co-digestion electricity	*9 -14*	*11 - 17.1*	*13 - 20.2*	15 - 20.5
Biomass >10 MW electricity	*9 – 15.4*	*11 – 15.4*	11.5 – 15.4	11.5 – 15.4
Biomass <10 MW electricity	*9 – 14*	*11 – 17.1*	*13 – 19.4*	*15 – 19.4*
All fermentation electricity	*9 – 14*	*11 – 14.9*	12.9 – 14.9	12.9 – 14.9
Hydro power > 5m	7.1	7.1	7.1	7.1
Hydro power < 5m	*9*	*11*	12.2	12.2
Run of river <0.5 m	*9*	*11*	*13*	*15*
Solar PV > 15kWp	*9*	*11*	*13*	*15*
Onshore wind	*9*	9.6	9.6	9.6
Wind in lake	*9*	*11*	*13*	*15*
Offshore wind	*9*	*11*	*13*	*15*

Biogas (€ct/Nm^3)				
Sewage treatment plants, landfill gas, biogas	28.8	28.8	28.8	28.8
Sewage treatment plants, landfill gas, gas hub	17	17	17	17
All fermentation biogas	*62*	63.7	63.7	63.7
Manure co-digestion biogas	*62*	*76*	76.7	76.7

For waste incineration and biomass, there are minimum and maximum reference prices. For the first option, the price increases with a higher efficiency. For biomass (CHP), the price increases when more heat is (usefully) supply to end-users.

The reference prices for 2012 need yet to be officially announced. This

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;
- SDE+ also introduces a 'free category' for echnologies with no predefined price in the respective bidding round. They can participate under the free category and will then receive the maximum base price for each round (see the blue coloured and Italic prices in the above table);
- For onshore wind, a differentiation of the level of support for wind investments depending on the average wind speed at the location is introduced;
- 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 (Round 3);
- 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.
- The free category is theoretically also open for innovative projects such as wave and tidal, geothermal and osmotic energy generation. They can also apply for support in this category, subject to the maximum reference price of 15 ct/kWh. In practice the reference prices are too low for innovative projects.
- Also biogas hubs are eligible for SDE+ support.

For 2012 some changes to the SDE+ scheme have been announced[210]:

- The budget will be raised from € 1.5 billion in 2011 to € 1.7 billion in 2012;
- An extra support round will be added with a maximum required support level of 7 €ct/kWh for RES-E , 48,3 €ct/Nm3 biogas (and 19,4 €/GJ for RES-H);
- Innovative technologies projects such as geothermal CHP and biomass gasification will become entitled for support.
- Projects that do not deliver energy to the grid (own use) are also eligible for support;
- Banking will be allowed for all eligible projects except wind energy. Producers are allowed to bank missed-out production (e.g. due to start-up issues) up to one year after the end of the support period (12 or 15 years).

The first round of the SDE+ 2012 will open on 13 March 2012[211].

From 2013 onwards, the SDE+ will be financed through a levy on the electricity bills of consumers and not through the government 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 (reference 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 developments[212]. 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.

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210 Letter of the Minister to Parliament dated 3 November 2011: Openstelling SDE+ 2012. Reference: ETM/ED / 11129353. Changes need yet to be officially approved by Parliament.

211 Kamerbrief openstelling SDE+ 2012 http://www.rijksoverheid.nl/bestanden/documenten-en-publicaties/kamerstukken/2011/12/23/kamerbrief-openstelling-sde-2012/kamerbrief-openstelling-sde-2012.pdf

212 http://www.rijksoverheid.nl/onderwerpen/duurzame-energie/subsidieregeling-duurzame-energie-sde

Below, the conditions to be eligible for the premium are presented:

- The premium is generally available 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.
- A certified meter has to be placed.
- Registration must be made with CertiQ in order to obtain renewable 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 installation[213]. Roughly 10% of the total investment costs can be subsidized in this way[214]. The EIA can be seen as a reduction in investment costs. It runs from 1997 - to date[215].

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.

213 http://regelingen.agentschapnl.nl/content/berekenen-eia-voordeel.

214 http://regelingen.agentschapnl.nl/content/energie-investeringsaftrek-eia

215 This is included in the Wet Inkomstenbelasting 2001 (Law income tax 2001)

The government budget for the EIA is revised annually. The total budget in 2011 is € 151 million, €6 million more than is 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 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)[216].

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 the scheme is terminated in 2014[217].

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 2014[218]. 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[219].

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.

216 http://regelingen.agentschapnl.nl/content/mia-milieu-investeringsaftrek-en-vamil-willekeurige-afschrijving-milieu-investeringen

217 http://regelingen.agentschapnl.nl/content/stand-van-zaken-rond-regeling-groenprojecten

218 http://regelingen.agentschapnl.nl/content/belastingvoordelen

219 http://regelingen.agentschapnl.nl/content/groen-beleggen-en-financieren

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;
- 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 subsidies[220].

From 2012, RES-H will become eligible for support under the SDE+ scheme (see the section on RES-E above). Renewable heat projects will receive a feed-in premium. Eligible technologies include geothermal energy, heat from solid biomass and digestion as well as solar thermal installations and heat from waste incineration. The support levels have not officially been announced and are expected late 2011 or January 2012.

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 requirement[221]:

- Corporate buildings;
- Processes;
- Renewable energy;
- Energy advice.

220 http://regelingen.agentschapnl.nl/sites/default/files/bijlagen/kamerbrief-stimulering-duurzame-energie%2030-11-2010.pdf

221http://regelingen.agentschapnl.nl/sites/default/files/bijlagen/Brochure%20Energie%20en%20bedrijven%202011.pdf

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.

Other instruments (CHP, district heating, H&C in industrial applications)

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. 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 exemptions[222]. 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 opened, one for feasibility studies (budget of €2.5 million) and one for investment projects (budget of €8 million)[223]. In total 57 feasibility studies and 10 investment projects were granted, using the total 2010 budget[224]. The scheme was discontinued in 2011 and there are currently no new (similar) schemes expected.

<u>UKP (Unieke Kansen Programma)</u>

The UKP focused 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

222 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

223 Subsidieregeling Industriële warmtebenutting http://regelingen.agentschapnl.nl/content/subsidieregeling-industri%C3%ABle-warmtebenutting

224 http://regelingen.agentschapnl.nl/content/subsidie-industri%C3%ABle-warmtebenutting-volledig-toegekend

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)[225]. 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%[226]. 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.

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 themes[227]:

- Technical aspects of charge and distribution systems (III)
- Testing, experimenting and development of standards (IV)

The call was open until 31 March 2011[228]. No new calls have (yet) been announced.

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 renewable[229]. The new regulation does not yet include proposed changes in the allocation of costs in case of grid congestion. A bidding system and compensation is foreseen to this extend,of which the exact details remain uncertain to-date. Until then, costs are carried by electricity users (via grid transportation tariffs).

Costs for grid connection is based on a ‘shallow cost’ approach, i.e. the installation operator only has to cover the costs directly related to the connection of the installation as well as costs for a potentially required cable between the installation and the nearest point of grid connection. ‘Deep costs’ are borne by the grid operator, respectively socialised in the transmission tariffs.

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225 Besluitvorming biobrandstoffen wegverkeer, Staatsblad 2006 (p.542 & Aanpassing biobrandstoffendoelstelling DGM 2008099192.

226 http://www.rijksoverheid.nl/onderwerpen/biobrandstoffen/wegverkeer-over-op-biobrandstof

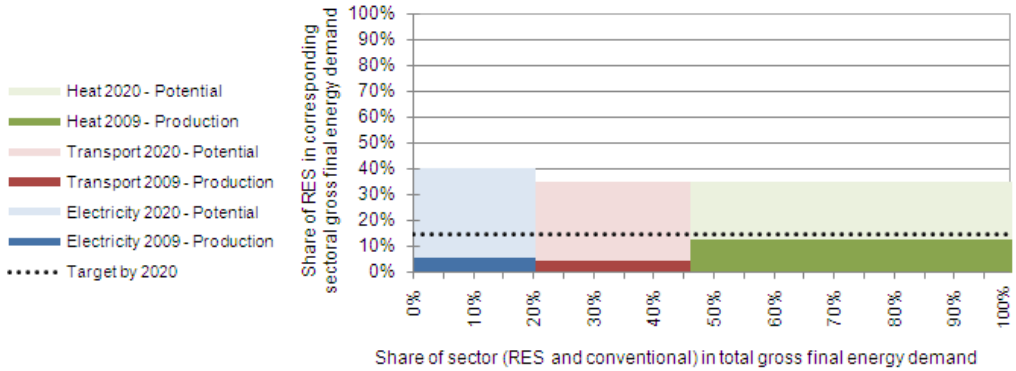
227http://www.senternovem.nl/proeftuinen/nieuws/publicatie_subsidieprogramma_electromobiliteit.asp

228 http://www.senternovem.nl/egl/nieuws/electromobiliteit_plus.asp

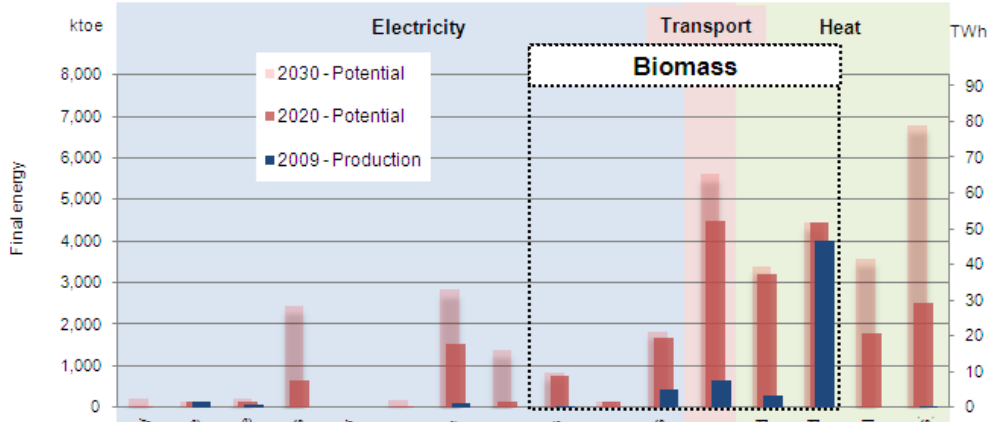
229 Besluit van 27 december 2010, houdende vaststelling van het tijdstip van inwerkingtreding van enkele onderdelen van de wet tot wijziging van de Gaswet en de Elektriciteitswet 1998 tot versterking van de werking van de gasmarkt, verbetering van de voorzieningszekerheid en houdende regels met betrekking tot de voorrang voor duurzame elektriciteit, alsmede enkele andere wijzigingen van deze wetten (Stb. 2010, 810)

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.

POLAND - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	6%	4%	13%	9%
Share of total sector consumption in total final energy consumption	20%	26%	54%	100%
Production 2009 [ktoe]	746	663	4,281	5,690
Production 2007 [ktoe]	467	106	3,960	4,533
Production 1999 [ktoe]	202	0	3,541	3,743
Average growth 2007-2009 [%/a]	26%	150%	4%	12%
Average growth 1999-2009 [%/a]	14%	-	2%	4%
Realisable potential until 2020 [ktoe]	5,139	4,479	11,913	21,531
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	6%
Realisable potential until 2030 [ktoe]	9,363	5,615	18,232	33,211



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	149	56	0	0	0	100	0	28	0	422	662	269	4,001	-	11
Production 2007 [ktoe]	0	149	53	0	0	0	45	0	17	0	203	105	113	3,837	-	10
Production 1999 [ktoe]	0	145	34	0	0	0	1	0	2	0	15	0	46	3,477	-	18
Ø annual production growth 2007-2009	-	0%	2%	-	-	-	49%	-	28%	-	44%	151%	54%	2%	-	3%
Ø annual production growth 1999-2009	-	0%	5%	-	-	-	65%	-	30%	-	40%	-	19%	1%	-	-5%
Realisable potential by 2020 [ktoe]	10	121	150	645	0	19	1,518	118	763	135	1,660	4,479	3,194	4,449	1,774	2,495
Realisable potential by 2030 [ktoe]	198	122	205	2,459	0	170	2,830	1,397	842	150	1,835	5,615	3,397	4,449	3,583	6,803

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

The Ministry of Economy has repeatedly declared that the new RES act will be published no later than October 2011. However, public consultations regarding the law on RES were moved to the beginning of December 2011. It was done because in the beginning of November the Ministry of Economy didn't present the new RES law to the public. Due to the absence of information regarding and the delayed implementation of the new law, many projects have been delayed.

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. It is expected thata new law on renewable energy sources will be adopted by the newly elected parliament before the end of 2011.

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 PLN 10 (€ 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 PLN 10 (€ 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 eligible. 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 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 (TGC) 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 (quota obligation) at the power exchange.

Table 1: The prices of electricity and tradable green certificates (TGC) 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) PLN/MWh (€/MWh)	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 used (PLN/€)	*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 million) – 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 million) – 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_t/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 million) – 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 million) – 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 PLN 1,400 million (€ 350 million). The programme will offer low interest loans for projects with a minimum total cost of PLN 10 million (€ 2.5 million). Loan amounts can range from PLN 4 to 50 million (€ 1-12.5 million), 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.

In July 2011, the National Fund for Environmental Protection and Water Management announced the results of the competition for funding for renewable energy ("RES and Cogeneration" priority program). Total 65 projects with value of PLN 1.8 billion (24 of them related to wind energy) will get loans.

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 PLN 20 (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 large 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 m^2 will be installed.

Since January 2009, every new building with a use area of more than 1000 m^2 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 subsidies (grants) 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 %.

<u>Excise Duty Rebate</u>

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 TAEE (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 (≤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 TAEE, 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.

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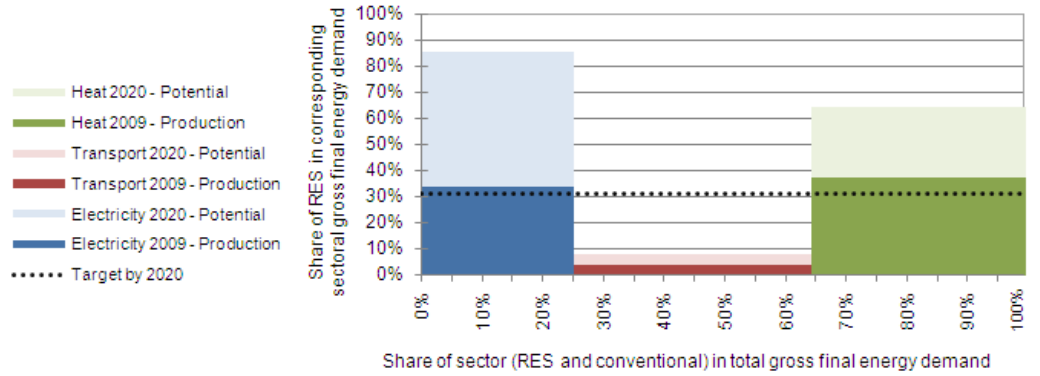
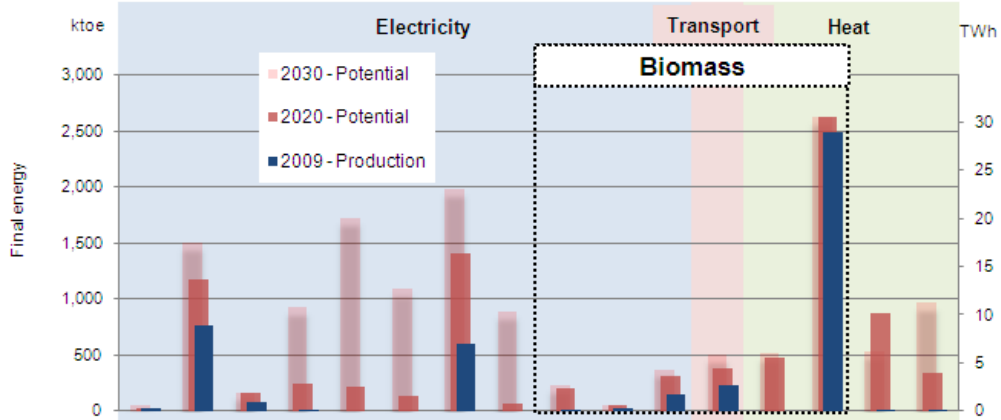
PORTUGAL - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	34%	4%	37%	23%
Share of total sector consumption in total final energy consumption	25%	39%	36%	100%
Production 2009 [ktoe]	1,573	224	2,495	4,292
Production 2007 [ktoe]	1,395	135	2,573	4,103
Production 1999 [ktoe]	744	0	2,404	3,148
Average growth 2007-2009 [%/a]	6%	29%	-2%	2%
Average growth 1999-2009 [%/a]	8%	-	0%	3%
Realisable potential until 2020 [ktoe]	3,973	383	4,313	8,669
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	4%
Realisable potential until 2030 [ktoe]	8,546	501	4,641	13,688



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Bioweste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	16	759	80	12	0	0	602	0	7	25	147	224	0	2,486	0	9
Production 2007 [ktoe]	17	753	81	3	0	0	352	0	5	24	132	136	0	2,563	0	10
Production 1999 [ktoe]	7	752	62	0	0	0	10	0	0	7	93	0	0	2,403	-	1
Ø annual production growth 2007-2009	-4%	0%	0%	119%	-	-	31%	-	20%	3%	6%	28%	-	-2%	22%	-5%
Ø annual production growth 1999-2009	9%	0%	3%	61%	-	-	51%	-	56%	14%	5%	-	-	0%	-	25%
Realisable potential by 2020 [ktoe]	27	1,177	165	246	208	127	1,404	67	199	47	305	383	481	2,626	867	339
Realisable potential by 2030 [ktoe]	58	1,505	167	925	1,728	1,096	1,985	890	230	52	371	501	514	2,626	537	964

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

Over the last months, Portugal went through political elections, after the resignation of former Prime Minister Josè Socrates, following the political crisis due to the debt crisis currently in the Euro Zone.

Social Democrats won the elections of the 6th of June. In the Government Program, sustainability and Renewable Energy are confirmed as an important strategic sector for Portugal, together with a renewed focus on Energy Efficiency. In the medium term, Portugal aims at becoming the European Country with the lowest carbon intensity.

Nevertheless, as a consequence of the agreements with the European Commission and the International Monetary Fund, Portugal committed anyway to "..ensure that the reduction of the energy dependence and the promotion of renewable energies is made in a way that limits the additional costs associated with the production of electricity under the ordinary and special (co-generation and renewables) regimes;" and to "..Review the efficiency of support schemes for co-generation..", "the efficiency of support schemes for renewables, covering their rationale, their levels, and other relevant design elements." "For new contracts in renewables, revise downward the feed-in tariffs and ensure that the tariffs do not over-compensate producers for their costs and they continue to provide an incentive to reduce costs further, through digressive tariffs. For more mature technologies develop alternative mechanisms (such as feed-in premiums)."

First effects of the economic crisis are therefore already visible:

- Mini-production and micro-production incentives, for instance, where already modified, through two 'portarias', n.284/2011 and 285/2011, reducing the reference tariffs more than already planned, and reducing the ceiling max installed power per year for the respective subsidised regimes. The concern of sectoral associations is therefore high, although the fact that the subsidies have been at least maintained, demonstrated a commitment not to create a complete stop of the renewable sector. The Energy State Secretary, Henrique Gomes, has recently said that the Government is inviting the companies to focus more on energy efficiency rather than on technologies such as PV, which require still to be sustained, and for which at the moment it is better to dedicate specific research incentives (rather than large scale subsidies n.d.r.).
- Another effect is the decision (the budget law 2012 has been already approved by the Council of Ministers but not yet by the Republic Assembly) to increase of VAT for renewable energy equipment from the level of 13%, to the level of 23% (this includes PV and ST panels, heat pumps, waste to energy);
- Finally the Budget Law currently being approved for 2012 also eliminates the fiscal deductions applicable to the buying of renewable energy or energy saving equipment such as solar thermal panels or double glazed windows.

In the recent months the Government started the privatisation of EDP and of REN, with four companies currently running to the final tender: German E.ON, Chinese Three Gorges and Brazilian Eletrobras and Cemig.

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 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.

Specific micro-production (up to 5.78 kW) and mini-production (up to 250 kW) subsidy scheme are available for households and Small and Medium sized Enterprises (SMEs), whereas related subsidised tariffs and maximum yearly power have been recently cut by the new Government according to the economic crisis and following provisions and agreements with IMF and CE.

In the last months no public tenders have been issued for new RES capacity.

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 articles 17 and 19 and annexes III and V of Directive 2009/28/CE, and art 1.c6 and annex IV of Directive n.º 2009/30/CE, and supports the ambitious target of 10% of biofuels by 2020 through a quota obligation on suppliers.

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.° 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.° 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.° 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, consisting of both the physical electricity and the green value, are defined on a monthly basis for both existing and new installations, according to a rather complicated formula. This was 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 “Z” coefficient;
- inflation;
- cost of avoided grid losses.

On the DGEG website[230], 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 regime[231].

230 www.dgge.pt

231 http://www.erse.pt/pt/electricidade/factosenumeros/Paginas/DivulgacaoMensaldeInformacaosobreaPRE.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 PV microgeneration > 5 kW <=150 kW	470 355	55 40	When installed in residential, commercial, services or industrial buildings. 15 years
PV > 5 kW PV <= 5 kW Solar thermoelectric <= 10 MW	310-317 450 267-273	35 52 29.3	21 GWh/MW or 15 years
Biogas anaerobic digestion RSU, ETAR etc. Landfill gas	115-117 102-104	9.2 7.5	When limits on power installed at National level are achieved, Z becomes 3.8. 15 years
Unsorted urban waste (RSU) Sorted/prepared urban waste (CdR)	53-54 74-76	1 3.8	15 years
Waves (Demonstration up to 4 MW)	260	28.4	15 years
Waves (Pre-commercial up to 20 MW)	191	16-22	The Z coefficient is fixed through a decision of the government between 16 and 22 depending on the project value.
Waves (Commercial) first 100 MW next 150 MW next	 131 101 76	 8-16 6-10 4,6	Z coefficient is fixed through a decision of the government between lower and upper limit depending on the project value. 15 years

Technology	Indicative average tariffs (€/MWh)	Coefficient Z	Notes
Geothermal energy (high deepness and high enthalpy)[232] up to 3 MW, per project and per entity and up to National limit of 6 MW Remaining projects up to 3 MW, per project and per entity and up to National limit of 10 MW	270 170 - 246	29.4 16.3 - 26.2	12 years for both types Z coefficient is fixed through a 'portaria' of the member of the Government responsible for energy, considering the 'added value' of the project
Concentrated photovoltaic (CPV) <= 1 MW, up to National limit of 5 MW installed power[233]	380	43	12 years
Hydro[234] up to 10 MW Hydro > 10 MW up to 20 MW	95 91 - 94	6.6 91 - 94	25 years 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
Photovoltaic's Power Plants (PV)[235]	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[236]	119	9.6	25 years

Statistics on new capacity, electricity produced by each technology are available on a specific section of the DGEG website[237], 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 those technologies, to a point that most of the latest contracted power has not been

232 Portaria 865/2009, 13 of August

233 Portaria nº 1057/2010, 15th of October

234 Portaria 126/2010, 23 of November

235 Portaria 132-A/2010, 21 of December

236 Portaria 5/2011, 10 of January

237 www.dgge.pt, --> Áreas Sectoriais -->Energia Eléctric -->Produção em regime especial -->Remuneração das Energias Renováveis

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 for some period no offshore project has been developed.

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 had sold 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 were 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 M€, whereas the last 23 lots where only assigned at the end of February 2011, resulting in a total amount of an additional 20 M€.

A tendering scheme for mini-hydro was also published with a similar functioning method.

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 was 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.

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 last 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, 256 MW for 30 GWh/year, construction begun 2008, delivery 2012);
- Baixo Sabor (170 MW, 250 GWh/year, construction begun 2008, delivery 2014);
- Ribeiradio Ermida (82 MW, 134 GWh/year, construction begun 2009, delivery 2014).

This will bring total power up to 5,850 MW in 2014.

The remaining 1,150 MW (1,630 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.

Hydro and in particular the opportunity to make use of pumped storage is very important for the integrated development of the other RES in Portugal.

Small-scale RES-E: Mini-generation

With Decree-Law n.34/2011, published the 8th of march 2011, the XVIII Government licenced a new 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, replacing a previously existing 'small production for auto-consumption' (Decree Law n.º 68/2002, of 25th of March), incentive which was not effective.

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 installed capacity proposed by the applicant entity needs to be at maximum 50% of the contracted power output of the plant. Co-generation plants are not included. At the same time the energy consumption of the applicant should be higher or equal to 50% of the energy produced by the mini production unit.

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 (SRMini) is available to handle all application procedures. The on-line platform is the same used for the micro-generation programme.

In terms of tariffs, there are two regimes, as in the micro-production scheme:

- Regime General (regulated by the market)
- Regime Bonificado (subsidised regime)

Tariffs are defined with a smart rule: there is a fixed base tariff, and permits are granted starting from those entities which offer a better discount on the fixed tariff. The following year, the base tariff is discounted by a certain %. For 2011, fixed tariff was fixed in 250 €/MWh, and yearly reduction was fixed in 7%. But with Portaria 285/2011, 28th October, a higher reduction % has been fixed, so now it is defined in 14%, and consequently the maximum tariff for 2012 is fixed at 215 €/MWh.

The limit of installed capacity for each year for the subsidised regime was originally fixed at 50 MW, but Portaria 285/2011 reduced it to 30 MW/year, with effect from 2012 included.

The distribution grid manager can restrict the access in certain sub-stations when cumulated connections exceed 20% of the sub-station capacity power. 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, with payback periods depending on the group as defined below.

Applicants are divided in three groups:

I. Up to 20kW (max 25% of the fixed maximum power)

II. From 20 to 100 kW

III. From 100 to 250 kW

Costs for the grid connection are in charge of the applicant, including the sold energy meter.

Group I is given the reference tariff as defined above; group II and III are subject to the discounted tariffs as of the ranking generated by the application requests.

The tariff is different for different energy sources:

- Solar: 100% (max 2,6 MWh/year for each kW installed capacity)
- Wind: 80% (max 2,6 MWh/year for each kW installed capacity)
- Hydro: 50% (max 5 MWh/year for each kW installed capacity)
- Biogas: 60% (max 5 MWh/year for each kW installed capacity)
- Biomass: 60% (max 5 MWh/year for each kW installed capacity)
- Fuel cells: same % as above in relation to the energy source used to generate hydrogen.

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.° 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).

After the changes introduced by DL 118-2010, and after the tariff reduction disposed by the Portaria n.284/2011, 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, for 2012, of €326/MWh for the first 8 years and €185/MWh in the following 7 years; those two tariffs are reduced every year by 54€/MWh (first 8 years) and 35€/MWh (second 7 years) for new installations;

  A specific ratio of this amount is applied depending on the technology:

  - Solar Energy Systems: 100%

- Wind Power Stations: 80%
- Hydro: 40%
- Biomass Fuelled CHP: 70%
- Non-renewable CHP: 40%
- Hydrogen Fuel Cells coming from one of the above: same as above
- 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.
- The registered projects for the subsidised regime is now limited to 10 MW per year (it was 25 MW in 2011, reduced to 10MW again by Portaria n.284/2011) of applications.
- 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 limit for 2011 was 29.6MW. In September 2011, registration requests were higher than 29.6 MW, therefore a part will be postponed to 2012. In the meantime, unfortunately, maximum connections for 2012 have been reduced to 10MW.

The application to install the 3.68 kW plants can be obtained on-line by signing in to the dedicated register.

Micro-production is sustained also with the following further incentives:

- VAT at 12% (instead of 23%) on renewable energy equipment, only until end 2011.
- Tax deduction of 30% of the investment for the equipment, up to a limit of €803 for earnings below €7,410/year, and €100 for yearly declarations from €7,410 to €18,375 (should be revoked since January 2012 as well).
- 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 necessary to pay a fee in order to start the granting procedure. This should increase the percentage of success of the procedures, meaning the ratio 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

In 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 m^2 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 m^2. 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 13 % for the purchased equipment was applicable to all renewable energy products, but from 1st January 2012, if the current proposal of new budget law 2012 will be approved, the applicable VAT will be 23%.

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[238] 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).

[238] The solar factor (or g-value) measures the percentage of heat that passes through the glass. The lower the solar factor the higher the solar protection and therefore the higher the performance of the solar control glass.

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.

This mechanism is actuated through specific tenders, such as the one for solar thermal launched and closed in 2010 for SMEs.

At the moment no tender is available for RES.

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 €803 (valid in general for all renewable energy investments). This will expire at the end of 2011 if the budget law for 2012 will be approved.

Building Obligations

The EPBD directive has been transposed into Portuguese legislation through decree 80/2009 (Decreto-Lei n.° 80/2006 de 4 de Abril).

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 that are not heated or airconditioned
- 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 1m^2 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 31December 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.° 49/2009 de 26 de Fevreiro) established a minimum quota for the incorporation of biofuels into diesel for road transport. According to this decree, oil companies were obliged to include 6% of biodiesel into diesel in 2009, and 10% in 2010.

Nevertheless, road diesel had to comply with European standard EN 590 and the maximum percentage of biodiesel that could be added was only 5%. The EU recently altered EN 590 standard, allowing the inclusion of up to 7% of biodiesel in diesel fuel, considering a requirement for the incorporation of 10% by 2020.

Decree Law 117/2010 (Decreto-Lei n.º 117/2010, de 25 de Outubro), finally transposed articles 17 and 19 and annexes III and V of Directive 2009/28/CE, and art 1.c6 and annex IV of Directive n.º 2009/30/CE, defining sustainability criteria for the production and use of biofuels and liquid biomass, and defining the limits of inclusion of biofuels from 2011 until 2020.

The decree states that companies selling fuels to the transport sector must accomplish with following minimum inclusion of biofuels in terms of energy content:

- 2011 - 2012 - 5 %;
- 2013 - 2014 - 5.5 %;
- 2015 - 2016 - 7.5 %;
- 2017 - 2018 - 9 %;
- 2019 - 2020 -10 %.

Art.28, moreover, defines an obligation until the end of 2014, of a minimum 6,75 % biodiesel in the diesel-fuel used in the road transport. In order to maintain a reasonable price for the final user, Portaria n.49/2011 fixed a formula to calculate the maximum price of biodiesel, as indicated in the following table:

Month	Max Price (€/m^3)
February 2011	1,178.05
March 2011	1,153.73
April 2011	1,083.90
May 2011	1,045.34
June 2011	1,021.28
July 2011	1,054.94
August 2011	1,043.95
September 2011	1,050.48
October 2011	1,087.08

The entity responsible for the implementation and monitoring of the scheme is DEGE[239] (Direcção Geral de Energia e Geologia).

Tax Exemptions

Since October 2010, the fiscal incentive for biodiesel producers has been eliminated.

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 has deliverer another 1300 normal charging points and 50 fast charging points in July 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 each of 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 €.

Network installation is mostly completed, including the ICT platform, which went live in July 2011. The solution is going be tested on the Portuguese market for approximately one year, till the end of 2012.

Based on that, appropriate plans will be defined, especially in terms of provision of services to the grid and the enablement of additional functionalities for users, such as the possibility of reserving charging periods at specific charging stations.

5 RES-E Grid Integration

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.

239 www.dgge.pt

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 Redes Energéticas Nacionais (currently subject to a privatization process, due to the imposed bailout signed by Portuguese Government with EU and IMF). 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.

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.

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.

EDP Distribuição (EDPD) has launched the initiative called InovGrid, with the aim of creating more than a smart metering initiative (either AMR or AMM), but a new way of managing and controlling the distribution network, making life easier for micro and mini energy producers, addressing automation and managing energy flows.

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 micro-generation and controllable loads and interfaces with users, with a view to covering 10% of domestic consumers.

With an investment of 1,000 M€, smart grids shall be responsible for creating 3,000 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.

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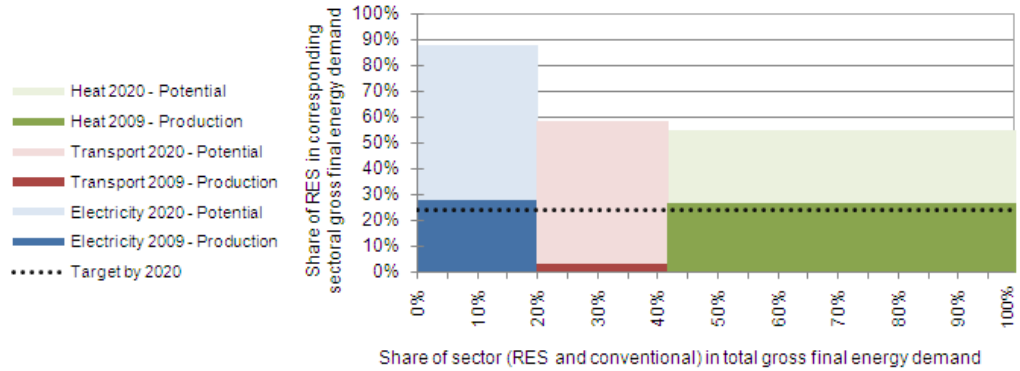
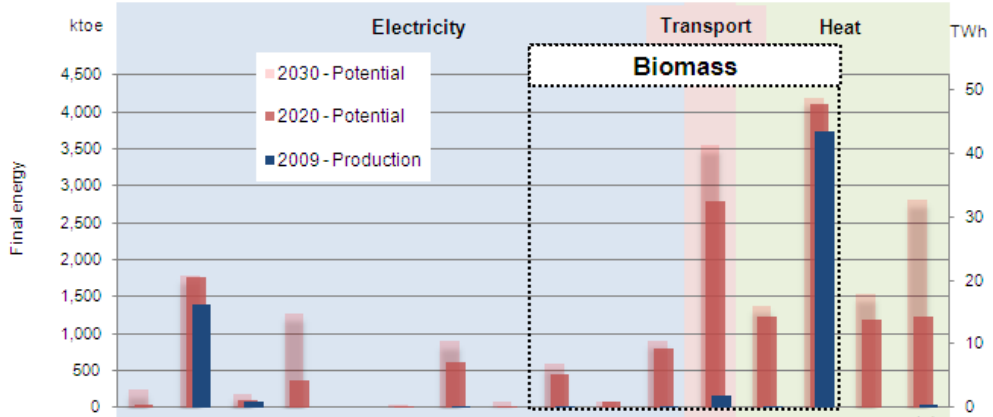
ROMANIA - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	28%	3%	27%	22%
Share of total sector consumption in total final energy consumption	20%	22%	58%	100%
Production 2009 [ktoe]	1,338	163	3,785	5,285
Production 2007 [ktoe]	1,376	40	3,301	4,717
Production 1999 [ktoe]	1,573	0	2,876	4,449
Average growth 2007-2009 [%/a]	-1%	102%	7%	6%
Average growth 1999-2009 [%/a]	-2%	-	3%	2%
Realisable potential until 2020 [ktoe]	4,193	2,781	7,758	14,731
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	4%
Realisable potential until 2030 [ktoe]	5,778	3,558	9,922	19,258



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	1,385	85	0	0	0	1	0	0	0	1	163	21	3,734	-	30
Production 2007 [ktoe]	0	1,382	81	0	0	0	0	0	0	0	3	40	18	3,215	-	68
Production 1999 [ktoe]	0	1,363	47	0	0	0	0	0	0	0	0	0	8	2,801	-	67
Ø annual production growth 2007-2009	-	0%	2%	-	-	-	91%	-	-29%	-	-42%	102%	8%	8%	-	-34%
Ø annual production growth 1999-2009	-	0%	6%	-	-	-	-	-	-	-	-	-	10%	3%	-	-8%
Realisable potential by 2020 [ktoe]	39	1,764	106	355	0	5	604	4	451	77	789	2,781	1,229	4,099	1,192	1,237
Realisable potential by 2030 [ktoe]	241	1,781	186	1,278	0	40	898	87	598	86	909	3,558	1,379	4,185	1,539	2,819

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

The long awaited amended Law 220 is close to enter into force as, after the EC approval, it was issued in the final form, taking into account the revisions made within the Emergency Ordinance no. 88/October 2011. The Law is expected to enter into force by the end of 2011, or early 2012 latest. Some secondary legislation is still pending.

Main new provisions regard the number of Green Certificates (GCs) granted for 1 MWh from geothermal, biomass, bio-liquids, biogas: reduced from 3 to 2 and from 3 to 1 for gas resulting from waste. If the produced energy in biomass production facilities comes from energy crops, one additional Green Certificate is granted.

Also an “overcompensation” concept was introduced. It will be applied if the internal rate of return (“IRR”) on a particular technology is ten percent (10%) higher than the IRR value considered for the respective technology when the promotion system was approved.)”

In order to benefit from the promotion system, a RES-E producer should be accredited by a procedure performed by ANRE, the National Energy Regulatory Authority. Therefore the ANRE Order no. 42 regarding the Regulation for the Accreditation of Electric Energy Producers from Renewable Energy Sources Pertaining to Promotion System Application, was published in November 2011.

Starting from 1 March 2011, there are no facilities regarding the exemption from excise tax applied to biofuels.

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. The penalty level for non-compliance with the targeted RES quota was set to 110 €/MWh. In 2010, Law 220 was amended by Law 139, which "updated" some provisions, mainly to answer to the RES Directive 2009/28. Also the number and conditions of GCs given for 1 MWh were increased according to the RES resource. The provisions on the number of GC granted for each RES resource entered into force in the autumn of 2011.

The final form of the amended Law 220[240] was issued, taking into account the revisions made within the Emergency Ordinance no. 88/October 2011. The changes are expected to enter into force by the end of 2011, or early 2012 latest. Some secondary legislation is still pending.

ANRE is completing the corresponding secondary legislation, mainly by issuing in November 2011 the Order no. 42 regarding the Regulation for the Accreditation of Electric Energy Producers from Renewable Energy Sources Pertaining to Promotion System Application.

The GC instrument was correctly organized and operational since several years but now, once differentiated amounts of GC/MWh according to technologies are granted, it offers a real attractiveness to the investors.

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 (1-2 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 suspension of the exemption from excise tax for biofuels, which operated until 1 March 2011. 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.

[240] Amended Law no. 220/2008 on the establishment of the promotion system for the production of energy from renewable energy sources ("E-RES")

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 (also referred to as technology banding), did not entered into force yet. In 2010, Law 220 was revised by the Law 139/2010. The revised Law 220 was object of a long EC competition approval procedure ending in a final version approved by the EC on July 2011. As a result, the Emergency Ordinance no. 88/2011, published with the Official Gazette no. 736 on October 19, 2011, introduced some specific provisions, resulted in the present operational Law 220/2008.

Below the present general GC mechanism conditions are described, including the provisions of the final form of Law 220/2008.

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

Information on the GC market operation in 2010 is available in the OPCOM annual report 2010, page 34[241].

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

[241] The OPCOM report is available here: http://www.opcom.ro/opcom/uploads/doc/rapoarte/Companie/RA_2010_RO.pdf

- 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 44 /2011 for the RES market - Regulation for Green Certificates Market Organization and Functioning is relevant.

The instrument has been operational since 2005. No end date has been set.

The system is granted to remain in place for the next 15 years. The 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%

Because there is still 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. This design of the procedure ensures that no one who wants to buy GCs but cannot due to insufficient supply is penalised. 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.

The energy supply companies are obliged to respect the quota. Some DSOs are also energy supply companies.

The Law 220 foresees the following certificates distribution (technology banding) for the next 15 years, if the overcompensation[242] mechanism does not apply:

[242] We speak of overcompensation when some economical indicators of a project are better than standard accepted ones.

- 2 GC/ 1 MWh for re-furbished small hydro (under 10 MW capacity) 3 GC / 1 MWh for new small hydro and for units using biomass from energy crops
- 2 GC / 1 MWh for wind power – until 2017
- 1 GC / 2 MWh for old small hydro
- 1 GC / 1 MWh for wind power – from 2018 on
- 2 GC / 1 MWh for power from the geothermal, biomass, bio-liquids, biogas
- 1 GC/ 1 MWh for gas resulting from waste processing and from the water treatment
- 1 additional GC for energy from biomass coming from energetic crops
- GC / 1 MWh for PV.

Biomass co-firing plants do not receive any GCs unless the renewable fuel share is at least 75%.

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[243].

Because the GC offer is lower than the quota, a methodology is in place to adjust the yearly quota. The prices of GCs were up to now close to the maximal value of 55 €/GC. No futures are traded. The prices are public, on the OPCOM web site[244].

The certificates may be kept for a period of sixteen (16) months.

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.

EGO 88/2011 introduces the possibility of the RES-E producers to receive one (1) GC during the testing period based upon the accreditation decision to be issued by ANRE and provided that the operation starts prior to 2016.

A RES-E producer who develops a project with a capacity over 125 MW should be assessed by the EU.

<u>The Regional state aid scheme on the use of renewable energy resources</u>

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

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243 www.anre.ro/download.php?id=2629

244 http://www.opcom.ro/portal/content.aspx?lang=RO&item=2165

supply, in the context of combating climate change, MIF 2 “Use of renewable energy resources for the green energy production”[245].

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 until 2013, a small part (c.a. 5-6%) of the investments needs for RES projects.

The National Environment Fund programme to increase the energy production from RES

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 million) is the maximal contribution of the Fund for a RES project.

In 2009 €85 million were granted for selected projects while in 2010 another €200 million 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 time since then. It became operational and significant in Summer 2010.

[245] See: http://oie.minind.ro/

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), 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), granted for applications forwarded in the period 1 July 2010 to 30 January 2011. The next 2011 call for residential buildings started June and the corresponding available budget is 100 millions RON (€23.5 millions).

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 were exempted from excise tax until 1 March 2011.

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/ and Mrs. Cristiana Ion, Counsellor to the Minister of Economy, Commerce and Business Environement, 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 with priority, unless this poses a risk to the secure operation of the national energy system (art. 20 Law no. 220/2008).

According to last provisions of the Law 220, RES-E producers will have a guaranteed access to the grid.The priority to absorb and dispatch RES-Electricity is to be confirmed in practice. In Romania there is a “virtual saturation” of the grid, due to speculation with grid connection contracts and emitted technical notifications. Saturation of the grid may be considered for wind energy projects in some regions, as Dobrogea, not in whole Romania .Virtual saturation has not stopped the TSO and DSO from offering connections. It is more an uncertainity on future project evolutions. Mainly wind farm developers fear that curtailments will indeed occur.

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

RES project developers are 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.

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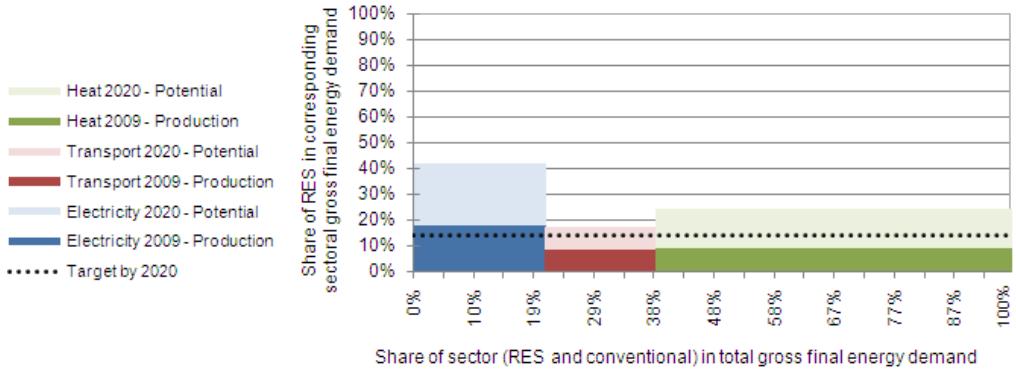
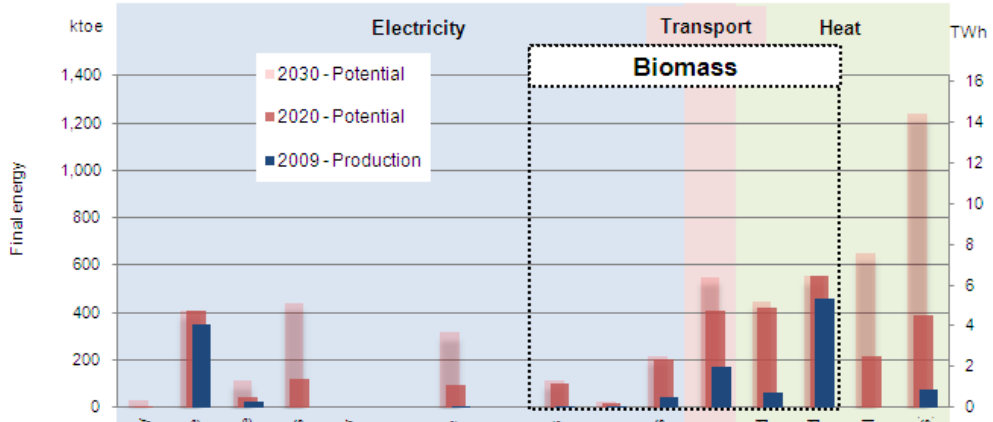
SLOVAKIA - Summary: RES target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	18%	9%	9%	11%
Share of total sector consumption in total final energy consumption	21%	18%	58%	96%
Production 2009 [ktoe]	422	168	596	1,187
Production 2007 [ktoe]	424	91	419	934
Production 1999 [ktoe]	385	0	284	669
Average growth 2007-2009 [%/a]	0%	36%	19%	13%
Average growth 1999-2009 [%/a]	1%	-	8%	6%
Realisable potential until 2020 [ktoe]	982	410	1,578	2,970
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	3%
Realisable potential until 2030 [ktoe]	1,556	552	2,888	4,997



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Bioweste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	352	21	0	0	0	0	0	2	2	42	168	60	461	-	75
Production 2007 [ktoe]	0	367	14	0	0	0	1	0	1	2	38	90	42	366	-	11
Production 1999 [ktoe]	0	0	0	0	0	0	0	0	0	0	0	0	0	235	-	49
Ø annual production growth 2007-2009	-	-2%	25%	-	-	-	-13%	-	35%	0%	6%	37%	20%	12%	-	168%
Ø annual production growth 1999-2009	-	-	-	-	-	-	-	-	-	-	-	-	-	7%	-	4%
Realisable potential by 2020 [ktoe]	2	404	43	117	0	0	94	0	102	20	200	410	422	553	218	385
Realisable potential by 2030 [ktoe]	33	408	111	442	0	0	316	0	112	22	217	552	449	553	649	1,238

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

There been no significant policy changes in Slovak Republic since March 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 be 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

The Slovak Parliament adopted an amendment to the RES Promotion Act in December 2010. By means of legislative changes, the state is trying to regulate the construction of photovoltaic and wind energy facilities, which are considered by the Slovak Transmission System Operator (SEPS) to be unpredictable RES that have a potential influence on the stability of the transmission system. Pursuant to the Amendment to the Act, effective as of 1 February 2011 (apart from some provisions effective as of 1 April 2011), only solar rooftop facilities or solar facilities on the exterior wall of buildings with capacity not exceeding 100kW are promoted in the form of additional payments. Promotion in the form of the transfer of liability for deviations is also reduced to 1MW of installed capacity (previously 4MW) with respect to non-photovoltaic facilities. The regulation of the transfer of the liability for deviations is even stricter regarding solar facilities: this is reduced to 100kW of installed capacity (previously 4MW). Further, according to the Amendment the Regulatory Office shall be entitled to reduce feed-in premium for solar and wind energy facilities without limitation, i.e. by more than 10% in respect of the next regulation period. The Amendment also specifies conditions for the reconstruction and modernisation of already existing devices. The total costs for reconstruction and modernisation must exceed more than 50% of the total investment costs of the producer[246].

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[247]. The Regulatory Office for Network Industries (http://www.urso.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[248]. 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,

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[246] http://www.legal500.com/assets/images/stories/firmdevs/changes_in_the_promotion_of_renewable_energy_in_slov.pdf and http://www.solarinvestor.info/photovoltaics_in_slovakia.html

[247] http://www.zbierka.sk/Default.aspx?sid=15&PredpisID=18307&FileName=04-z656&Rocnik=2004&AspxAutoDetectCookieSupport=1

[248] http://www.zbierka.sk/zz/predpisy/default.aspx?PredpisID=209127&FileName=zz2009-00309-0209127&Rocnik=2009

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 €/MWh,
- wind energy: 80.91 €/MWh,
- geothermal energy: 195.84 €/MWh,
- biomass: 113.10-144.88 €/MWh,
- hydropower: 61.72-109.08 €/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[249]. By approval of 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.

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[249] http://www.zbierka.sk/zz/predpisy/default.aspx?PredpisID=210061&FileName=zz2010-00558-0210061&Rocnik=2010&#xml=http://www.zbierka.sk/zz/predpisy/default.aspx?HitFile=True&FileID=571&Flags=160&IndexFile=zz2010&Text=309/2009

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[250].

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[251]. 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 cent/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[252]. 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/m^2 per year for installations completed as of 2010;
- certificate of Solar Keymark (issued in EU) is necessary.

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250 http://www.zbierka.sk/zz/predpisy/default.aspx?PredpisID=209127&FileName=zz2009-00309-0209127&Rocnik=2009

251 http://www.zbierka.sk/zz/predpisy/default.aspx?PredpisID=207892&FileName=zz07-00609-0207892&Rocnik=2007

252 http://www.sea.gov.sk/energeticke_aktivity/program_pre_domacnosti/program_pre_domacnosti.pdf

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[253]. 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.

[253] http://www.zbierka.sk/zz/predpisy/default.aspx?PredpisID=19009&FileName=05-z555&Rocnik=2005

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[254]. 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[255]. 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[256]. 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[257]. 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

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254 http://www.agroporadenstvo.sk/oze/legislativa/nariadenie_biopaliva.pdf

255 http://www.colnica.sk/Download/legislativa/zakony/98_2004.pdf

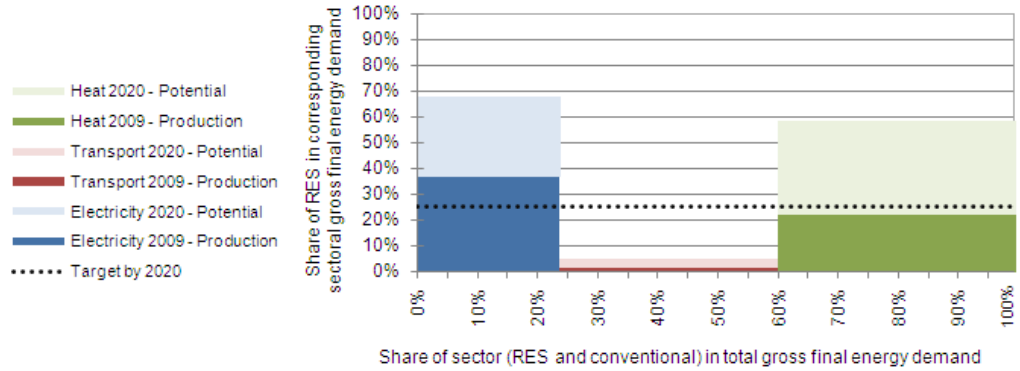
256 http://www.zbierka.sk/Default.aspx?sid=15&PredpisID=18307&FileName=04-z656&Rocnik=2004&AspxAutoDetectCookieSupport=1

257 http://www.zbierka.sk/zz/predpisy/default.aspx?PredpisID=209127&FileName=zz2009-00309-0209127&Rocnik=2009

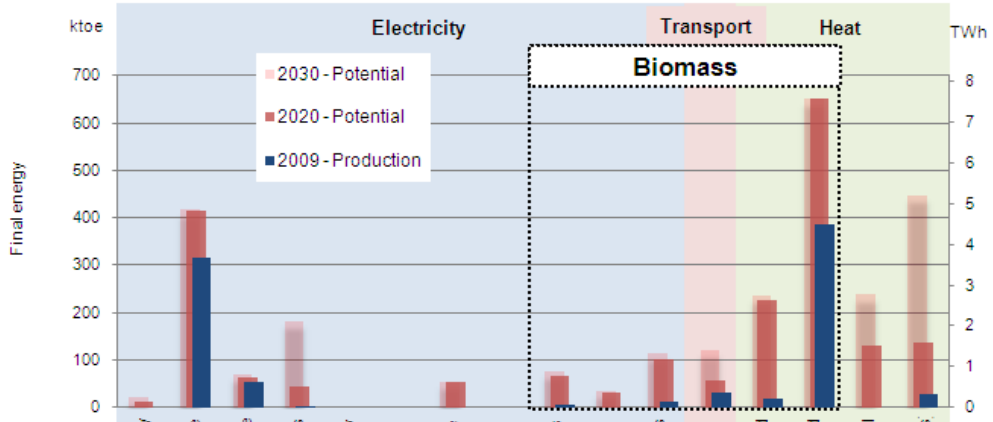
[9]. The connection fees are calculated according to transparent rules presented in the business conditions of individual TSO or DSOs. The size of fees for the connection corresponds to the size of costs required for essential technical modifications and a fee for reserve capacity.

Transmission and distribution system operators are responsible for the balancing of RES-E generation.

SLOVENIA - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	37%	2%	22%	18%
Share of total sector consumption in total final energy consumption	24%	36%	40%	100%
Production 2009 [ktoe]	422	30	433	885
Production 2007 [ktoe]	291	14	432	736
Production 1999 [ktoe]	324	0	261	586
Average growth 2007-2009 [%/a]	20%	46%	0%	10%
Average growth 1999-2009 [%/a]	3%	-	5%	4%
Realisable potential until 2020 [ktoe]	780	57	1,143	1,981
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	4%
Realisable potential until 2030 [ktoe]	915	122	1,574	2,611



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	316	55	0	0	0	0	0	6	0	10	30	19	387	-	27
Production 2007 [ktoe]	0	300	52	0	0	0	0	0	4	0	6	14	10	407	-	15
Production 1999 [ktoe]	0	269	14	0	0	0	0	0	0	0	3	0	3	223	-	35
Ø annual production growth 2007-2009	-	3%	2%	-	-	-	-	-	19%	-	36%	46%	38%	-2%	-	36%
Ø annual production growth 1999-2009	-	2%	15%	-	-	-	-	-	-	-	14%	-	20%	6%	-	-3%
Realisable potential by 2020 [ktoe]	12	413	62	43	0	0	52	0	66	32	100	57	225	652	130	137
Realisable potential by 2030 [ktoe]	21	417	70	183	0	0	55	0	76	36	115	122	236	652	238	449

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

There were no important RES policy changes during 2011. However, the Government of Republic of Slovenia approved a program to encourage the purchase of battery electric vehicles in the period 2011-2013. With reference to this program, two battery electric vehicles related calls have been announced. Slovenian Eco fund published public calls for RES related measures: installation of heating appliances using biomass for central heating in residential buildings; installation of heat pumps for central heating and / or hot water; installation of central heating systems in the reconstruction of residential buildings

1 Summary: RES Support Policy

RES-E

The current RES-E support scheme entered into force on 12 July 2009. Under this 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.
- Feed-in premium (operation support) for RES plants above 5 MW and CHP plants above 1 MW.

Slovenia also promotes RES-E through fiscal measures, e.g. 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 energy 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 a motor vehicles tax. The purchase of electric vehicles is promoted through non-repayable financial assistance.

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 (Energetski zakon) [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.
- Feed-in premium (operation support) 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 is provided for 15 years and includes new RES generating plants as well as already existing plants (for which the support period is calculated as the difference between 15 years and the actual age of the RES generating plant). 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 the capital costs and other investment parameters that provided the basis for determining the fixed part of RCE. The variable part of RCE will be determined annually or more frequently on the basis of forecast of reference energy market prices.

The guaranteed purchase price for which the input fuel does not represent a cost is formulated only based on the fixed part of the price. At RES generating plants where the input fuel represents a cost, it is formulated on basis of the variable part as well as the fixed part of the price (reference costs). Operating support is calculated as the difference between the reference costs of producing electricity in individual RES generating plants and the reference market price of electricity. Operating support for electricity for the period in question is not paid, if on the basis of forecasted reference market prices of electricity it is determined that the price of electricity on the market is higher than the RCE,.

The sustainability provisions are considered when deciding how to allocate support to RES generating plants.

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 5 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 from 2011 to 2013 the reference costs for solar power stations will be reduced as follows [4]:

- 2011: 20%;
- 2012: 30%;
- 2013:40%.

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.agen-rs.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, 43/2011), 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

Micro and small-scale CHP generating plants may receive both feed-in tariff and feed-in premium for produced electricity. CHP generating plants with a nominal electrical capacity of 1 MW or more may only receive the feed-in premium.

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) in 2011 under the following measures [10]:

- promotion of solar collectors in households;
- installation of heating appliances using biomass for central heating in residential buildings;
- installation of heat pumps for central heating and / or hot water;
- installation of central heating systems in the reconstruction of residential buildings.

These measures are managed by the Eco Fund (http://www.ekosklad.si/).

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. € 2 million was assigned for this measure for 2011.

Installation of heating appliances using biomass for central heating in residential buildings

The biomass incentive is set up to be 25% of recognized costs of the investment but not more than € 2,000 for a boiler or central heating fireplaces using wood chips or pellets and not more than € 1,500 for a boiler or central heating fireplaces with firewood. The aim of this incentive is to encourage the replacement of used fossil energy sources to renewable sources for at least 900 residents and to distribute € 1 million in 2011.

Installation of heat pumps for central heating and / or hot water

The incentive is granted for the purchase and installation of heat pumps, which will achieve a prescribed minimum coefficient of performance. The incentive amounts to more than 25% of the recognized costs of investment but not more than € 2,000 for a heat pump for space heating, not more than € 1,000 for domestic hot water under a water / water or soil / water and not more than € 1,500 for a more efficient air / water heat pump. € 0.8 million are foreseen for this purpose for 2011.

Installation of central heating systems in the reconstruction of residential buildings

This incentive is granted for the purchase and installation of full central heating systems in the reconstruction of residential buildings to be connected to district heating systems that uses renewable energy sources (biomass, geothermal and others). The incentive is fixed at 25% of the recognized costs of the investment, but not more than € 2,000 per residential unit.

Additional programmes are also in place:

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 the investment value amounts to at least 70,000 €.

<u>Grants</u>

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 [11]. 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) [12] 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 [13] 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) should be as follows [13]:

- 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 [14]. 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 [15]. 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 [16].

In 2011 public calls have been announced for a non-repayable financial assistance to legal persons, individual entrepreneurs and private individuals to buy cars which use compressed natural gas or biogas for public passenger transport [17].The amount of non-repayable financial assistance for each vehicle is provided to all eligible persons equally, regardless of the company size but ranges from € 2,500 to € 10,000 according to the vehicle category.

On 29 September 2011 the Government of Republic of Slovenia approved a program to encourage the purchase of battery electric vehicles in the period 2011-2013. With reference to this program two battery electric vehicles related calls have been announced:

- A call for non-repayable financial assistance to legal persons for purchase a new battery-electric vehicle was announced [18]. The public call aims to promote the purchase of battery-electric vehicles that have a retail price (including VAT) of € 50,000. The amount of non-repayable financial assistance for each vehicle is provided to all eligible persons equally, regardless of the company size and varies between € 2,000 and € 5,000 depending on the type of vehicle.
- A call for a non-repayable financial incentive for citizens to purchase battery-electric vehicles [19].

With reference to public calls, non-refundable financial incentives for citizens to purchase new environmentally-friendly battery electric vehicles where established (including new battery-electric vehicles and new connection [plug-in] hybrid for road transport). Non-repayable financial incentives cannot be obtained for the purchase of vehicles that have a higher retail price than € 50,000 (including VAT). Support may not exceed 50% of the recognized cost of the investment. In addition, the applicant must also provide their own funds of at least 25% of the recognized costs of investment. The amount of financial incentives varies between € 2,000 and € 5,000 depending on the type of vehicle.

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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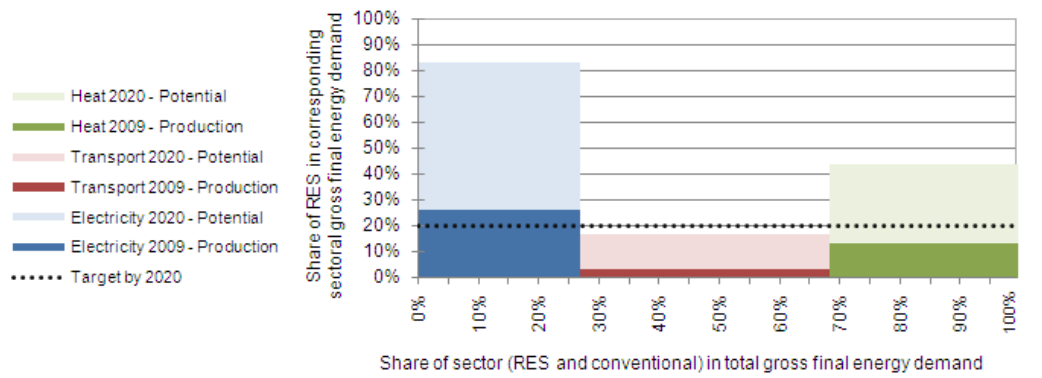
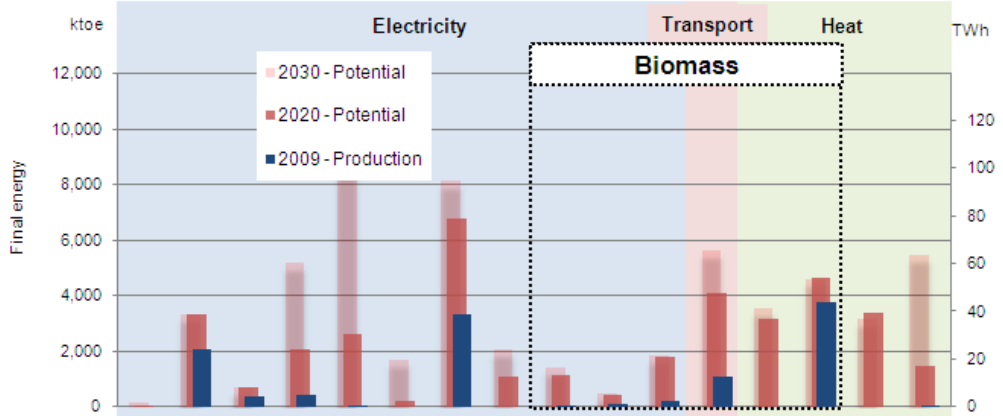
SPAIN - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	26%	3%	13%	12%
Share of total sector consumption in total final energy consumption	27%	41%	32%	100%
Production 2009 [ktoe]	6,325	1,073	3,775	11,173
Production 2007 [ktoe]	5,005	385	3,799	9,189
Production 1999 [ktoe]	2,352	0	3,420	5,772
Average growth 2007-2009 [%/a]	12%	67%	0%	10%
Average growth 1999-2009 [%/a]	10%	-	1%	7%
Realisable potential until 2020 [ktoe]	20,162	4,089	12,686	36,937
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	6%
Realisable potential until 2030 [ktoe]	33,418	5,640	16,832	55,890



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	2,072	352	400	2	0	3,352	0	45	65	184	1,072	0	3,770	-	5
Production 2007 [ktoe]	0	2,060	338	86	1	0	2,414	0	52	63	134	385	0	3,791	-	8
Production 1999 [ktoe]	0	0	0	1	0	0	239	0	16	39	92	0	0	3,415	-	5
Ø annual production growth 2007-2009	-	0%	2%	116%	66%	-	18%	-	-7%	2%	17%	67%	-	0%	-	-20%
Ø annual production growth 1999-2009	-	-	-	81%	-	-	30%	-	11%	5%	7%	-	-	1%	-	1%
Realisable potential by 2020 [ktoe]	16	3,301	672	2,073	2,626	228	6,797	1,095	1,140	446	1,768	4,089	3,178	4,623	3,409	1,477
Realisable potential by 2030 [ktoe]	162	3,334	679	5,193	10,284	1,706	8,145	2,088	1,404	495	1,845	5,640	3,551	4,623	3,168	5,491

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

The situation of the renewable energy market in Spain remains uncertain in 2011.

As it happened in the case of solar PV in 2010, new regulation for wind power is on the verge of being approved by (early) 2012. This regulation will affect reducing the number of years and annual amount of hours awardable under the feed-in tariff and feed-in premium schemes.

In March 20011, the Law on Sustainable Economy was approved. This regulation establishes general conditions to implement sustainability on the national energy model (in line with goals set up by the European Commission). On the short term, two specific laws are expected to be enacted derived from this law: the Law on Renewable Energies and the Law on Energy Efficiency. However, until now there is no information available on any progress on their design and approval by the central government.

In addition, general elections were held by the end of the year (November) and it is likely that change on the political orientation of the central government will affect the future situation of the renewable energy market in Spain.

1 Summary: RES Support Policy

RES-E

The key policy instrument for support of RES-E in Spain is based on a special remuneration scheme where producers may choose between a feed-in tariff and a feed-in premium. This scheme covers all major renewable technologies (and high efficiency production as cogeneration) and provides support for different time periods depending on the technology. Tariffs are differentiated by type of technology and size of the project, and adjusted to inflation yearly. In addition, the remuneration scheme is subjected to modification in case capacity targets are exceeded (as it has happened with solar PV and wind power). Offshore wind projects are covered by a specific 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 tax exemption mechanisms and mandatory targets for biofuels utilization. A quota obligation forces retailers to blend their fuel with a minimum share of biofuels. Biofuels also benefit from reduced taxes.

2 Details RES-Electricity Support Policy

Price Regulation: Feed-in-tariffs and feed-in-premium (Electricity Producers on Special Regime[258])

In Spain renewable electricity is promoted using a special remuneration scheme based on a feed-in-tariff and a feed-in-premium mechanism. The scheme is regulated under the Royal Decree 661/2007[259], dated May 25th, on the regulation of electricity production under special regime. It defines two remuneration mechanisms to be used by system operators[260] to claim for the payment of renewable energy introduced in the grid.

- Feed-in-tariff (guaranteed payment): comprising a guaranteed feed-in tariff (understood as a state regulated minimum tariff for all renewable energy sources[261]; and a variable feed-in tariff, eligible by hydro-electricity operators and biomass projects, based on a variable, time-dependent tariff, set up by statutory law. This tariff is composed of different elements depending on the time of day and the season[262].
- Feed-in premium: paid on top of the electricity price, these are minimum and maximum prices for the overall remuneration level (for all renewable technologies except solar PV and geothermal) determined on an hourly basis.

Since 2009, all projects to be 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). This step involves stricter requisites for projects entitled to receive feed-in tariffs and premiums. It serves the government to exercise better control of projects to be awarded but it generates additional bureaucratic hurdles, which may slow down deployment of renewable projects.

Tariffs are differentiated by technology and project size and guaranteed for different time periods, and adjusted to inflation and other components such as operation efficiency of the system, cost of technology used, market development of the technology, etc. The updating process is also linked to the fulfillment of capacity targets per technology (defined by national targets framed in the ongoing plan on renewable energies). Therefore, each time a “special regime” technology has exceeded the defined cap[263], its remuneration scheme is reviewed (through new regulation) in order to adapt it to the new market situation of the technology. Two examples of technologies affected by changes of regulation due to surpassing capacity caps have been solar PV (performed on 2010) and wind (regulation to be released by 2012). The remuneration

258 Productores de electricidad en Régimen Especial.

259 (art. 19.3, 44.3, DA (Diposición Adicional) Novena).

260 Eligible plants to be considered under special regime comprises: plants using cogeneration or other high efficiency technologies, plants using renewable non feedstock sources, municipal solid waste and other residues, along with plants fo reduction and treatment of agriculture, livestock and services residues.

261 Arts. 35, -43 RD 661/2007.

262 Art. 26 RD 661/2007 in connection with First Final Provision of RD 1578/2008.

263 Detailed information in terms of current capacity installed and targets of the former plan can be checked at the web site of the National Commission on Energy (ww.cne.es).

scheme for solar PV energy is currently being run under the Royal Decree 1578/2008[264].

Capacity caps were run under former Plan on Renewable Energies 2005-2010. This document has been replaced by the new plan and, therefore it is expected that new targets will be implemented in the regulation.

The information in the table below[265] shows all values for feed in tariffs or market premiums (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 renewable energy production in 2011.

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		First 20 years	7,9084	2,0142	9,1737	7,6975
			After	6,6094			
	Off shore				9.1041	17.7114	
Geothermal			First 20 years	7,441	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	17,1596	12,9361	17,9599	16,6423

264 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.

265 Updated according to data provided in the last Renewables Energies Plan 2011-2020.

Technology type	Technology sub type	Power		Regulated tariff €cent /kWh	Reference premium €cent/kWh	Higher limit €cent/kWh	Lower limit €cent/kWh
			years				
			After	12,7362			
		2 MW < P	First 15 years	15,8313	11,3885	16,2967	15,4111
			After	13,3344			
	Waste (agriculture and garden)	P < 2 MW	First 15 years	13,5736	9,3528	14,3744	13,0568
			After	9,153			
		2 MW < P	First 15 years	11,614	7,1712	12,0849	11,209
			After	8,7111			
	Waste (forest)	P < 2 MW	First 15 years	13,5763	9,3528	14,3744	13,0568
			After	9,153			
		2 MW < P	First 15 years	12,7754	8,333	13,2404	12,3548
			After	8,7111			
Biomass/Biofuels or Biogas	Biogas generated by landfill sites		First 15 years	8,6311	4,5652	9,6766	8,0305
			After	7,0306			
	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			
Biomass coming from industrial plants	Principal fuel coming from agriculture activity.	P < 2 MW	First 15 years	13,5763	9,3528	14,3744	13,0568
			After	9,153			
		2 MW < P	First 15 years	11,614	7,1712	12,0849	11,209

Technology type	Technology sub type	Power		Regulated tariff €cent /kWh	Reference premium €cent/kWh	Higher limit €cent/kWh	Lower limit €cent/kWh
			After	8,7111			
	Principal fuel coming from forest activity.	P < 2 MW	First 15 years	10,0221	5,7997	10,8213	9,4929
			After	7,0306			
		2 MW < P	First 15 years	7,0284	2,5856	7,495	6,6094
			After	7,0284			
	Principal fuel coming from paper industry.	P < 2 MW	First 15 years	10,0221	6,0677	10,8213	9,4929
			After	7,0306			
		2 MW < P	First 15 years	8,6397	3,9621	9,7197	8,0998
			After	7,0284			
Energy valorization (waste)	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 x [(50 – P)/40]] x 1,0826, being P the plant's capacity.
*** Regulated tariff from the 26th year on shall equal: [5.94 + 1,080 x [(50 – P) / 40]] x 1.0826, being P the plant's capacity.
Solar PV: the values presented are only for projects installed under RD 661/2007, prior to enactment of RD 1578/2010. Restricted full-load hours according to RDL 14/2010. This regulation is subject to law and suits both national and European level as it also applied retroactively to projects commissioned prior to issuance of this RDL.
Solar thermal: restricted full-load hours according to RD 1614/2010
Wind: restricted full-hours load according to RD 1614/2010; unknown regime as of January 1st , 2013 as the draft of the new RD was presented but rejected by the wind sector. The new government will set up new RD by 2012.

The following table shows the specific feed-in tariff values[266] in 2011 for solar PV plants falling under RD 1578/2008.

Project type		**1T 2011 [€ct/kWh]**	**2T 2011 [€ct/kWh]**	**3T 2011 [€ct/kWh]**	**4T 2011 [€ct/kWh]**	**1T 2012 [€ct/kWh]**
Type I.1 Capacity <= 20 kW:	First 25 years	31,3542	28,8821	28,1271	27,3817	26,6208
Type I.2 Capacity > 20 kW	First 25 years	27,8887	20,3726	19,8353	19,317	19,317
Type II.1 Ground	First 25 years	25,1714	13,4585	13,0324	12,497	12,1716

Note: for new projects in 2011 (and 1st semester 2012) tariffs shown in the table above according to RD 1578/2008 were applied (this RD regulates the quota system, the digression and different plant categories, i.e. points that did not exist in RD 661/2007). Tariffs are published by the Ministry of Industry, Tourism and Trade on a trimestral basis. The following restriction has to be considered: restricted full-load hours according to RDL 14/2010. This regulation is subject to law and suits to both national and European level and it is applied retroactively to plants commissioned prior to the issuance of this RDL.

Deficit of the electricity tariff

In 2010, significant changes operated in the Spanish renewable energy market due to the approval of new regulation. This modified the remuneration schemes of the major renewable energy sources: solar PV and wind. These changes were triggered by the so-called 'deficit of the electricity tariff', defined as the difference between total revenues collected that projects collect by selling their electricity and real costs in terms of energy generation, transport and distribution. These differences are normally generated by errors in the estimation of costs as well as to regulatory decisions of the central administration.

The resulting deficit has been estimated at 3,000 M€ 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 M€ in 2011 and 1,000 M€ in 2012.

In order to reduce the deficit, a package of temporary measures has been released affecting remuneration schemes for some renewable technologies such as solar PV and wind power (being the two major technologies benefitting from the scheme) along with CSP (due to its large investment costs). These measures affect the remuneration scheme limiting the possibility of choosing either feed-in tariff or feed-in premium, reducing the value of the tariff as well as the amount of hours or time period awardable under the scheme. This regulation has been approved on a temporary basis (valid until 2013) until the tariff deficit has been reduced to zero.

The package of temporary measures is currently composed by the following regulation: RDL 14/2010, RD 1565/2010 and RD 1614/2010.

[266] Information provided by contact with APPA (Association of Renewable Energy Producers): www.appa.es; and from the Ministry of Industry, Tourism and Trade: http://www.mityc.es/energia/electricidad/RegimenEspecial/Paginas/InstalacionesFotovoltaicas.aspx

Wind energy

Plants with capacity over 50 MW are affected by the temporary package of measures (RD 1614/2010[267]). The reference feed-in premium was reduced by 35% (compared to 2010 values) until the end of 2012. After this period plants will recover feed-in premiums set up for 2009[268], starting from January 1st 2013. The amount of awardable operation hours is also limited. If the wind plant exceeds the maximum amount of hours allowed, operators are obliged to refund all revenues generated by the excess of hours within a three months period after being requested by the government.

New regulation is expected to be released by 2012 limiting the number of years (reduced to twelve) as well as the annual amount of hours (limited to a maximum value of 1,500 hours per year) entitled to be rewarded.

Photovoltaics (PV)

The RD 1565/2010[269] introduced modifications which reduced feed-in tariff value for solar PV plants registered after November 24th 2010[270].The value of reduction was differentiated by size of the installation: by 5% in case of plants equal or lower to 20 kW, by 25% in case of plants larger than 20 kW, and by 45% for free-standing plants. In addition, RDL 14/2010[271] reduces the maximum amount of operation hours entitled to be awarded. The amount of hours awardable depends on the type of installation (fixed, single axis tracker and dual axis tracker) and the "climate solar zone[272]" where the plan is located. Until December 31st 2013, reference operation hours have been fixed to 1,250 hours for fixed plants, 1,644 for single axis plants, and 1,707 hours for dual axis tracker.

Access toll

The RDL 14/2010 introduces the obligation to electricity utilities to pay a toll to grant access to 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.

Tax deduction

The Law on Sustainable Economy introduces the possibility to deduct 8% of the investments performed under agreements/programs with the competent environmental administration. It concerns 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.

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267 Royal Decree 1614/2010, dated December 7th, which governs and modifies certain aspects of electricity generation activities using solar thermoelectric and wind power technologies.

268 Values defined through Order ITC/351/2009.

269 Royal decree 1565/2010, dated November 19th, on the regulation and amendment of certain aspects related to electricity generation under special regime.

270 First period call for projects to be awarded under pre-registry scheme.

271 Royal Decree Law 14/2010, dated December 23rd, on the implementation of urgent measures to correct electricity sector tariff deficit.

272 Under classification of solar average radiation climatic zones set up by Royal Decree 314/2006, dated January 17th, which approves Technical Building Code.

Building Technical Code (Código técnico de edificación, CTE) – Solar PV Obligations for Buildings

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.

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:

- 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 sustainability in the Spanish Economy and is applicable to RES-E, RES-H&C and RES-T (next sections). 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.

3 Details RES-Heating and Cooling Support Policy

Feed-in tariff and feed-in premium

Similar as in the case of electricity generation, combined production of heat and electricity is promoted using the feed-in tariff and feed-in premium scheme (RD 661/2007). In particular, high efficiency cogeneration (using either biomass or biogas) is entitled to be awarded under the umbrella of this scheme.

This regulation creates a favourable scenario for cogeneration using biomass (particularly for tertiary sector as particularly demanding for cogeneration processes involving low heat use). It aims at achieving large profitability for cogeneration processes involving biomass use (for both selling electricity to distribution companies and in the electricity market). In the situation of selling the electricity on the market, the feed-in-tariff varies according to the reference market price. Therefore, maximum and minimum limits are established for each technology[273].

As previously mentioned, this regulation aims at promoting high efficiency cogeneration. Thus, it establishes a minimum energy output (equivalent electricity output[274]) which is calculated[275] and, for the case of cogeneration using biomass set up the following minimum limits:

- Biomass for electricity production[276]: 30%
- Biogas for electricity production[277]: 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.

Building Technical Code (Código técnico de edificación, CTE) – Solar Thermal 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 thermal depends on different parameters of the building: climatic zone, surface (m^2), 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.

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273 Which are updated considering Consumer's Price Index (-0.25 until 2012 and -0.50 from that moment on).

274 Rendimiento Energético Equivalente - REE

275 Partially in base on some factors defined under the European Directive 2004/8/CE.

276 Included in groups b.6 and b.8 of the RD 661/2007.

277 Included in the Group b.7.2 of the RD 661/2007.

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.

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.

4 Details RES-Transport Support Policy

Quota and blending obligation

The Law 12/2007[278] introduced regulation to force fuel retailers to achieve a minimum share of biofuels in the amount they release for consumption. The law initially set up mandatory targets for biodiesel of: 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).

Biofuel targets have been modified via new Royal Decree 459/2011 (approved on 1st April 2011) for years 2011, 2012, and 2013. The new targets for biofuels are 6.4%, 6.5%, and 6.5%, for the respective years.

Tax deduction

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 2005. The lead on this law lies with the Ministry of Economy and Treasury[279]. The law establishes a zero tax rate for biofuels (instead of 0.278 €/litre for diesel and of 0.371 €/litre 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: tax on the retails sales of certain hydrocarbons" (IVMH)[280], including a national component of 0.024 €/litre as well as a regional component of approximately 0.024 €/litre, and the "value-added tax" (VAT).

278 Law 12/2077, dated 2nd July, that modifies Law 34/1998 of the Hydrocarbon Sector.

279 http://www.meh.es/en-GB/Paginas/Home.aspx

280 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

Tax Benefit for Investment in Biofuel Production

As mentioned in the RES-E fiscal regulation section, the Law on Sustainable Economy offers the possibility of tax deduction for investments on renewable equipment to use agriculture and forestry products as well as used oils to be transformed in biofuels.

Other considerations

The European directive requires Member States to set up sustainability criteria for biofuel utilization. In line with this requirement, Spain has recently approved the Royal Decree 1597/2011 (on date 4th November) to regulate sustainability criteria for biofuels and bioliquids.

5 RES-E Grid Integration

In Spain, RES-E is statutorily entitled to connection to and usage of the grid with priority[281]. 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 renewable technologies is comprised under the umbrella of the RD 661/2007 and the RD 1955/2000[282].

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.

The plant operator shall bear the costs of connection to and a possible expansion of the grid[283] as well as all costs related to feeding and transmission of electricity generated from renewable energy.

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 operator[284].

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”[285] 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

281 As stated in RD 661/2007.

282 Royal Decree 1955/2000, dated 1st December, to regulate transport, distribution, commercialization, supply activities and authorization procedures for electricity plants.

283 Annex XI nr. 8, 9 RD 661/2007).

284 Art. 17.e, Annex XI nr.4 RD 661/2007).

285 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

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 persons[286]. 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 when planning grid capacity expansion.

REFERENCES

The websites of the Comisión Nacional de Energia[287] (CNE-regulatory entity)) and the Instituto de Diversificación y Ahorro Energético[288] (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 in presented in the following list:

- Royal Decree 661/2007 dated May 25, regulates electricity production under the Special Regime[289]. 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:
  - Regulate some technical aspects to remove barriers to new capacity.
  - Disengage the premium tariff from the average or reference electricity tariff in order to avoid windfall profits.
  - Increase incentives for cogeneration and biomass.
  - 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.
- Royal decree 1578/2008, dated September 26th, related to remuneration of energy production with solar PV for plants.
- 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.

286 Art. 11 RD 1955/2000.

287 Information available at: http://www.cne.es/cne/Home

288 Information available at: www.idae.es

289 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 Law 14/2010, dated December 23rd, on the implementation of urgent measures to correct electricity sector tariff deficit.
- Royal Decree, 459/2011, dated 1st April, to set up compulsory targets for biofuels utilization for years 2011, 2012, and 2013.
- Royal Decree 1597/2011, dated 4th November, to regulate sustainability criteria for biofuels and bioliquids.
- ORDER ITC-3353-2010, dated 28th December, to set up access tolls and feed-in tariffs and feed-in premiums for plants under special regime.
- Law 2/2011, dated 4th March, on Sustainable Economy. Developed to accelerate recovery process of the Spanish economy, it comprises strategic lines to build-up national sustainable energy model by 2020.
- National Action Plan on Renewable Energies 2011-2020, dated 30th June 2010, sets up new targets and strategic lines for the promotion of renewable technologies up to 2020.
- Renewable Energies Plan 2011-2020, approved on date 11th Novemeber 2011, which defines in detailed work lines to achieve goals defined in the national action plan.

Additional Sources of Information

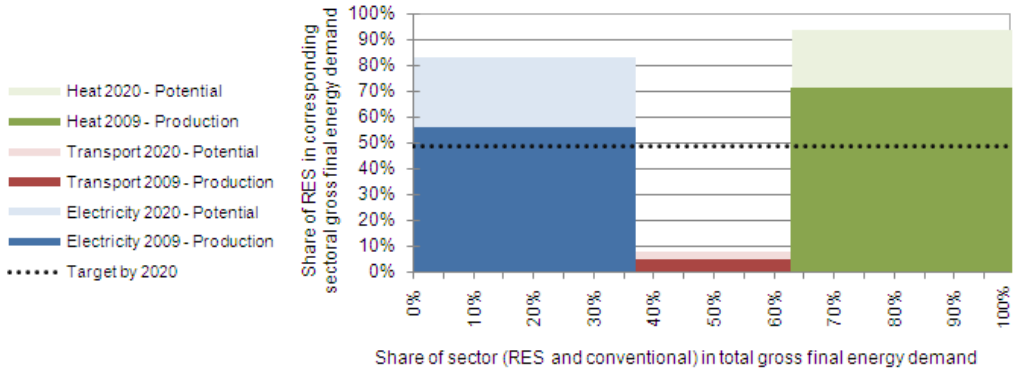
Ministry of Industry, Tourism and Trade
Paseo de la Castellana 160-162
28046, Madrid
Spain
Tel.: 0034 902 44 60 06
Fax: 0034 91 458 30 01
Web page: www.mityc.es

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

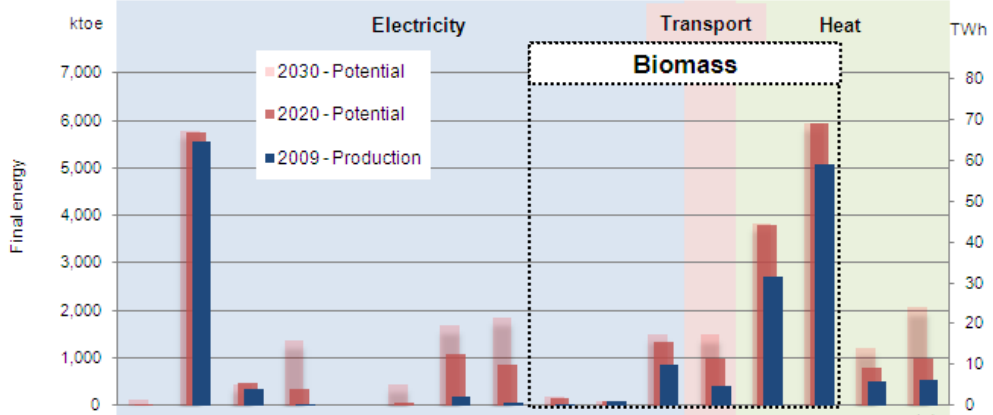
Comisión Nacional de Energía (CNE)
Calle Alcalá 47
28014, Madrid
Spain
Tel.: 0034 91 432 96 00
Web page: www.cne.es

Asociación de Productores de Energías Renovables
Calle Aguarón 23, Portal B. 1º B.
28023, Madrid
Spain
Tel.: 0034 91 307 17 61
Email: appa@appa.es
Web page: www.appa.es

SWEDEN - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	56%	5%	71%	48%
Share of total sector consumption in total final energy consumption	37%	26%	37%	100%
Production 2009 [ktoe]	6,832	361	8,783	15,976
Production 2007 [ktoe]	6,644	285	8,489	15,419
Production 1999 [ktoe]	6,428	0	6,780	13,208
Average growth 2007-2009 [%/a]	1%	13%	2%	2%
Average growth 1999-2009 [%/a]	1%	-	3%	2%
Realisable potential until 2020 [ktoe]	10,094	987	11,548	22,629
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	0%
Realisable potential until 2030 [ktoe]	12,790	1,484	13,064	27,337



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	5,555	328	0	0	0	176	42	3	90	862	395	2,709	5,072	485	517
Production 2007 [ktoe]	0	5,558	341	0	0	0	87	34	6	95	731	284	2,620	5,039	415	415
Production 1999 [ktoe]	0	5,508	335	0	0	0	30	1	1	4	227	0	1,882	4,713	77	107
Ø annual production growth 2007-2009	-	0%	-2%	22%	-	-	42%	11%	-27%	-3%	9%	18%	2%	0%	8%	12%
Ø annual production growth 1999-2009	-	0%	0%	12%	-	-	19%	52%	14%	35%	14%	-	4%	1%	20%	17%
Realisable potential by 2020 [ktoe]	6	5,736	453	332	0	52	1,075	837	158	100	1,346	987	3,798	5,952	804	994
Realisable potential by 2030 [ktoe]	110	5,793	458	1,363	0	448	1,674	1,852	180	100	1,491	1,484	3,836	5,952	1,214	2,063

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

Norway and Sweden have agreed on a joint green certificates market from 1 January 2012 onwards. Current goals of the electricity certificate system and operation will remain unchanged in Sweden. The new system is expected to generate 26.4 TWh of electricity from new renewable energy projects by 2020, each country generating half the amount.

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 of 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, CO_2, 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 CO_2 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

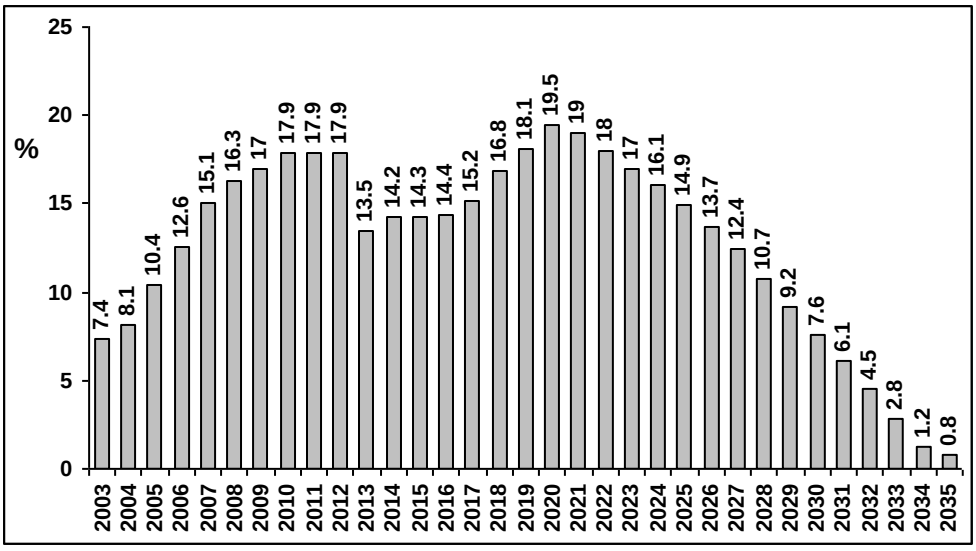
The expansion of electricity production from RES and peat in Sweden is supported by a quota obligation with a tradable electricity certificates system. This system came into effect on 1 May 2003, based on Act No. 2003:113 on Electricity Certificates[290] and Regulation No. 2003:120 on Electricity Certificates[291]. 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, 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. Additionally, the Act No 2010:598 on Sustainability Criteria for Biofuels and Liquid Biofuels[292] 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]



290 http://www.riksdagen.se/webbnav/index.aspx?nid=3911&bet=2003:113

291 http://www.riksdagen.se/webbnav/index.aspx?nid=3911&bet=2003:120

292 http://www.riksdagen.se/webbnav/index.aspx?nid=3911&bet=2010:598

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. 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 fulfill 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 fulfill the 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[293]) 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[294]. 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.

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293 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), , 9.5413 SEK/€ (for 2010) and 9.0234 (for 2011SEK/€ January - October)// http://www.riksbank.com/templates/stat.aspx?id=17211

294 https://elcertifikat.svk.se/cmcall.asp?showrequest=false

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[295]. The Act No. 2010/11:155 for a new law on electricity certificates with simple rules and a common electricity certificate market was prepared for this purpose[296]. With reference to the bill, current goals of the electricity certificate system and operation procedures will remain unchanged. The innovation proposed in the bill is that the introduced rules will allow for an electricity certificates market that is common with other countries. An electricity certificate market that is common with Norway is expected to decrease the risk of high electricity certificate prices. The new Norwegian-Swedish system is expected to generate 26.4 TWh of electricity from new renewable energy projects by 2020, with each country producing 13.2 TWh[297].

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[298]. 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[299]]. 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 cent) per kWh used.

The Act on Federal Real Estate Tax[300] [11] 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.

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295 http://www.risk.net/energy-risk/news/1533077/norway-sweden-agree-joint-electricity-certificates-market

296 http://www.riksdagen.se/webbnav/index.aspx?nid=37&dok_id=GY03155

297 http://www.nortrade.com/index?cmd=show_article&id=605

298 http://www.riksdagen.se/webbnav/index.aspx?nid=3911&bet=1994:1776

299 http://webbshop.cm.se/System/TemplateView.aspx?p=Energimyndigheten&view=default&cat=/Broschyrer&id=b4cea7b00212456b9bdbdbe47a009474

300 http://www.riksdagen.se/webbnav/index.aspx?nid=3911&bet=1984:1052

Wind plants are subject to a reduced tax level (0.2%), whereas hydro power plants are subject to a higher tax (1.7%). The act stipulates that since 1 January 2011 a new property tax on hydro plants is 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[301]. With reference to the latest amendment No 2011: 1027, which came into effect in 1 November 2011, the support is limited to actions commenced on or after 1 July 2009 and completed by 31 December 2012[302]. 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. According to the latest amendment, the state aid under the regulation is given to individuals, municipalities and businesses as a one-time grant for the installation of all types of grid-connected photovoltaic systems. This does not apply to measures that receive other public assistance, including tax credit for labor and aid provided by the European Union. The aid may not exceed 60% of the eligible costs. Engineering and labour costs and costs of materials are eligible costs, but connection to an external network is not an eligible cost). For large companies, aid may not exceed 55% of the eligible costs. Eligible costs for solar-PV may not exceed 40,000 SEK (~€4,433) plus VAT per installed kW. Eligible costs for solar electricity and solar thermal hybrid systems may not exceed 90,000 SEK (~€9,974) plus VAT per installed kW. Support should not exceed 1.5 million SEK (~€166,234) for solar photovoltaic systems or solar electricity and solar thermal hybrid systems per building. There is 60 million SEK (€ 6.65 million) allocated for aid in 2012. Previously allocated funds for the period 2009-2011 amounted to 222 million SEK (~€24.6 million)[303].

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[304]. 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[305]. 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

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301 http://www.riksdagen.se/webbnav/index.aspx?nid=3911&bet=2009:689

302 http://energimyndigheten.se/Global/Forskning/Kraft/SFS%202011%201027%20Förordning%20om%20ändring%20i%20förordningen%20(2009%20689)%20om%20statligt%20stöd%20till%20solceller.pdf

303 http://energimyndigheten.se/sv/Foretag/Energieffektivisering-i-foretag/Stall-krav-vid-inkop/Aktuella-bidrag-och-stod/Stod-till-solceller/

304 http://www.riksdagen.se/webbnav/index.aspx?nid=3911&bet=2007:160

305 http://www.riksdagen.se/webbnav/index.aspx?nid=3911&bet=2003:564

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.

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[306]. 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 (including biogas). Sweden also provides investment support for planting forests for energy use in the country.

3 Details RES-Heating and Cooling Support Policy

Subsidies

Subsidies for RES-H were provided under the Regulation No. 2008:1247 on Financial Support for Solar Heating[307]. Under this regulation, support was provided for installations of solar heating devices for hot water, as well as hot water and heating or cooling. In 3 November 2011 the Regulation No 2011: 1105 was issued[308]. It states that support for investments in solar energy will expire at the end of 2011.

Tax Exemptions

RES-H is supported in an indirect way by raising taxes on fuels. In accordance to the Law on Energy Tax[309], energy products used for heat production are subject to energy, CO_2 and in certain cases sulphur tax. Energy and CO_2 tax is not paid for wood, briquettes, pellets, and 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[310]. 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.

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306 http://www.riksdagen.se/webbnav/index.aspx?nid=3911&bet=2009:938

307 http://www.riksdagen.se/webbnav/index.aspx?nid=3911&bet=2008:1247

308 http://www.notisum.se/rnp/sls/sfs/20111105.pdf

309 http://www.riksdagen.se/webbnav/index.aspx?nid=3911&bet=1994:1776

310 http://www.boverket.se/Global/Webbokhandel/Dokument/2008/BBR_English/9_Energy_management.pdf

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[311]

Energy source	Energy tax	Carbon dioxide tax	Sulfur tax	Total tax
Natural gas/methane,				
- SEK/m^3	0.00	1.35	0.00	1.35
- €/m^3	0.00	0.14	0.00	0.14
Diesel fuel,				
- SEK/liter	1.33	3.01	0.00	4.34
- €/liter	0.14	0.32	0.00	0.46
LPG,				
- SEK/kg	0.00	1.67	0.00	1.67
- €/kg	0.00	0.18	0.00	0.18
Petrol, unleaded, environment class 1,				
- SEK/liter	3.06	2.44	0.00	5.50
- €/liter	0.32	0.26	0.00	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 [21]. 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[312].

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[313]. 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.

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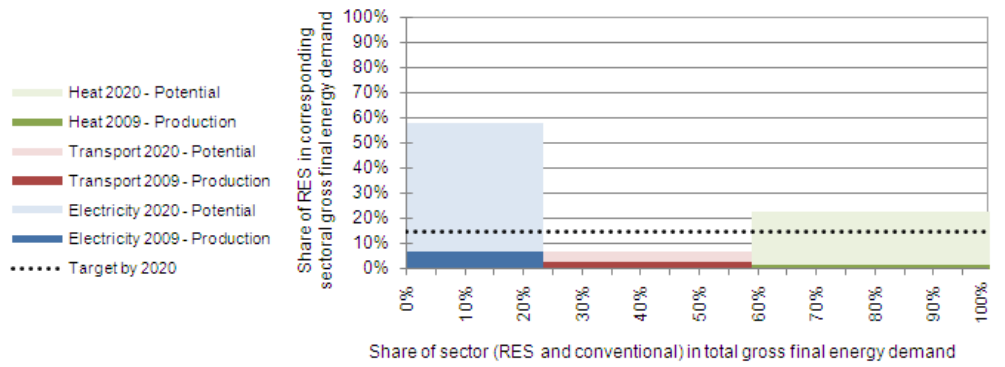
311 http://webbshop.cm.se/System/TemplateView.aspx?p=Energimyndigheten&view=default&cat=/Broschyrer&id=b4cea7b00212456b9bdbdbe47a009474

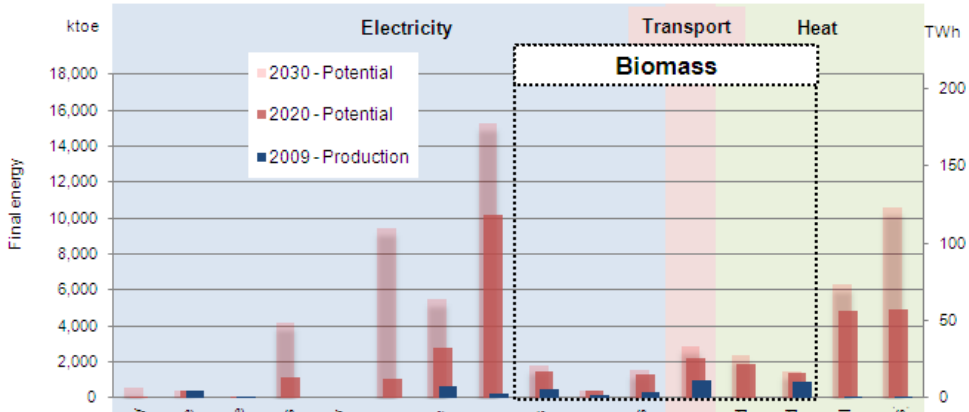
312 http://www.riksdagen.se/webbnav/index.aspx?nid=3911&bet=2006:228

313 http://www.riksdagen.se/webbnav/index.aspx?nid=3911&bet=1997:857

UNITED KINGDOM - Summary: RES Target, Production and Potential



	Electricity	Transport	Heat	Total
Share of RES in corresponding sectoral gross final energy demand	7%	2%	2%	3%
Share of total sector consumption in total final energy consumption	23%	36%	41%	100%
Production 2009 [ktoe]	2,168	968	933	4,069
Production 2007 [ktoe]	1,689	346	725	2,760
Production 1999 [ktoe]	827	0	583	1,410
Average growth 2007-2009 [%/a]	13%	67%	13%	21%
Average growth 1999-2009 [%/a]	10%	-	5%	11%
Realisable potential until 2020 [ktoe]	18,579	2,226	12,992	33,797
Average growth 2009-2020 [%/a] needed to achieve target	-	-	-	15%
Realisable potential until 2030 [ktoe]	36,247	2,889	20,726	59,861



	Geothermal electricity	Hydro large-scale	Hydro small-scale	Photovoltaics	Solar thermal electricity	Wave and tidal power	Wind on-shore	Wind off-shore	Biogas	Biowaste	(Solid & liquid) Biomass	Biofuels	Biomass grid	Biomass non-grid	Solarthermal	Geothermal (incl. Heat Pumps)
Production 2009 [ktoe]	0	365	68	0	0	0	633	178	481	130	304	967	0	882	25	27
Production 2007 [ktoe]	0	339	63	0	0	0	374	104	445	101	251	345	0	705	9	11
Production 1999 [ktoe]	0	372	17	0	0	0	72	0	182	74	40	0	0	582	0	1
Ø annual production growth 2007-2009	-	4%	4%	-	-	-	30%	31%	4%	13%	10%	67%	-	12%	64%	56%
Ø annual production growth 1999-2009	-	0%	15%	-	-	-	24%	-	10%	6%	23%	-	-	4%	78%	42%
Realisable potential by 2020 [ktoe]	13	371	58	1,116	0	1,013	2,793	10,141	1,430	375	1,270	2,226	1,859	1,403	4,842	4,888
Realisable potential by 2030 [ktoe]	528	374	59	4,215	0	9,461	5,509	15,280	1,760	417	1,511	2,889	2,359	1,473	6,316	10,578

See page 4 for explanation. Unit conversion: 1 ktoe = 11.628 GWh = 41.868 TJ

Summary of most important policy changes since last country profile (March 2011)

There have been a number of key RES policy updates in the UK since March 2011. In August/September 2011 feed-in tariffs (FIT) for solar PV (>50kW) were reduced and farm-scale anaerobic digestion increased following a 'fast-track review' of the scheme. Government announced further reductions to solar PV tariffs in October 2011, effective from December 2011. 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. In April 2011 sustainability reporting requirements for solid and gaseous biomass were introduced and in October 2011 the Government announced its proposals for revisions to the certificate banding for the period 2013-2017.

A major new support system for RES-H, the Renewable Heat Incentive (RHI), was introduced in November 2011. 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 6.8% in 2010. 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. Government is currently consulting on revised banding levels for the period 2013-2017. Recently the government proposed to discontinue the RO 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 September 2011, almost 100,000 installations had registered for support, 97% of which were solar projects, with lower than expected take-up of other renewable technologies (particularly farm-scale anaerobic digestion). This has led to concerns that solar projects are taking up a disproportionate amount of the available funding. Government has responded by publishing two consultations on the FIT scheme tariffs. A ‘fast track’ review took place in February 2011, after which tariffs were lowered for solar (>50kW) and increased for farm-scale anaerobic digestion. A second review was published in October 2011 and looks to further reduce tariffs for solar.

RES-H&C

To date, the main support instrument has been 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 help meet the UK’s overall RES target under the RED, the government launched the Renewable Heat Incentive (RHI), a feed-in tariff for heat, in November 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 a 5% biofuels share in road transport (by volume) in 2013/14. The key changes to the RTFO in 2011/12 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 originally intended to publish new banding levels by autumn 2011 to give early certainty to the market on future banding levels. DECC in fact launched its consultation in October 2011 and will now confirm the banding levels in early 2012[314].

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)[315] 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.

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

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314 http://www.decc.gov.uk/en/content/cms/consultations/cons_ro_review/cons_ro_review.aspx

315 http://www.decc.gov.uk/assets/decc/Consultations/emr/1041-electricity-market-reform-condoc.pdf

crops" such as miscanthus and short rotation coppice willow and poplar are excluded from the cap). DECC now proposes to remove the co-firing cap altogether from April 2013. However, it is proposing to introduce a 4% cap on the use of bioliquids by suppliers to meet their renewables obligation.

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 1. 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 (consumption target)	£/MWh	€/MWh ***	£/MWh	£/MWh	€/MWh ***
2002/03	3	30	34.95	15.94	45.94	52.83
2003/04	4.3	30.51	35.54	22.92	53.43	61.44
2004/05	4.9	31.39	36.57	13.66	45.05	51.81
2005/06	5.5	32.33	37.66	10.21	42.54	48.92
2006/07	6.7	33.24	38.72	16.04	49.28	56.67
2007/08	7.9	34.30	39.96	18.65	52.95	60.89
2008/09	9.1	35.76	41.66	18.61	54.37	62.53
2009/10	9.7	37.19	43.33	15.17	52.36	60.21
2010/11	11.1	36.99	43.09	14.32	57.41	66.02
2011/12	12.4	38.69	45.07	-	-	-
2012/13	15.8	-	-	-	-	-
2013/14	Targets will be set by DECC prior to the start of the obligation period	Increases in line with retail price index		-	-	-
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: €1.15

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'. DECC is currently consulting on proposed changes to the banding levels, which will become effective from April 2013 for new projects (see table below). A key change in the proposed banding levels is that derogation is to be introduced for the first time for specific technologies from 2014/15. Furthermore it is proposed to narrow the definition of energy crops to cover "non-food" crops only (i.e. only short rotation coppice and perennial grasses).

Table 6: Existing and proposed RO banding levels (subject to consultation).

Technology	Current support ROCs/MWh	Proposed support ROCs/MWh (2013 to 2017)	Other proposed changes
Advanced gasification or pyrolysis	2	2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17	
Anaerobic digestion	2		
Biomass conversion[316]	No current band but 1.5 under current banding arrangements	1	Proposal for a new band
Co-firing of biomass	0.5	0.5	
Co-firing of biomass (enhanced)[317]	No current band but 0.5 under current banding arrangements	1	Proposal for a new band
Co-firing of biomass with CHP	1	1	Proposed to close this band from 1 April 2015
Co-firing of energy crops	1	1	
Co-firing of energy crops with CHP	1.5	1.5	Proposed to close this band from 1 April 2015
Dedicated biomass	1.5	1.5 until 31 March 2016; 1.4 from 1 April 2016	

[316] Biomass conversion applies to the conversion of coal plants to dedicated biomass plants.

[317] Co-firing of biomass (enhanced) applies to the partial conversion of a coal plants to biomass. To qualify, generators would need to co-fire at least 15% of their generation.

Technology	Current support ROCs/MWh	Proposed support ROCs/MWh (2013 to 2017)	Other proposed changes
Dedicated energy crops	2	2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17	
Dedicated biomass with CHP	2	2 in 2013/14 and 2014/15	Proposed to close this band from 1 April 2015
Dedicated energy crops with CHP	2		Proposed to close this band from 1 April 2015
Energy from waste with CHP	1	0.5	
Geothermal	2	2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17	
Geopressure	1	1	
Hydro-electric	1	0.5	
Landfill gas	0.25	0	
Microgeneration (<50kW – for technologies not supported under the FIT)	2	2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17	
Onshore wind	1	0.9	
Offshore wind	2 in 2013/14; 1.5 from 2014/15 onwards	2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17	
Sewage gas	0.5	0.5	
Solar PV	2	2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17	
Standard gasification or pyrolysis	1	0.5	
Tidal impoundment – tidal barrage or lagoon	2	2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17	
Tidal stream	2	5 up to a 30MW project cap	
Wave	2	5 up to a 30MW project cap	

The Government announced in December 2010 that it would introduce “phasing” for offshore wind projects accredited after 31 March 2011, where generators can register the installed capacity for the project in up to five phases (with a minimum of 20% in the first phase)[318]. Each phase will be eligible for support for 20 years (up to 2037).

318 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

In December 2010, the Government also 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, it is proposed that 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%)[319]. ROC eligibility for electricity generated from bioliquids has been dependent upon meeting mandatory sustainability requirements from April 2011, in line with the requirements of the RED (Renewable Energy Directive).

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 £36.99; plus the recycle of £14.32; gives a ROC "value" of £51.31 (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 October 2011. Over 48,000 ROCs were traded in the auction at an average ROC price of £46.00 (~52.90 €/MWh).

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 (~€58.33 and €54.80) respectively, while the average 2011 YTD price is £48.37 (€55.62). Future ROCs are not traded.

E-ROC auction price data is publicly available. Historic trading prices of ROCs can be found at: http://www.e-roc.co.uk/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.

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319 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

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 website[320].

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 was 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 also expressed concerns over the rapid take-up of 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) had been lower than anticipated.

Following on from these concerns, a 'fast-track' consultation review[321] of the scheme was announced on 18 March 2011 (and closed on 6 May 2011). This proposed new tariffs for large-scale solar PV and farm-scale AD (see below). The new tariffs became effective on 1 August 2011 for solar PV and 1 September 2011 for AD and apply to new scheme entrants only (i.e. not imposed retrospectively).

320 http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/feedin_tariff/feedin_tariff.aspx

321 http://www.decc.gov.uk/en/content/cms/consultations/fit_review/fit_review.aspx

Table 7: FIT tariffs per technology for 2011/12 (effective from 1 August 2011) for existing installations installed in 2010/11 and new installations installed in 2011/12

Technology	Scale	Tariff (£p/kWh)	Tariff (€cent/kWh)*
Anaerobic Digestion	<250kW	12.1/14[322]	13.9/16.1
Anaerobic Digestion	250-500kW	12.1/13	13.9/15
Anaerobic Digestion	>500kW	9.4	10.8
CHP[323]	2kW	10.5	12.1
Hydro	<15kW	20.9	24
Hydro	15–100kW	18.7	21.5
Hydro	100kW–2MW	11.5	13.2
Hydro	>2MW	4.7	5.4
Solar PV	<4kW (new build)	37.8	43.5
Solar PV	<4kW (retrofit)	43.3	49.8
Solar PV	4-10kW	37.8	43.5
Solar PV	10–50kW	32.9	37.8/
Solar PV	50-100	32.9/19[324]	37.8/21.9
Solar PV	100-150	30.7/19	35.3/21.9
Solar PV	150-250kW	30.7/15	35.3/17.3
Solar PV	>250kW	30.7/8.5	35.3/9.8
Solar PV	Stand alone system	30.7/8.5	35.3/9.8
Wind	<1.5kW	36.2	41.6
Wind	1.5–15kW	28.0	32.2
Wind	15–100kW	25.3	29.1
Wind	100–500kW	19.7	22.7
Wind	500kW-1.5MW	9.9	11.4
Wind	>1.5MW	4.7	5.4
Existing microgenerators transferred from the RO (accredited under the RO on or before 31 March 2010)		9.4	10.8
Export tariff		3.1	3.6
* Exchange rate used £1: €1.15			

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.

A ‘comprehensive’ review[325] of the scheme will also take place. This review will be split into two phases.

Phase I was launched on 31 October 2011 and will run until 23 December 2011[326]. It proposes new (lower) tariff rates for solar PV and aggregated solar PV projects (see below) and also announces the intention of prioritising energy efficiency by linking PV tariffs to specified minimum energy efficiency requirements from 1 April 2012.

Phase II of the review will consider wider issues including tariffs for non-PV technologies, new cost control mechanisms and administrative aspects of the scheme.

322 The higher tariff is applicable if the eligibility date is on or after 1 September 2011.

323 The tariff is available for the first 30,000 units only with a review to start when the 12,000th installation is completed.

324 The lower tariff is applicable if the eligibility date is on or after 1 August 2011.

325 http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/feedin_tariff/review/review.aspx

326 http://www.decc.gov.uk/en/content/cms/consultations/fits_comp_rev1/fits_comp_rev1.aspx

A consultation on Phase II of the comprehensive review is due to be announced before the end of 2011, with changes expected to be implemented in the first half of 2012.

Table 8: Proposed FIT tariffs for Solar PV (subject to consultation)[327]

Technology	Scale	Existing Tariff (£p/kWh)	Proposed Tariff (£p/kWh)	Proposed Tariff (€cent/kWh)
Solar PV	<4kW (new build)	37.8	21.0	24.2
Solar PV	<4kW (retrofit)	43.3	21.0	24.2
Solar PV	4-10kW	37.8	16.8	19.3
Solar PV	10–50kW	32.9	15.2	17.5
Solar PV	50-100	32.9/19	12.9	14.8
Solar PV	100-150	30.7/19	12.9	14.8
Solar PV	150-250kW	30.7/15	12.9	14.8
Solar PV	>250kW	30.7/8.5	8.5	9.8
Solar PV	Stand alone system	30.7/8.5	8.5	9.8
Multi-installation generation tariffs				
Solar PV	<4kW (new build)	37.8	16.8	19.3
Solar PV	<4kW (retrofit)	43.3	16.8	19.3
Solar PV	4-10kW	37.8	13.4	15.4
Solar PV	10–50kW	32.9	12.2	14.0
Solar PV	50-100	32.9/19	10.3	11.8
Solar PV	100-150	30.7/19	10.3	11.8
Solar PV	150-250kW	30.7/15	10.3	11.8
Solar PV	>250kW	30.7/8.5	8.5	9.8
Solar PV	Stand alone system	30.7/8.5	8.5	9.8

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 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 7. 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 2012 review of the FIT scheme.

[327] It is proposed that projects commissioned before 12 December 2011 will get the existing tariffs for the 25 year duration. Projects commissioned after 12 December 2011, but before 1 April 2012 will get the existing tariffs at first, but then go down to the lower tariffs from 1 April 2012. Projects commissioned after 1 April 2012 will get the new tariffs. Tariff rates for >250kW and Stand-alone projects will be adjusted in line with the RPI from 1 April 2012.

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). Revised FIT tariffs will be applied to new scheme entrants only.

Feed-in Tariff (> 5MW) – proposed options

In the Electricity Market Reform (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 was to implement a FIT CfD based tariff and this was formally proposed in the EMR White Paper published in July 2011[328].

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 2011/12 is set at £4.85/MWh (5.58 €/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 be 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.

[328] http://www.decc.gov.uk/en/content/cms/legislation/white_papers/emr_wp_2011/emr_wp_2011.aspx

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 introduced a Renewable Heat Incentive (RHI) in November 2011 to boost RES-H deployment.

Renewable Heat Incentive

The UK government launched the Renewable Heat Incentive (RHI), a feed-in tariff for heat, on 28 November 2011, with the aim of boosting currently low levels of RES-H to help meet the UK's RES target for 2020. The scheme was due to be launched in September 2011, but was halted following European Commission concerns that the large biomass tariff was set to high. State aid approval was granted by the Commission subject to lower tariffs being put in place for large biomass. 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 website[329].

The Energy Act 2008 (Section 100) allows for the setting up of the RHI, which provides 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 is providing support to the domestic sector through the £15m (~17.5 mio €) Renewable Heat Premium Payment scheme (see below). 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 originally 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 – both now discontinued). 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[330] 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 the table below and is only eligible for heat installations that have been accredited by

329 http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/policy/incentive/incentive.aspx

330 CHP generating stations receive an extra 0.5 ROCs per megawatt hour up to the 2 ROC threshold, e.g. co-firing of biomass with CHP as compared to co-firing of biomass without CHP. This is known as the CHP uplift, and is the way in which the ROS recognises the extra costs and benefits of CHP.

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.

Table 9: 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[331] (inc. CHP)	<200 kW_{th}	Metering. Tier 1 applies annually up to the "Tier break", Tier2 above the "Tier break"[332].	Tier 1: 7.6 Tier 2: 1.9	Tier 1: 8.7 Tier 2: 2.2
Medium biomass		200 – 1,000 kW_{th}		Tier 1: 4.7 Tier 2: 1.9	Tier 1: 5.4 Tier 2: 2.2
Large biomass		>1,000 kW_{th}	Metering	1.0[333]	1.2
Small ground source	Ground source heat pumps; Water source heat pumps, deep geothermal	<100 kW_{th}	Metering	4.3	4.9
Large ground source		>100 kW_{th}	Metering	3	3.5
Solar thermal	Solar thermal	<200 kW_{th}	Metering	8.5	9.8
Biomethane	Biomethane injection and biogas combustion, except from landfill gas	Biomethane all scales, biogas combustion less than 200 kW_{th}	Metering	6.5	7.5

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

331 For MSW, the biomass content will be assumed to be 50%, unless it can be proved that the actual content is higher.

332 The "Tier Break" is a specified annual heat output and is calculated as: installed capacity x 1,314 peak load hours, i.e. kWth x 1,314. The intention of introducing the Tier Break is to prevent more heat than necessary being used.

333 DECC had originally proposed a tariff of 2.7p /kWh, however this was reduced to 1.0p /kWh following concerns expressed by the European Commission that the rate was set too high.

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.

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 List[334] (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 17 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 20% 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.

334 http://etl.decc.gov.uk/etl

Grant Schemes

RES-H is or has been also supported through various grant schemes. The major ones being:

- The Renewable Heat Premium Payment gives vouchers to householders to help them buy renewable heating technologies prior to the extension of the RHI scheme to cover the domestic sector335. The scheme will specifically target those households who are not connected to the gas grid. Applicants will need to ensure that basic energy efficiency measures are in place to qualify and that Microgeneration Certified Scheme (MCS) certified equipment is used and installed by MCS certified installers (or equivalent standard). The scheme was launched on 1 August 2011 and runs until 31 March 2012. Support levels are: Solar Thermal - £300/unit, Air Source Heat Pumps - £850/unit, Biomass Boilers - £950/unit, Ground Source Heat Pumps - £1,250/unit.
- Scotland launched the Renewables loan scheme, a £500,000 interest free loan scheme, in April 2011 for the domestic sector for the installation of renewable heat and electricity technologies336. 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. Further support is available under the Home loans scheme, which also offers interest free loans of up to £10,000 for the installation of renewable heat technologies (and up to £4,000 for renewable electricity technologies)337.
- The Wood Energy Business Scheme (WEBS)338 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 Scheme339 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 project340 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.

335 http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/incentive/factsheet/factsheet.aspx

336 http://www.scotland.gov.uk/News/Releases/2011/03/11142409

337 http://www.energysavingtrust.org.uk/scotland/Take-action/Grants-and-offers/Home-loans-scheme

338 http://www.forestry.gov.uk/website/forestry.nsf/byunique/infd-7njg2e

339 http://www.usewoodfuel.co.uk/

340 http://www.carbontrust.co.uk/technology/technologyaccelerator/biomass.htm

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.

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)[341] 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 was formerly administered by the Office of the Renewable Fuels Agency (RFA)[342], 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, effective from 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 Order[343] which was amended in 2009[344] and is due to be amended again in 2011. 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

341 http://www.dft.gov.uk/topics/sustainable/

342 http://webarchive.nationalarchives.gov.uk/20110407094507/http://renewablefuelsagency.gov.uk/

343 Renewable Transport Fuel Obligation Order 2007: http://www.opsi.gov.uk/si/si2007/uksi_20073072_en_1

344 Renewable Transport Fuel Obligation Order (Amended) 2009: http://www.opsi.gov.uk/si/si2009/uksi_20090843_en_1

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.

To earn an RTFC an obligated party must report to the RTFO Administrator 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 could report "unknown", but all this information was made public[345]. Indicative targets for company performance on Carbon and Sustainability were set for the first three years of the RTFO. The DfT will not continue to set such targets once the RTFO has been fully incorporated the RED requirements, as the EC Carbon and Sustainability requirements of the RED will be mandatory, and RTFCs will only be issued for RED-compliant biofuel.

In November 2011, the DfT launched a consultation on revised RTFO guidance which fully implements the RED carbon and sustainability requirements[346]. This guidance will come into effect from the date of RED implementation (anticipated to be on 15 December 2011) and cover the rest of Year Four of the RTFO. It is not anticipated that there will be further revisions to the guidance for Year Five of the RTFO (covering 15 April 2012 to 14 April 2013).

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 Agency[347]. 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 RTFO Administrator. 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 October 2011 only around 0.5 million RTFCs were traded at an average price of £21.50p (~€24.73 cent). This contrasts to the January 2011 auction where 9 million certificates were traded, the most successful auction to date. The average RTFC price in 2011 at auction is £19.43p (~€22.35 cent) for Year 3 certificates and £21.81p (~€25.08 cent) for Year 4 certificates.

E-TOC auction price data is publicly available. Historic trading prices of RTFCs can be found at: http://www.nfpas-auctions.co.uk/etoc/trackrecord.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. Where there is a change in GHG criteria between one obligation period and the next, only RTFCs that meet the GHG saving criteria that apply on the first day of the period in question, may be redeemed in that period. The only exception

345 http://www.renewablefuelsagency.org/reportsandpublications/rtforeports.cfm

346 http://www.dft.gov.uk/consultations/dft-2011-31

347 http://www.nfpas-auctions.co.uk/etoc/index.html

to this is that any RTFCs issued in 2010/11 may be used to meet the 2011/12 obligation. Furthermore, it is proposed that certificates will only be issued once data relating to the consignment for which they are being claimed has been verified. In previous reporting periods, RTFCs were issued monthly, but suppliers were only required to have their data verified annually.

Biofuels made from wastes and residues (other than from agriculture, aquaculture, fisheries and forestry) will be exempt from complying with the land-related sustainability criteria but there is no further specific support. However the DfT will increase support levels for these biofuels from wastes and residues, in line with the double counting element of the RED. (Biofuels from non-food cellulosic and ligno-cellulosic materials such as miscanthus and woodchips will also be double counted.) Details are currently being consulted on, including proposals for classifications of products, wastes and residues.

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, until the end of March 2012. 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

Historically, the grid operator, National Grid, was obliged to grant access to the grid according to non-discriminative criteria. RES-E was therefore not given priority (compared to conventional generators). DECC undertook two public consultations on improving grid access for RES-E (and other low-carbon generation) in 2009 and 2010[348]. This led to the introduction of the 'Connect and Manage' (Socialised) regime for grid access in August 2010, which will enable new and existing RES-E generation projects to connect to the network more quickly[349].

Connection charges to the distribution network are currently 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). Ofgem is reviewing these arrangements as part of the Project TransmiT[350].

348 http://www.decc.gov.uk/en/content/cms/consultations/mproving_gridi/mproving_gridi.aspx

349 Generators would be offered a firm connection date once the local works required to connect them to the network had been completed, but before wider network reinforcement. Any consequential constraint costs due to the wider reinforcement not being completed on time would be paid for by users of the system.

350 http://www.ofgem.gov.uk/Networks/Trans/PT/Pages/ProjectTransmiT.aspx

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.