

## **Addendum to the *National Renewable Energy Action Plan* of 2 December 2011**

### **Additional notes to chapter 1 — Summary of the national renewable energy policy**

Objectives and measures included in Government policies, plans and programmes confirm the will to support increased usage of renewable energy sources (RES) in energy, transport, heating and cooling sectors.

The Energy Policy of Poland until 2030, adopted by the Polish government on 10 November 2009, indicates that ‘Sustainable use of individual types of energy from renewable sources will be supported. Regarding usage of biomass, the preferred solutions will be the most energy-efficient ones, *inter alia* those employing different techniques of its gasification and processing into liquid fuels, in particular second-generation biofuels. It will be crucial to use biogas from landfills, sewage treatment plants and other waste. The objective is to utilise biomass through distributed generation. As regards wind energy, the plans are to develop it both on land and offshore. A crucial role will be played by the increased usage of water power plants, both on a small scale and in larger installations, which have no material impact on the environment. Increased usage of geothermal energy is planned through utilisation of heat pumps in capturing aerothermal, hydrothermal and geothermal energy and direct usage of deeper thermal resources. Solar power will be utilised to a much larger extent than currently, through the use of solar panels and innovative photovoltaic technologies.’

The Energy Policy also specifies the main objectives in the scope of RES usage, which include:

- An increased share of renewable energy sources in final energy consumption up to at least 15% in 2020 and a further increase of this index in subsequent years,
- 10% share of biofuels in the market for transport fuel in 2020 and increased usage of second-generation biofuels,
- Protection of forests from excessive exploitation in order to obtain biomass and sustainable use of agricultural areas for RES purposes, including biofuels, in order to prevent competition between renewable energy and agriculture and to preserve biodiversity,
- Use of State Treasury-owned damming structures to produce electricity,
- Increased diversification of supply sources and creation of optimum conditions for the development of distributed energy, based on locally available raw materials.

Apart from specifying objectives, the Policy indicates specific measures to be implemented, including:

- Development of a sustainable path to 15% of RES share in final energy consumption, broken down into individual types of energy: electricity, heat, cold and renewable energy in transport,
- Maintaining support mechanisms for producers of electricity from renewable sources, e.g. through a system of certificates of origin,
- Maintaining the obligation to gradually increase the share of biocomponents in transport fuels in order to achieve the set objectives,

- Introducing additional support instruments encouraging more extensive generation of heat and cold from renewable energy sources,
- Implementing directions of construction of agricultural biogas plants, assuming that by 2020, there will be on average one biogas plant in every community,
- Creating conditions facilitating investment decisions regarding the construction of offshore wind farms,
- Maintaining the principle of excise tax exemption for energy obtained from RES,
- Direct support to building new renewable energy generation units and power grids that could be connected with the use of European funds and environmental protection funds, including funds gathered in the form of the substitution fees and fines,
- Stimulating development of the potential of Polish industry manufacturing renewable energy equipment, including using European funds,
- Support for development of technologies and construction of installations for obtaining renewable energy from waste containing biodegradable materials (e.g. municipal waste containing biodegradable fractions),
- Evaluation of the plausibility of using existing damming structures owned by the State Treasury to generate power by way of taking their inventory, establishing their framework environmental impact, and devising the rules of making them available,

Apart from the above-mentioned measures, implementation of the *Multiannual programme for promotion of biofuels and other renewable fuels for 2008–2014*, adopted by the Council of Ministers on 24 July 2007, will continue.

The assumptions of the Energy Policy, whose objective is to support development of renewable energy sources in the transport sector, will be implemented through the Polish parliament adopting another amendment to the Act on biocomponents and liquid biofuels and the Environmental Protection law, whereas in the electricity, heat and cold sectors — to the Act on renewable energy sources. All of the above-mentioned draft legal acts, pursuant to Directive 2009/28/EC, will promote development of utilisation of renewable energy sources and will be fully complementary with the above-mentioned Policy.

Additional notes to this chapter concern only table 1, according to the Commission's question.

Table 1. Expected gross final energy consumption of Poland in heating and cooling (district and non-district heat), electricity and transport up to 2020 taking into account the effects of energy efficiency and energy saving measures 2010-2020 [Mtoe]\*

Description	2005	2010		2011		2012		2013		2014	
	base year	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency
(1) heating and cooling (district and non-district)	37.1	31.6	32.4*	33.0	32.5	34.7	32.7	35.9	32.8	37.3	32.9
(2) electricity	12.5	12.9	12.1	13.4	12.3	14.0	12.5	14.4	12.7	14.9	12.9
(3) transport as in Article 3(4)a	12.4	16.8	16.8	17.0	17.0	17.5	17.2	17.5	17.4	17.7	17.6
<b>(4) Gross final energy consumption</b>	<b>62.0</b>	<b>61.3</b>	<b>61.3</b>	<b>63.4</b>	<b>61.8</b>	<b>66.2</b>	<b>62.4</b>	<b>67.8</b>	<b>62.9</b>	<b>69.9</b>	<b>63.4</b>

Source: Our work based on forecasts included in the Energy Policy of Poland until 2030. The table structure and headings are consistent with Decision 2009/548/EC.

\* implementation of measures aimed at increasing the energy efficiency in heating and cooling during the initial period of introduction of the additional energy efficiency plan will increase individual energy consumption as compared to lack of such measures, according to the reference scenario

Table 1. (continued) Expected gross final energy consumption of Poland in heating and cooling, electricity and transport up to 2020 taking into account the effects of energy efficiency and energy saving measures 2010-2020 [Mtoe]

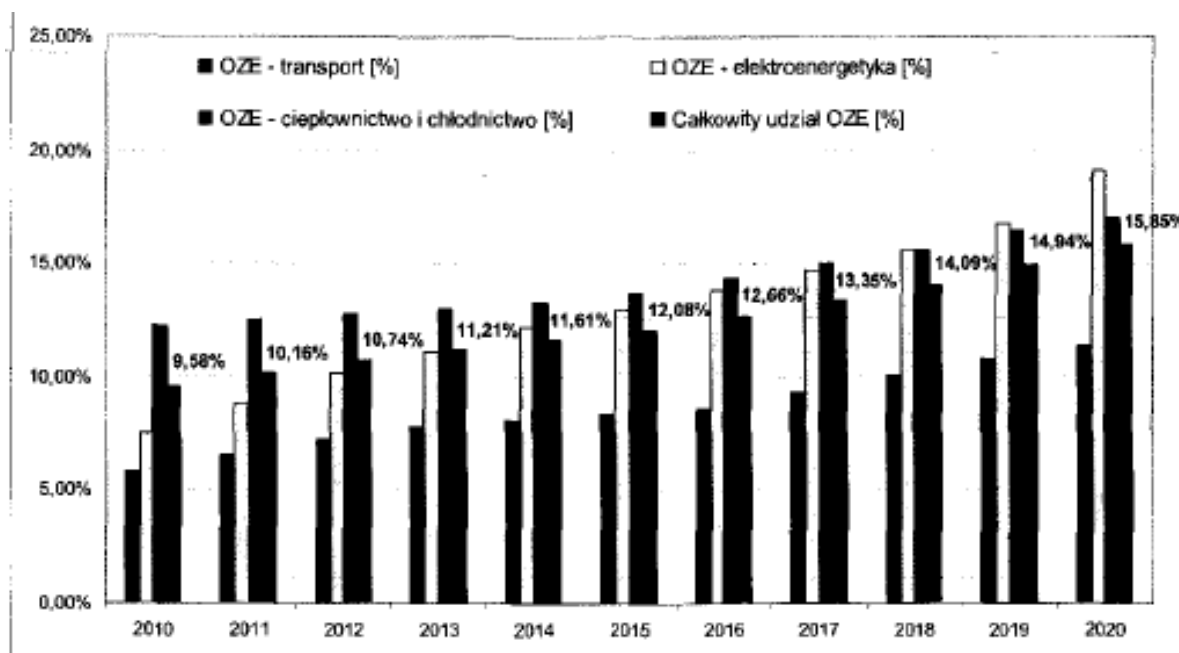
Description	2015		2016		2017		2018		2019		2020	
	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency
(1) heating and cooling	38.8	33.1	40.3	33.4	41.8	33.8	43.2	34.1	44.7	34.4	46.2	34.7
(2) electricity	15.3	13.1	15.7	13.4	16.2	13.7	16.6	14.0	17.1	14.3	17.4	14.6
(3) transport as in Article 3(4)a	17.9	17.8	18.2	18.2	18.6	18.6	19.0	19.0	19.5	19.5	19.9	19.9
<b>(4) Gross final energy consumption</b>	<b>72.0</b>	<b>64.0</b>	<b>74.2</b>	<b>65.0</b>	<b>76.6</b>	<b>66.1</b>	<b>78.8</b>	<b>67.1</b>	<b>81.1</b>	<b>68.2</b>	<b>83.5</b>	<b>69.2</b>

Source: Our work based on forecasts included in the Energy Policy of Poland until 2030. The table structure and headings are consistent with Decision 2009/548/EC.

### Additional notes to chapter 3.2 — Sectoral targets and trajectories

Additional notes to the chapter concern only chart 1 and tables 3, 4a and 4b, according to the Commission's question.

**Chart 1. National 2020 target and estimated trajectory of energy from renewable sources in heating and cooling (district and non-district systems), electricity and transport [%]**



Source: Our work based on the forecast RES energy basket until 2020

RES — transport	
RES — heating and cooling	
RES — electricity	
Overall RES share	

**Table 3 National 2020 target and estimated trajectory of energy from renewable sources in heating and cooling, electricity and transport**

Description	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RES — heating and cooling (district and non-district systems) [%]	12.29%	12.54%	12.78%	13.05%	13.29%	13.71%	14.39%	15.02%	15.68%	16.50%	17.05%
RES — electricity [%]	7.53%	8.85%	10.19%	11.13%	12.19%	13.00%	13.85%	14.68%	15.64%	16.78%	19.13%
RES — transport [%]	5.84%	6.56%	7.27%	7.79%	8.05%	8.37%	8.62%	9.34%	10.09%	10.83%	11.36%
Overall RES share [%]	<b>9.58%</b>	<b>10.16%</b>	<b>10.74%</b>	<b>11.21%</b>	<b>11.61%</b>	<b>12.08%</b>	<b>12.66%</b>	<b>13.35%</b>	<b>14.09%</b>	<b>14.94%</b>	<b>15.85%</b>
<i>of which from cooperation mechanism [%]</i>		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%
<i>surplus for cooperation mechanism* [%]</i>		1.40%	1.98%	1.67%	2.07%	1.37%	1.95%	1.08%	1.82%		0.85%
<b>In accordance with Annex I, Part B to the Directive</b>		<b>2011–2012</b>		<b>2013–2014</b>		<b>2015–2016</b>		<b>2017–2018</b>			<b>2020</b>
		<b>S<sub>2005</sub>+20% (S<sub>2020</sub>-S<sub>2005</sub>)</b>		<b>S<sub>2005</sub>+30% (S<sub>2020</sub>-S<sub>2005</sub>)</b>		<b>S<sub>2005</sub>+45% (S<sub>2020</sub>-S<sub>2005</sub>)</b>		<b>S<sub>2005</sub>+65% (S<sub>2020</sub>-S<sub>2005</sub>)</b>			<b>S<sub>2020</sub></b>
RES minimum trajectory [%]		8.76%		9.54%		10.71%		12.27%			15.0%
RES minimum trajectory [ktoe]		5 439.96		6 024.51		6 907.95		8 171.82			10 380.5
<i>*adjusted surplus for cooperation mechanism [%]</i>		1.40%		1.67%		1.37%		1.08%			0.85%

\* Calculated for subsequent years, taking into account estimated trajectory (two-year) in accordance with Annex I Part B to Directive 2009/28/EC.

Source: Our work. The table structure and headings are consistent with Decision 2009/548/EC.

**Table 4a. Calculation table for the renewable energy contribution of each sector to final energy consumption 2010-2020 (ktoe)**

Description	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
(A) Expected gross final consumption of RES for heating and cooling	3 980	4 073	4 175	4 277	4 369	4 532	4 806	5 079	5 350	5 680	5 921
(B) Expected gross final consumption of electricity from RES	913	1 090	1 276	1 417	1 577	1 709	1 858	2010	2 185	2 393	2 785
(C) Expected final consumption of energy from RES in transport	981	1 115	1 250	1 356	1 417	1 490	1 569	1 737	1 917	2 112	2 260
<b>(D) Expected total RES consumption</b>	<b>5 873</b>	<b>6 277</b>	<b>6 702</b>	<b>7 050</b>	<b>7 363</b>	<b>7 731</b>	<b>8 232</b>	<b>8 826</b>	<b>9 453</b>	<b>10 186</b>	<b>10 967</b>
(E) Expected transfer of RES to other Member States	0	0	0	0	0	0	0	0	0	0	0
(F) Expected transfer of RES from other Member States and third countries	0	0	0	0	0	0	0	0	0	0	0
<b>(G) Expected RES consumption adjusted for target (D)-(E)+(F)</b>	<b>5 873</b>	<b>6 277</b>	<b>6 702</b>	<b>7 050</b>	<b>7 363</b>	<b>7 731</b>	<b>8 232</b>	<b>8 826</b>	<b>9 453</b>	<b>10 186</b>	<b>10 967</b>

*Source: Our work based on the Energy Policy of Poland until 2030. The table structure and headings are consistent with Decision 2009/548/EC.*

**Table 4b. Calculation table for the renewable energy in transport share (ktoe)**

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
(C) Expected RES consumption in transport	2.25	981	1 071	1 162	1 255	1 316	1 376	1 454	1 579	1 719	1 870	2 006
(H) Expected RES electricity in road transport	0	0	0	0	0	0	0	0	0	0	0	8
(I) Expected consumption of biofuels from wastes, residues, non-food cellulosic, and ligno-cellulosic material in transport	0	0	44	88	101	101	114	114	158	198	242	242
(J) Expected RES contribution to transport for the RES-T target: (C)+(2.5-1)x(H)+(2-1)x(I)	2.25	981	1 115	1 250	1 356	1 417	1 490	1 569	1 737	1 917	2 112	2 260

Source: Our work based on the Energy Policy of Poland until 2030. The table structure and headings are consistent with Decision 2009/548/EC.



#### **Additional notes to chapter 4.1 — Overview of all policies and measures to promote the use of energy from renewable sources**

The draft Act on RES is the response to postulates concerning the necessity to establish a transparent and cost-effective system promoting usage of RES energy. The perspective of broader utilisation of electricity from renewable sources follows from the need to protect the environment and improve energy security. Similarly, development of highly efficient co-generation using RES contributes to environmental protection, but primarily increases production efficiency. The purpose of measures taken is also to increase the production of energy from RES in the aspect of supporting technological development and innovations. Moreover, development of RES usage contributes to the creation of additional employment opportunities and to regional development, in particular in rural and poorly urbanised areas with vast RES resources. RES development also improves the security of energy supply, in particular on a local scale. Moreover, in light of obligations following, *inter alia*, from the 3x20 climate and energy package, Poland should utilise renewable energy sources to a larger and larger extent, thanks to which it will be possible to reduce the dependency on imported fossil fuels and increase usage of new energy technologies.

The drafted act will specify the principles of supporting energy generation from RES, based on the country's established energy policy and taking into account the assumed international obligations. Moreover, the purpose of the Act is to ensure conditions for optimal development and usage of energy from RES through the reduction of macroeconomic costs of its supply. This objective should be implemented by taking advantage of long-term external effects, protection of nature and natural environment, protection of fossil resources and support of further development of technologies towards reducing the costs of energy generation from RES and promotion of energy efficiency. The above will be achieved provided that energy production from RES increases to at least 15% of the share of this energy in gross final energy consumption in 2020. Apart from achieving the general objective, the drafted act should provide the basis to achieve intermediate objectives, which are as follows for individual years: 8.76% by 2012, 9.54% by 2014, 10.71% by 2016 and 12.27% by 2018. The provisions of the draft act concern, in particular, final customers in the meaning of Directive 2009/72/EC *concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC*. Moreover, the act will clarify the basic notions taken from Directive 2009/28/EC and used in the act, including: RES; aerothermal energy; geothermal energy; hydrothermal energy; gross final consumption of energy; bioliquids; guarantee of origin; support scheme.

Endeavour to increase RES share in the balance of electricity consumption requires usage of support schemes, which guarantee their systematic development. The support mechanism for entrepreneurs producing electricity from RES comprises two elements, i.e. on one hand, it shapes the principles and scope of compulsory purchase of produced electricity imposed *ex officio* on the seller, i.e. the energy enterprise to whose activity area a given source is connected; on the other hand — it provides for issuance of certificates of origin by the President of the Energy Regulatory Office, certifying the production of electricity or agricultural biogas from RES. Property rights resulting from the above-mentioned certificates of origin are subject to trade, among others at the Commodity Energy Exchange (Towarowa Gielda Energii S.A.). Every entity conducting activity involving generation or trade in electricity and selling electricity to final customers is obliged to have a specific share of electricity generated from RES in its energy basket or to pay an appropriate substitution fee. This mechanism is supported by a sanction in the form of pecuniary penalties for failure to comply with it.

Poland has made the required progress in the field of improving energy efficiency. According to the Central Statistical Office (GUS), GDP energy consumption (according to the euro exchange rate) decreased by nearly 30% over the last 10 years. In 1996, it amounted to 0.680 kgoe/EUR; in 2006, it dropped to 0.425 kgoe/EUR. Nevertheless, the efficiency of the Polish economy calculated as GDP (according to the euro exchange rate) per unit of energy is still twice lower than the European average. The draft Act on renewable energy sources also provides for the possibility to promote innovative, highly efficient technologies under flexible support instruments,

such as subsidies, loans with write-off possibilities and preference loans. Introduction of the complex support system for measures aimed at development of capacity in renewable energy production will in consequence reduce the adverse effects of the conventional energy sector on the environment and will contribute to improvement of the national energy security.

The basic requirement and objective of adopting the Act on renewable energy sources is the establishment and systematisation of support mechanisms for energy from RES, included in the provisions of the *Energy Law Act*. At the first stage, the transposition of the support schemes to promote energy from RES should refer to legislation at the level of an act, subject to transition periods of validity of regulations allowing for functioning mechanisms of support to energy from RES. It is assumed that development of new principles of supporting energy generated from RES would be differentiated depending on the carrier of renewable energy, installed power of energy-generating equipment and the date of commissioning or modernisation. The new principles will support the development of distributed renewable energy sources, determine conditions for retaining rights already acquired for the investments completed or started, their duration, and allow for reduction of end user charges. Detailed solutions will be included in the Act on renewable energy sources.

The Act on renewable energy sources should lead to transparency of the existing support to energy from RES, which will allow for increasing investments in new generating capacities. The development of energy from RES will be based on principles of rational use of existing resources of this energy, which is one of the targets of the climate and energy package implementing the European Council Conclusion of March 2007. Directive 2009/28/EC is a part of this package, based on which Poland has committed itself to increase the share of energy from renewable sources in gross final consumption of energy to at least 15% in 2020. Achieving the aforementioned objective certainly requires undertaking various analyses of the renewable energy market, continuous monitoring of energy generation at the level of overall renewable energy sector and by each technology using RES. Poland also has an opportunity to experience significant technology development with respect to extension and modernisation of the existing energy infrastructure. Implementation of the aforementioned measures has to be supported by the public administration to ensure coordination of activities at the national level, as well as application of the most consistent, flexible and efficient support mechanisms. The new legislation is aimed at allocating stronger systemic support for sustainable development of the renewable energy sector. It should be concluded that the statutory regulation level would allow for proper coordination of activities supporting the development of RES and thus achievement of even greater benefits pertaining to protection of the environment as invaluable property of society as a whole.

The Act on renewable energy sources is also aimed at improved implementation of the provisions of Directive 2009/28/EC, excluding issues regarding biocomponents and biofuels used in transport. The above-mentioned Directive imposes, *inter alia*, the obligation to introduce several definitions, overall objectives and measures necessary to achieve these objectives, principles of calculating the share of energy from RES, administrative procedures, legislation and codes, installer information and certification, guarantee of electricity from RES, access to grids and their operation, as well as reporting. Moreover, the above-mentioned Directive creates the possibility to introduce regulations concerning establishment of common systems of support for production of energy from RES by two or more EU Member States to national legislation. It is also recommended to take up other forms of cooperation between EU Member States, *inter alia* by: making statistical transfers of energy from RES; the possibility to carry out joint projects in the scope of production of energy from RES, including joint projects for energy from RES with participation of third countries, introduction of obligatory guarantees of electricity from RES and optional guarantees of heat and cold from RES.

Domestic objectives of the Act require development of specific instruments of support for development of renewable energy production in Poland and taking measures with precise specification of the manner of their realisation, including information concerning the degree of

their realisation. Programming renewable energy development has been entrusted to the minister competent for the economy.

Finally, it should be stated that the present statutory matter, i.e. the Energy Law, is already implementing the basic issues of Directive 2009/28/EC. Renewable energy sources have, pursuant to Polish law, a number of facilities, both financial (exemption of green energy from excise duty, lower costs of connecting RES to the grid, exemption of RES of total power not exceeding 5 MW from stamp duty for licence issuance, exemption of RES from annual charges constituting a burden to the costs of activity) and procedural (the obligation to purchase green energy by the so-called *ex officio* seller, priority transfer of electricity from RES).

For this reason, the planned Act, apart from optimisation of the existing support mechanism (which is currently still being developed) will transpose mainly those provisions of the Directive which are due to enter into force at a later date, i.e. the issue of obligations for buildings referred to in Article 13(4) of Directive 2009/28/EC — 2014, certification scheme for RES installers referred to in Article 14(3) of Directive 2009/28/EC — 2013.

It should be stressed that the drafted regulation has been subject to neither inter-department arrangements nor social consultations as of yet. While developing draft legal acts, the Ministry of Economy follows the procedure for development of governmental legal acts in Poland, adopted in Resolution of the Council of Ministers No 49 of 19 March 2002 *Regulations concerning work of the Council of Ministers* (Monitor Polski Official Gazette No 13, item 221 as amended). This resolution includes principles specifying transparent regulatory terms while ensuring equal and fair chances of access to drafted regulations to all interested external entities.

#### **Additional notes to chapter 4.2.1 — Administrative procedures and spatial planning (Article 13(1) of Directive 2009/28/EC).**

##### **a) List of existing national and, if applicable, regional legislation concerning authorisation, certification, licensing procedures and spatial planning applied to plants and associated transmission and distribution grid infrastructure for the production of electricity, heating or cooling from renewable sources**

In Poland, authorisation, certification and installation of renewable energy sources mean the procedure aimed at issuance of decisions allowing for conducting business activity involving production of electricity. A licence for electricity generation issued by the President of the Energy Regulatory Office upon request of the interested entity is deemed to be such a decision. The President of the Energy Regulatory Office, as a licensing authority, performs tasks aimed at determining whether a given energy source meets the prerequisites to be deemed renewable. The procedure for obtaining licences, including the period for which the licence is granted, is regulated by the provisions of the Energy Law Act.

Processes related to determining the location of investments are regulated separately for land and offshore territories of Poland. On land they are, as a rule, subject to the provisions of the Act of 27 March 2003 on *spatial planning and development* (Journal of Laws No 80, item 717 as amended), hereinafter referred to as the Act on SPD. Separate related regulations have been determined in the provisions of special laws and concern specific types of investments, e.g. public roads or EURO 2012 investments.

Pursuant to the provisions of the Act on SPD, the purpose of land, location of public purpose investments and specification of the manners and conditions of land development are determined in the local spatial development plan (Article 4(1) of the Act on SPD).

Local spatial development plans specify the borders of land for construction of facilities generating energy from renewable sources with a capacity exceeding 100 kW, as well as their safety area related with restrictions in development and usage of land and with material impact of these facilities on the environment, provided that the community determines the location of these facilities in the area covered by the local plan (Article 15(3a) of the Act on SPD).

In the case of lack of a local spatial development plan, the manner and conditions of spatial development shall be specified by way of a decision on development conditions — in this case, in relation to electricity-generating equipment and by way of a decision on determining the location of the public purpose investment — in relation to electricity transmission grids.

The decision on building permit for investments related to renewable energy sources must comply with the local spatial development plan or, if no local plan is applicable for a given investment, with a decision on conditions of development or a decision on determining the location for public purpose investment. The process of location of investments in offshore territory of the Republic of Poland is specified in the Act of 21 March 1991 *on offshore territory of the Republic of Poland and marine administration* (Journal of Laws of 2003 No 153, item 1502 as amended).

In the case of sources using energy obtained from the fall of rivers, the investor must additionally obtain the permit required by the so-called Water Law, i.e. a decision on special use of water, specified in the Act on Water Law. All deadlines and procedures concerning licences, connection and the entire process of localisation and construction of the investment are clearly specified in relevant provisions. A person applying for issuance of the appropriate decisions is entitled to receive complete necessary information (including the necessary costs) and complete aid from competent administrative units.

It should be noted, at the same time, that social entities are entitled to actively participate in every stage of the administrative process aimed at issuance of a building permit.

In the case of installation of solar panels, there are also simplified installation procedures in place. In accordance with Article 29(2)(16) in reference to Article (30)(1) of the *Construction Law Act* of 7 July 1994 (Journal of Laws of 2010 No 243, item 1623, as amended), the installation of standalone solar panels does not require obtaining a building permit or a notification. Neither is a building permit or a notification required in the case of construction works involving installation of equipment on structures — Article 29(2)(15) in reference to Article 30(1) of the *Construction Law Act*. The exception is installation of equipment exceeding 3 m on structures; such equipment, pursuant to Article 30(1)(3)(b) of the *Construction Law Act*, requires notification to the competent authority. This means that in order to install equipment under 3 m, there is no obligation to obtain a building permit or to make a notification. Thus, installation of solar panels on a building structure, together with the fastening structure, does not require notifying the competent authority or obtaining a building permit, unless the entire installation exceeds 3 m in height.

To obtain systemic support in the form of green certificates, the installation must obtain the above-mentioned licence and be connected to the operator of the district system. An investor who does not want to use such support but only to generate electricity for their own needs is exempted from the necessity to obtain a licence and a decision about connection conditions. It should also be stressed that it is not necessary to have a licence or connection in order to use direct support or preference loans. In the case of such support, the institution implementing a given scheme addressed to producers of energy from renewable sources determines clear, transparent and generally available criteria.

#### **b) Responsible Ministry(ies)/authority(ies) and their competences in the field**

The authority responsible for issuance of an extract or outline from local spatial development plan or for issuance of decision on terms of land development is the Head of the community, Mayor or City President. The decision on environmental conditions is issued, pursuant to Article 75 of the Act of 3 October 2008 on making available the information about the environment and its protection, on the participation of the society in environmental protection and on the assessments of the effects on the environment (Journal of Laws No 199, item 1227 as amended), by the regional director of environmental protection, Director General of Environmental Protection, the district leader, the director of the Regional Directorate of State Forests, Head of the community, Mayor or the City President. The environmental authority participating in proceedings concerning issuance of this decision is the regional director of

environmental protection or the Director General of Environmental Protection (exclusively in the case of investments in the scope of construction of nuclear energy facilities and accompanying investments).

Permits pursuant to the Water Law for special use of waters are issued by the District leader, Marshall of the Voivodship or the Director of the Regional Water Management Board.

The authority responsible for issuance of decisions on building permits is the District leader or the Voivode. It should be explained that a building permit is not a decision on the location. A decision on the location is a decision on the terms of spatial development of land, specified in the Spatial Planning and Land Development Act. Pursuant to the provision of Article 4(2) of the Act on SPD, the location of a public purpose investment is determined by way of decision on the location of the public purpose investment. The manner of land development and development terms for other investments are determined by way of decision on development conditions. The decision on building permits, pursuant to Article 3(12) of the Construction Law Act, is an administrative decision permitting commencement and continuation of construction or performance of construction works other than construction of a building structure.

Pursuant to the Act of 21 March 1991 *on marine areas of the Republic of Poland and maritime administration* (Journal of Laws of 2003 No 153, item 1502 as amended), in the case of adoption of a *spatial development plan of inland waters, territorial sea and exclusive economic area*, the permit for construction and use of artificial islands, structures and devices in the exclusive economic area of the Republic of Poland shall be issued by the director of the competent maritime office.

In the case of lack of a *spatial development plan of inland waters, territorial sea and exclusive economic area*, the permit for construction and use of artificial islands, structures and devices in the exclusive economic area of the Republic of Poland shall be issued by the minister competent for maritime economy, upon receiving opinions from the ministers competent for the economy, culture and national heritage, fishery, the environment, the interior and the Minister of National Defence.

Issuance of a decision on connecting an installation to the energy grid is the competence of the regional Electricity Distribution System Operator or, in the case of application for connection to electricity transmission grid, the Transmission System Operator.

A licence for production of energy from RES, regardless of the installation capacity, shall be issued by the President of the Energy Regulatory Office.

Entrepreneurs conducting business activity in the area of production of agricultural biogas or electricity generation from agricultural biogas are covered by the obligation of entry to the register kept by the President of the Agricultural Market Agency.

### **c) Revision foreseen with the view to take appropriate steps as described by Article 13(1) of Directive 2009/28/EC**

As stated above, the applicable provisions regulate issues related to planning, construction and operation of RES installations. In issuance of decisions, competent authorities must observe the principles of objectivity, transparency, proportionality and non-discrimination. Moreover, simplified legal regulations regarding commencement of business activity for entities producing agricultural biogas or generating electricity from agricultural biogas are already in force in the Polish law (such entities are not subject to the obligation to obtain a licence; only the obligation of entry into the appropriate register kept by the President of the Agricultural Market Agency).

The solutions planned in the Act on renewable energy sources will offer additional facilities for sources generating energy from renewable sources. However, since the debate on the proposal of such solutions has yet to begin, it is impossible to list specific concepts which will become effective. The planned solutions include, *inter alia*, additional administrative facilities regarding the location and connection of RES, along with procedural facilities and preference for micro-RES installations. The proposals of the above-mentioned solutions are included in the draft Act on renewable energy sources, which will amend some other acts systemically regulating the subject

issues, *inter alia* in the chapter concerning amendments to the applicable provisions. The necessity to implement the above-mentioned administrative facilities is directly due to, *inter alia*, Article 13 of Directive 2009/28/EC.

At the same time, due to the multiple stages of the lawmaking process, it is currently impossible to determine when the planned Act will enter into force or what its final shape will be. It should become effective by the date allowing for the fastest possible implementation of the obligations under Article 13(4) and (5) of Directive 2009/28/EC.

**d) Summary of the existing and planned measures at regional/local levels (where relevant)**

Pursuant to the Energy Law Act, establishment and implementation of energy policy at the national level is the responsibility of the minister competent for the economy. At the same time, local self-government units, such as poviats or communities, can establish detailed schemes in the scope of energy management.

Moreover, communities — the basic units of local self-government — are legally obliged to develop Plans for supplying the community with heat, electricity and gas fuel.

**e) Are there unnecessary obstacles or non-proportionate requirements detected related to authorisation, certification and licensing procedures applied to plants and associated transmission and distribution grid infrastructure for the production of electricity, heating or cooling from renewable sources, and to the process of transformation of biomass into biofuels or other energy products? If so, what are they?**

The procedure for obtaining licences for renewable sources is based on the application and the applicant's declarations. Therefore, the current system of authorisation, certification and licensing procedures, following directly from the transposal of directives concerning environmental protection, is optimal in Poland's opinion. The planned Act on renewable energy sources will propose implementation of additional facilities and exemptions in this scope. Positive solutions, stimulating the development of micro-RES installations, will include, for instance, their exemption from the necessity to obtain a licence in exchange for introduction of a simplified mechanism of registration of such installations. The above also follows from the obligations to establish facilities in the scope of their connection to the electricity grid, as well as to propose facilities regarding their location and installation. The proposals of the above-mentioned solutions are included in the draft Act on renewable energy sources, which will systemically regulate the subject issues, *inter alia* in the chapter concerning business activity in the scope of generating energy and producing fuels from RES. The necessity to implement the above-mentioned administrative facilities is directly due to, *inter alia*, the provisions of Directive 2009/28/EC.

It should also be stressed that entities which intend to produce agricultural biogas or generate electricity from agricultural biogas are already exempt from the obligation to obtain a licence and only require entry in the register kept by the President of the Agricultural Market Agency.

**f) What level of administration (local, regional and national) is responsible for authorising, certifying and licensing renewable energy installations and for spatial planning? If more than one level is involved, how is coordination between the different levels managed? How will coordination between different responsible authorities be improved in the future?**

The President of the Energy Regulatory Office is a central government administration body, supervised by the minister competent for the economy, whose scope of obligations has been specified in Article 23 of the Energy Law Act. The most crucial tasks of the President of the Energy Regulatory Office include, *inter alia*, granting and withdrawing licences, approval and control over application of gas fuel, electricity and heat tariffs with respect to compliance with the principles set forth in Articles 44, 45 and 46 of this Act, including analysis and verification of costs accepted by energy enterprises as justified for calculation of prices and rates of tariff fees;

imposition of pecuniary penalties on principles specified in the Act; cooperation with competent authorities in countering competition reduction practices of energy enterprises; determining methods of controlling and taking measures to improve the efficiency of energy enterprises; determining and publishing indices and index prices crucial for the tariff determination process; publication of information aimed at increasing the efficiency of usage of fuels and energy; issuance of certificates of origin referred to in Article 9e(1) and certificates of origin from co-generation, referred to in Article 91(1), as well as their discontinuation.

Pursuant to Article 9p of the Energy Law Act, business activity involving production of agricultural biogas or generation of electricity from agricultural biogas is regulated activity, which requires entry to the appropriate register, kept by the President of the Agricultural Market Agency. The Agricultural Market Agency is a state-owned legal person. The Agency is supervised by the minister competent for agricultural markets, and in the scope of financial management — the minister competent for public finance. Moreover, Article 9r of the above-mentioned Act stipulates that an energy enterprise which conducts the above-mentioned activity is obliged to send the Agency data concerning:

- the amount and type of raw materials used to produce agricultural biogas or to generate electricity from biogas,
- the amount of produced biogas, with specification of agricultural biogas entered into the gas distribution network, used for electricity generation in a separated or co-generation system or used in a different manner,
- the amount of heat and electricity generated from agricultural biogas in a separated or co-generation system.

The President of the Agricultural Market Agency is also entitled to inspect the business activity involving production of agricultural biogas or generation of electricity from agricultural biogas. The procedure of inspections and authorisation of inspectors have been set forth in Article 9s of the Energy Law Act.

Spatial planning is carried out at three levels:

- local-communal,
- regional-voivodship and
- national.

The arrangements of planning acts at individual levels are coordinated at the stage of preparation of the draft planning document. The appropriate authority applies for an opinion to competent authorities in order to obtain the opinion and arrangements. The authority preparing the draft spatial development plan of the voivodship also applies for an opinion to the competent institutions and authorities, as well as to the voivode, poviats boards, heads of communities, mayors and presidents of cities located in the voivodship as well as government and self-government public administration bodies in on land adjacent to the borders of the voivodship — Article 41(6) of the Act on SPD. At the national level, pursuant to Article 46 of the Act on SPD, the minister competent for construction, spatial management and housing coordinates the compliance of spatial development plans of voivodships with the concept of spatial development of the country. At the level of local planning, the study project requires arrangement with the voivodship board and the voivode in the scope of its compliance with arrangements of programmes referred to in Article 48(1) of the Act on SPD and application for opinions regarding solutions adopted in the study project — Article 11(6) of the Act on SPD. The Act on spatial planning and development introduces the obligation to prepare a plan in accordance with the findings of the study.

At the same time, it should be stressed that the areas where facilities generating energy from renewable sources with a capacity exceeding 100 kW will be located, as well as their safety area related with restrictions in development and usage of land, will be determined in particular in the communal study and in the local plan.

**g) How is it ensured that comprehensive information on the processing of authorisation, certification and licensing applications and on assistance to applicants is made available? What information and assistance are available to potential applicants for new renewable energy installations on their applications?**

The President of the Energy Regulatory Office conducts all proceedings related with granting licences for generation of energy from renewable sources in a thorough and comprehensive manner. The applicants for licences also receive necessary information and support with regard to formal and technical requirements regarding the submitted documentation. In the case of agricultural biogas plants, applications concerning new installations are considered by the President of the Agricultural Market Agency.

The President of the Energy Regulatory Office has also published a so-called Information Package (RES) for entrepreneurs intending to conduct business activity involving generation of electricity from renewable energy sources on the Office's website (<http://www.ure.gov.pl/portal/pdb/471/784/>). This study describes, step by step, the entire procedure for obtaining licences and lists all documents required when submitting an application for a licence. The study is also available in English, allowing representatives of foreign capital to acquaint themselves with conditions of investing in RES in Poland.

Additionally, a package has been prepared and published in order to inform about the possibilities for entities to obtain support in the form of certificates of origin, which for new investors constitutes information allowing them to plan the path of obtaining potential benefits already at the stage of business plan. The study is available in Polish and English.

**i) Do authorisation procedures take into account the specifics of the different renewable energy technologies? If so, please describe how. If they do not, do you envisage taking them into account in the future?**

The procedure for obtaining licences requires specification of which technology these licences are to concern; however, they are issued in an objective, transparent, proportional manner which does not discriminate any generation technology. Installations for co-incineration of biomass or biogas with other conventional fuels additionally require the applicant to prepare a so-called certifying documentation. A complete set of materials in this scope (both in Polish and English) is available on the website of the Energy Regulatory Office.

**k) Where are the fees associated with applications for authorisation/licences/permits for new installations published? Are they related to the administrative costs of granting such permits? Is there any plan to revise these fees?**

Fees related with issuance of administrative decisions and licences are regulated in the Act of 16 November 2006 on stamp duty (Journal of Laws No 225, item 1635 as amended).

The obligation to pay the stamp duty on issuance of licence occurs upon submission of application for its issuance. The rates of duties with respect to tasks related with the scope of activity of the President of the Energy Regulatory Office are available on the website of the Energy Regulatory Office and amount to:

- for a promise to issue a permit (licence promise) — PLN 98,
- for extending the validity date or changing the conditions of a promise to issue a permit (licence promise) — PLN 44,
- for issuance of a permit (licence) — PLN 616,
- for extending the validity date or changing the conditions of an issued permit (licence) PLN 308 or 616 (depending on whether the application concerns only extension of validity or expansion of activity or whether the application concerns subsequent activity).

It should be stressed that applicants for licence for an installation whose total installed capacity does not exceed 5 MW are exempt from the duty for issuance of licence and from annual charges encumbering their activity.

Duties for issuance of other administrative decisions are as follows:



- for issuance of a decision on conditions of land development — PLN 107,
- for approval of a building design — PLN 47,
- decision on environmental conditions of permit for implementation of the undertaking — PLN 205,
- extract and outline from the local spatial development plan — up to PLN 200,
- for issuance of a building permit — PLN 1/m<sup>2</sup> of the building's usable area,
- for issuance of a permit pursuant to Water Law — PLN 217.

Moreover, pursuant to Regulation of the Prime Minister of 5 May 1998 *on the amount and manner of collection of annual charges by the President of the Energy Regulatory Office from energy enterprises which have been granted licence*, energy enterprises which have been granted licence are obliged to pay an annual charge. Pursuant to §1.1. of the above-mentioned Regulation, the amount of the annual charge is the product of income of the energy enterprise obtained from sale of products (goods and services) or commodities in the scope of its activity covered by the licence, obtained during the year preceding determination of the charge, and so-called charge coefficients.

These coefficients have been presented in Summary 1.

Summary 1. Charge coefficients

Item	Type of licensed activity	For electricity, heat and gas fuels	For other fuels
1	Fuel production and energy generation	0.0006	0.0004
2	Fuel storage	0.0006	0.0004
3	Fuel and energy transmission and distribution	0.0006	0.0004
4	Trade in fuels and energy	0.0006	0.0004

Currently, no changes to the rates of the above-mentioned charges are planned.

**l) Is official guidance available to local and regional administrative bodies on planning, designing, building and refurbishing industrial and residential areas to install equipment and systems using renewable energy sources in electricity and heating and cooling, including in district heating and cooling? If such official guidance is not available or insufficient, how and when will this need be addressed?**

It is assumed that the obligatory share of renewable energy sources would be fulfilled, for instance, in the case of usage of electricity supplied by operators of distribution systems of the electricity grid, and in the scope of heat — usage of 'green heat' supplied by the systemic provider or generated using solar panels. Such obligations will occur upon entry of the above-mentioned Act into force. There are currently no plans regarding preparation of guidance on planning, designing, building and refurbishing industrial and residential areas to install equipment and systems using RES in electricity, heating and cooling.

**m) Are there any specific trainings for case handlers of authorisation, certification and licensing procedures of renewable energy installations?**

Pursuant to the Act of 21 November 2008 *on Civil Service* (Journal of Laws No 227, item 1505, as amended), employees of the Energy Regulatory Office, including the ones responsible for issuance of licences, are a part of civil service corps. Article 4 of the above-mentioned Act stipulates that civil service may employ a person who, *inter alia*, has the qualifications required for a given job. However, pursuant to information from the President of the ERO, office employees do not undergo trainings in the scope of types of renewable sources used by entrepreneurs and other trainings useful for licensing sources using RES.

**Additional notes to chapter 4.2.6 — Electricity infrastructure development (Article 16(3) and Article 16(3) to (6) of Directive 2009/28/EC)**

**b) How is it ensured that transmission and distribution grids will be developed with a view to integrating the targeted amount of renewable electricity while maintaining the secure operation of the electricity system? How is this requirement included in the transmission and distribution operators' periodical grid planning?**

The national electricity grid can be divided, according to the voltage it operates in, into transmission and distribution grids. High-voltage grids (the transmission grid) are managed by the Electricity Transmission System Operator (TSO), whereas low-voltage grids (the distribution grid) — by Electricity Distribution System Operators (DSO). A part of the high-voltage grid (110 kV) is an asset of and is managed by the DSOs. These entities are responsible, *inter alia*, for maintenance and modernisation of individual grid fragments. Detailed obligations of the above-mentioned operators are stipulated in Article 9c of the Energy Law Act. TSO and DSO are commercial companies, operating pursuant to the Act of 15 September 2000 — Code of Commercial Companies. Pursuant to Article 9k of the Energy Law Act, TSO operates in the form of a joint-stock company, whose sole shareholder is the State Treasury. Article 12a of the above-mentioned Act stipulates that the rights of the State Treasury in relation to TSO are executed by the minister competent for the economy. Thanks to this, the Minister of Economy can supervise safety, development and modernisation of the transmission grid. This is particularly important from the point of view of development and implementation of the national energy policy.

Ensuring continuous coverage of energy requirements, taking into account the maximum possible usage of national resources and environmentally-friendly technologies, is one of the basic tasks specified in the Energy Policy of Poland until 2030. This objective is implemented through elementary objectives, which include:

- Development of new capacities in order to balance the national demand for electricity and maintain the operationally available surplus at the peak capacity available in national conventional and nuclear generation sources at a level of at least 15% of the maximum domestic demand for electricity,
- Construction of interventional electricity generation sources, required for safe operation of the electricity system,
- Expansion of the domestic transmission system, enabling sustainable economic growth of Poland and its individual regions and ensuring reliable supply of: electricity (in particular closing the 400 kV ring and rings surrounding major cities of Poland), as well as receiving electricity from areas with large saturation of planned and newly built generation units, with particular focus on wind farms,
- The development of cross-border interconnections coordinated with extending the domestic transmission system, as well as the systems in neighbouring countries, which will allow exchanging at least 15% of electricity used in Poland by 2015, 20% by 2020 and 25% by 2030,
- Modernisation and expansion of distribution grids for the purpose of improving the reliability of supply and development of distributed power distribution, using local energy sources,
- Modernisation of transmission and distribution grids, for the purpose of 50% reduction by 2030 of supply interruptions caused by breakdowns in 2005.

Requirements relating to grid development were identified and subsequently realised on the basis of applications for connection to the grid submitted to TSO and DSO. In accordance with the *Energy Law Act*, the development of transmission and distribution grids with a view to integrating the targeted amount of renewable electricity while maintaining the secure operation of the electricity system is the responsibility of energy companies responsible for energy transmission or distribution. These companies are appointed by the President of the Energy Regulatory Office of Poland as operators of electricity systems in the area of the grid based on

which their business activities are carried out, in accordance with the transmission or distribution licence granted by the President of the Energy Regulatory Office of Poland. The President of the Energy Regulatory Office of Poland appoints operators at the request of grid owners, pursuant to the provisions of the Energy Law Act. These companies are obliged to prepare the development plans with regard to meeting the current and the future demand for energy in the area of their activities. The development plans take into account local special development plans or directions of community development set forth in the study of conditions and directions of spatial development of the community. They cover a period of at least five years and include, in particular, projects involving modernisation, extension and construction of the grid, as well as targeting potential new sources of gas fuels, electricity or heat, including RES. The plans also include projects involving modernisation, extension or construction of connections to energy systems of other countries. These plans present the expected investment financing method, expected revenues necessary for executing the plans and expected investment implementation schedule. In accordance with the Energy Law Act, draft plans are agreed with the President of the Energy Regulatory Office of Poland since they influence the level and calculation of transmission and distribution tariffs, which allow for obtaining financial resources for the development of transmission and distribution grids.

Pursuant to Article 16(2a) of the Energy Law Act, PSE Operator SA develops the development plan in the scope of current and future demand for electricity for periods of at least 5 years, as well as forecasts concerning safety of electricity supply for periods of at least 15 years. Development conditions taken into account therein include the diagnosis of the current situation and forecast changes. For the purpose of preparing a development plan, the assumed conditions follow from the current assessment of grid operation, forecast increase in demand for electricity and power, forecast development of the generation sector and indices resulting from Poland's energy policy, including from the objectives of the climate package. The most crucial conditions affecting the correct performance of tasks implemented by the TSO within the long-term horizon include:

- macroeconomic assumptions;
- forecast demand for power and electricity;
- the possibility to cover the forecast demand, taking into account the requirements concerning the share of RES in coverage of demand;
- cooperation with Distribution System Operators;
- the technical condition of the National Transmission Grid (NTG);
- support of operation of the electricity market;
- possible directions of expansion of cross-border interconnections;
- sources of financing of NTG development.

NTG Development Plan specifies the set of TSO investment objectives:

- ensuring the capacity of the transmission grid to cover the forecast demand for power and electricity,
- enabling safe operation of the grid and liquidation or reduction of grid restrictions occurring in the national transmission system,
- enabling development on national and international markets for electricity.

In preparation of the NTG Development Plan, the basic operation safety criterion assumed was observing the rule of  $n-1$  reliability of supply. Compliance with this rule means that if any single system component is shut down (e.g. a single line conductor, transformer, busbar section or energy unit), the permissible load and voltage parameters will not be exceeded for any component and that the stability of its operation will not be threatened. The assumed economic criterion — excluding investments ensuring energy safety — is a situation where discounted costs of construction and usage of transmission grid components will not exceed the benefits related with such an undertaking. Moreover, in the current conditions, the NTG Development Plan should

ensure optimisation of investment expenditures, optimisation of operating costs and distribution of expenditures over time in such a manner so that operating costs and expenditures do not give rise, in individual years, to excessive increases of prices and rates of charges for transmission of electricity, ensuring continuity, reliability and quality of supply. Between 2012 and 2016, investments are planned in order to ensure the effects listed in the following summaries.

Summary 2. Numbers of kilometres of planned expansion and modernisation of transmission lines, according to voltage

Voltage [kV]	Type of undertaking	Length [km]	
		Route	Conductors
220		938	1 377
		794	1 250
	new	115	115
	modernised	961	842

Summary 3. Tangible effects of investment undertakings in the scope of ATR installation [MVA]

TR type	Year of installation / [MVA]					
	2012	2013	2014	2015	2016	TOTAL
400/220	0	1 000	1 000	0	500	2 500
	1 800	1 230	2 790	330	2 460	8 610
220/110	0	1 925	870	0	550	3 345
<b>TOTAL</b>	1 800	4 155	4 660	330	3 510	14 455

As regards the operation of the electricity distribution system, between 1 October 2010 and the end of January 2011, the President of ERO appointed 16 grid operators. Currently, all Distribution System Operators (DSO) have Development Plans for distribution systems in their areas, approved by the President of ERO. Distribution System Operators can be divided into 2 groups:

- So-called industrial operators, conducting business activity in the area of local electricity distribution (operation of the grid has no material impact on the National Energy System (NES)). For these operators, there is no uniform validity period of arranged development plans.
- Operators who separated their activity on 1 July 2007 (PGE Dystrybucja, ENEA Operator, Energa operator, Enion, EnergiaPro, Stoen Operator and VDP) and in relation to whom development plans have been arranged with the President of ERO for the years 2011–2015.

The total grid length planned for reconstruction/modernisation or construction covered by these plans is presented in Summary 4.

Summary 4. Development plans for electricity distribution grid

Expansion and construction of new lines related with connecting customers and sources [km]	2011	2012	2013	2014	2015
HV 1 conductor	111	98	215	192	127
HV 2 conductors	45	120	114	92	65
MV 1 conductor	1 572	1 579	1 415	1 392	1 472

MV 2 conductors	16	6	5	6	5
LV 1 conductor	3 357	3 625	3 587	3 588	3 541
LV 2 conductors	23	50	15	3	4
<b>Modernisation and reconstruction of lines and grid expansion unrelated with connection [1 km]</b>					
HV 1 conductor	778	635	824	992	1 236
HV 2 conductors	96	147	188	186	242
MV 1 conductor	2 536	2 688	2 915	3 221	3 271
MV 2 conductors	15	27	21	12	4
LV 1 conductor	2 565	2 791	3 124	3 225	3 251
LV 2 conductors	47	46	49	43	31

*Source: ERO's own study on the basis of information included in development plans arranged with the President of ERO with 7 of the above-mentioned DSOs.*

Measures taken by individual DSOs in order to solve the issues of grid capacity limits in order to connect RES are included in the above-mentioned Development Plans, covering both construction of new lines and electricity stations, as well as modernisation of existing facilities in order to increase their capacity, also for the purposes of RES.

The presented electricity infrastructure development plans are aimed at enabling connection of renewable energy sources, but they can also be used to connect new customers of electricity. This is done in attempt to minimise district losses, i.e. achieve the effect of usage of generated electricity locally in a given area.

Modernisations of existing lines will involve mainly their adaptation to higher temperatures of operation of the working lines, exchange of working lines for lines with a maximum technically and economically justified diameter, replacement of insulation and in particular cases, usage of low-hanging lines.

It should be noted, however, that all Polish DSOs have issued connection conditions and signed agreements on connection to RES installation for a total power amounting to 17 GW. When comparing this value with the peak demand of the Polish electricity system, reaching 25 GW, it is clear that nearly 70% of the entire Polish demand, during the period of peak demand, was guaranteed for the purpose of connecting RES.

While appreciating the need for the development of district infrastructure for the purposes of electricity transmission, including electricity from RES, advanced legislative works are in progress in Poland, aimed at facilitating the extension of the grid as necessary by operators of energy systems. New legislation will intensify the development of the infrastructure, which will improve access to the system also for distributed RES installations.

Legislation facilitating access for RES producers in accordance with the provisions of Directive 2009/28/EC is also planned.

It should be stressed that projects supporting development of RES, planned by PSE Operator S.A., have obtained a positive opinion as a part of conclusion of the initiative entitled *North-South Energy Interconnections in Central-Eastern Europe* and were included on the list of the so-called *projects of common interest*. This means that in the future, they will be recommended for funding under the new financial instrument: *Connecting Europe Facility*.

**d) Is the reinforcement of the interconnection capacity with neighbouring countries planned? If so, which interconnectors, for which capacity and by when?**

Poland has currently the following cross-border interconnections with neighbouring countries:

at the border with Germany:

- Krajinik-Vierraden voltage of 400 kV, 2 conductors, currently operating under a voltage of 220 kV.
- Mikułowa-Hagenyerder voltage of 400 kV, 2 conductors.

at the border with the Czech Republic:

- Wiciopole-Albrechtice voltage of 400 kV, 1 conductor.
- Wielopole-Nošoyice voltage of 400 kV, 1 conductor.
- Bujaków-Liskovec voltage of 220 kV, 1 conductor.
- Kopanina-Liskovec voltage of 220 kV, 1 conductor.

at the border with Slovakia:

- Krosno Iskrzynia-Lemšany voltage of 400 kV, 2 conductors.

with Sweden:

- Słupsk-Stärno voltage of 450 kV (DC connection), 1 conductor.

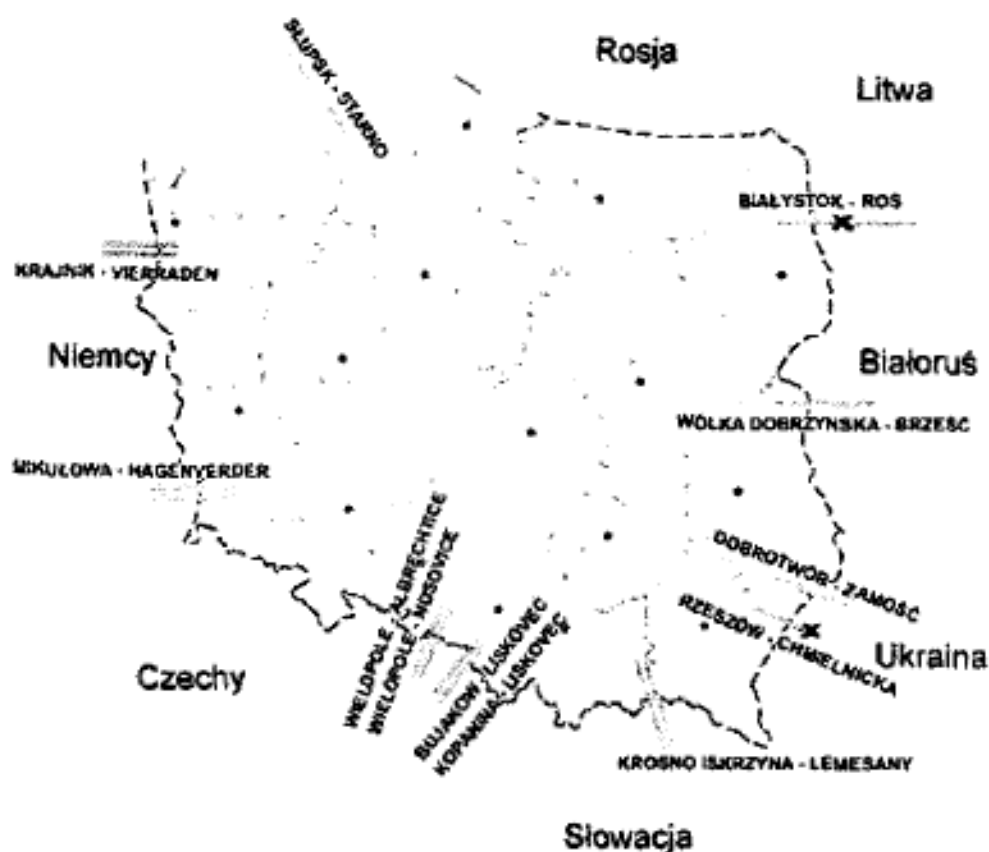
at the border with Belarus:

- Białystok-Roś voltage of 220 kV, 1 conductor. This line has been disconnected since 30 June 2004.
- Wólka Dobrzyńska-Brześć voltage of 110 kV, 1 conductor. Private line connected to the 110 kV distribution grid of PGE Dystrybucja S.A.

at the border with Ukraine:

- Dobrotwór-Zamość voltage of 220 kV, 1 conductor. This line operates in a radial system.
- Rzeszów-Chmielnicka voltage of 750 kV, 1 conductor. This line has been disconnected since 1993.

Figure 1. Current cross-border interconnections of the Polish energy system



*Source: Study of PSE Operator S.A. based on the Development Plan for meeting the present and future electricity demand, 2010-2025.*

*Summary. Konstancin-Jeziorna, March 2010*

Rosja	Russia
Litwa	Lithuania
Białoruś	Belarus
Ukraina	Ukraine
Słowacja	Slovakia
Czechy	Czech Republic
Niemcy	Germany

Additionally, it should be stated that there is a need for the development of cross-border interconnections coordinated with the development of the national transmission system and extension of systems in neighbouring countries, meeting requirements set forth by the EU with respect to the capacity at the level of 10% of national electricity production.

In theory, cross-border interconnections of the Polish National Energy System meet EU requirements with respect to the capacity at the level of 10% of national electricity production. Actual transmission capacities are lower as a result of developments in internal transmission grids of Poland and neighbouring countries. Cross-border grids in Central Europe are often busy due to the priority for energy from renewable sources. Considerable capacity installed in unstable energy sources affects, in this case, contract energy exchange opportunities, because the Polish Transmission System Operator limits the transmission capacity availability, as it reserves the capacity for sudden increases in energy production outside the Polish territory. This situation can be assessed as ensuring a sufficient level of capacity within interconnections between the countries for renewable energy production in the region. Additionally, the Transmission System Operator reserving transmission capacities for so-called '*circular flows*' of energy occurring in Central Europe often results in occupying the whole capacity and thus is a serious barrier for implementation of planned contractual energy flows.

In the long-term horizon, the plan of the development of cross-border interconnections of the energy company PSE Operator S.A. for the years 2011–2016 includes preparatory work with respect to:

- construction of an energy bridge to connect the Polish and Lithuanian energy systems,
- re-commissioning of the interconnection with Ukraine via the 750 kV line between Rzeszów and Chmielnicka,
- connection with Belarus and installing a new 400 kV Narew-Roś distribution line;
- construction of the third cross-border interconnection between Poland and Germany.
- installation of phase shifters at cross-border electricity stations of Krajnik and Mikułowa.

The increasing level of the capacity of generation sources connected and operating in the German system, both wind and heat sources, results in increased circular flows of power from the German system through the Polish system to systems of the Czech Republic and Slovakia. This may cause exceeding of border values of capacity of individual components of these systems, in particular of the Polish system and its interconnections with the German system. As a consequence, it can threaten the security of operation of interconnections between Poland and Germany, as well as security of operation of the Polish system. Such a situation also results in the reduction or lack of capacity of synchronic sections of the Polish system, which may be made available to participants of the market for electricity. Installation of phase shifters on cross-border Poland-Germany interconnections: Mikułowa—Hagenwerder and Krajnik—Vierraden will increase the security of operation of the National Electricity System (thanks to the opportunity for regulating circular flows from Germany to safe values) and increase both export and import capacity on the synchronic section.

Conclusions of the initiative entitled *North-South Energy Interconnections in Central-Eastern Europe* indicate that GERPOL Improvements project (providing for installation of phase shifters on cross-border Poland-Germany interconnections) was included on the preliminary list of the so-called projects of common interest in the NSI region and in the future, it should be recommended for financing under the new financial instrument: *Connecting Europe Facility*.

Operators of distribution systems, especially in the northern part of the country, are planning various investments involving modernisation or construction of the infrastructure aimed at connecting new users to the grid, improvement of access to the grid of renewable sources and increasing the reliability of supply, including interconnections with neighbouring countries. Closing the so-called ‘Baltic Ring’ — the transmission grid connecting Norway, Sweden, Finland, Denmark and Poland with Russia and Baltic States is one of the projects that has been discussed and prepared for about a dozen years by international Baltrel Working Group (formerly Baltic Ring). This project could result in establishing the largest global synchronised energy system, supporting over 700 million users. The diversification of sources, in particular ensuring access to renewable energy sources in wind farms and hydro power plants in Sweden, Norway and Denmark, would also ensure unprecedented security of electricity supply.

The document ‘*Energy Policy of Poland until 2030*’ provides for the development of cross-border interconnections coordinated with extending the domestic transmission system, as well as the systems in neighbouring countries, which will allow exchanging at least 15% of electricity used in Poland by 2015, 20% by 2020 and 25% by 2030.

**e) How is the acceleration of district infrastructure authorisation procedures addressed? What is the current state and average time for getting approval? How will it be improved?**

In order to obtain necessary information on resulting costs of connection and technical adaptations, and the estimated schedule of connection to the grids from the operator of the transmission or distribution system, the producer of energy from RES has to file the application for issuing the so-called ‘connection conditions’. In the application, the producer presents to the operator his data as an entrepreneur and characteristics of his generating installation, as well as needs with respect to characteristics of the connection. The connection fee is determined in accordance with currently binding principles, i.e. based on actual expenditures incurred for installing the connection. Connection conditions are issued to the producer together with a draft agreement for connection to the grid. Connection conditions remain binding for 2 years from the date of their issuance, and during that period, the operator, when issuing technical conditions to other producers, is obliged to take them into account in determining necessary changes in the grid related to a new connection, including the extent of usage of the lines making up the common grid and power of transformer and switching stations that connect grids with various voltages.

During the last years, operators noticed that only a small group of investors who received the connection conditions concluded the agreement for connection. Due to the high number of connection conditions issued to investors, many investors were not able to target sources of



financing for their energy generating installations. Some of them obtained connection conditions for speculative purposes in order to sell them to other investors. Such a situation resulted in the lack of implementation of individual generating installation designs, and thus lack of implementation of potential district investments by operators included in these conditions.

After the amendments of 8 January 2010, the *Energy Law Act* includes provisions protecting against blocking the access to the grid to reliable producers by investors of poor financial reliability. Entities applying for connection to the energy grid of sources with rated voltage over 1 kV are obliged to pay advances on account of the connection fee. This advance equals PLN 30 for each kilowatt of the connection power set in the application for connection conditions. However, the amount of the advance cannot exceed the amount of expected grid connection fee and PLN 3 million. If the amount of the advance exceeds the amount of the grid connection fee, the difference between the amount of the advance paid and the amount of this fee shall be returned together with statutory interest calculated from the date of paying the advance. The advance shall be paid within 7 days from the date of submitting the complete application for defining connection conditions, under pain of leaving the application unexamined.

One should also note the abolishment of the obligation to supplement the application for specification of connection conditions with documents confirming the legal title to the property. This obligation has been replaced by the obligation to provide an extract and outline from the local spatial development plan or decision on development conditions or decision of determining the location of public purpose investment, allowing for location of a given energy source within the property mentioned in the application. This obligation was introduced in order to give credibility to projects by entities applying for specification of connection conditions and from time's perspective, it may be assessed as an effective mechanism which allowed for reduction of the number of unrealistic projects for which applications for specification of connection conditions are submitted.

Another amendment introduced into the Energy Law Act is the fact that the operator ensures preparation of the expert opinion of the impact of the connection instead of the applicant (as was previously the case). This change is extremely important since the transfer of the obligation to ensure preparation of the expert opinion onto the operator has considerably shortened the time required for such an expert opinion and eliminated the issue of unreliable expert opinions commissioned by investors of wind farms in order to confirm the technical possibility of connection, even in the case of lack thereof.

Introduction of the above-mentioned modifications to the applicable rules concerning the procedure for submission and consideration of applications for specification of the connection conditions has been summarised in the 'Guide for connection to the transmission grid', published on the website of PSE Operator S A, (<http://www.pse-operator.pl>, 'Documents' tab — 'Templates of applications and agreements' — 'Applications for specification of conditions for connection to the National Transmission Grid'). The above-mentioned guide details the procedure for connection to the transmission grid.

Deadlines for issuing connection conditions to producers run from the date of paying the advance on account of the grid connection fee. In the case of an applicant connecting the generating sources with the rated power not exceeding 1 kV to the grid, the energy company responsible for electricity transmission or distribution is obliged to issue the connection conditions within 30 days of paying the advance. In the case of connecting a source with rated power over 1 kV to the grid, the deadline for issuing connection conditions is 150 days from when the applicant pays the application.

**l) How will it be ensured that transmission and distribution system operators provide new producers wishing to be connected with the necessary information on costs, a precise timetable for processing their requests and an indicative timetable for their grid connection?**

The *Energy Law Act* includes the obligation of the energy company to compile and publish information, in particular information on:

- entities (their registered office or place of residence) applying for connecting to the energy grid with rated voltage over 1 kV, connection point, connection power, date of issuing the connection conditions, conclusion of the connection agreement and start of electricity delivery,
- amount of available connection power for energy stations or their groups making up the grid with rated power equal 110 kV and higher, as well as planned changes of these amounts during the next 5 years after publishing these data,

The aforementioned information is published pursuant to regulations on protection of classified and other legally protected information. Such information is updated by operators at least once a month and published on their official websites and made available for review in their registered offices.

The published information enables all potential applicants to assess the possibility of connection at individual points of the grid and hence to select the location for the investment which is advantageous from the point of view of the grid and connection possibilities. The above data do not provide information concerning the costs of possible connection. This is due to the fact that the real cost of connection to the transmission grid is determined individually each time since it depends on costs borne by individual operators for connection, and hence is strictly related with technical details of the interconnection. The real connection cost depends not only on the voltage level to which the connection is planned, but also depends on the alignment of the switching station and its technology. In the case of connection to the grid of the Transmission System Operator, the connection fee does not include the expenditure on expansion of the grid, necessary to transmit the power out.

In accordance with Annex 3 to the ‘*Energy Policy of Poland until 2030*’, in the part pertaining to implementation of Article 16 of Directive 2009/28/EC, the Ministry of Economy has undertaken activities to create conditions to facilitate making investment decisions on building offshore wind farms, which covered implementation or coordination of the following tasks:

- 1) identification of legal barriers preventing or hindering the construction of offshore wind farms,
- 2) preparing draft amendments to regulations aimed at lifting the identified barriers, in particular amendments to the *Act on marine areas of the Republic of Poland and maritime administration*,
- 3) making a decision on Poland’s participation in the construction of the international offshore energy cable line (*Supergrid*) of key importance to the development of offshore wind farms, which will take place upon launching of such project,
- 4) selecting potential sites of wind farms in marine areas of the Republic of Poland.

State authorities responsible for the implementation of the aforementioned activities include:

- the minister competent for the economy (tasks 1–3),
- the minister competent for maritime economy (tasks 2 and 4),
- the President of the Government Legislation Centre (task 2),
- field maritime administrative bodies (task 4).

One of the measures was amendment of provisions facilitating construction of offshore wind farms (OWF) on the Baltic Sea, introduced by the Act of 26 May 2011 amending the Act on offshore territory of the Republic of Poland and maritime administration (Journal of Laws No 134, item 778). It should be stated that the above-mentioned regulation, *inter alia*, adjusts the provisions regulating issuance of permits for construction and utilisation of artificial islands, structures and facilities to the conditions of the investment process in offshore wind energy industry. The basic provision is prolonging the validity of the permit for implementation and use of the undertaking from the period of 5 years to 30 years, since preparing OWF projects together with an application for permit for construction and utilisation may take up to 7 years, taking into

account the necessity to perform a number of specialised, long-term research on maritime environment, necessary to obtain the decision on environmental conditions and develop a correct technical project. Moreover, the Act introduces a mechanism of prolonging the validity of the permit for a subsequent 20 years, provided that the hitherto use of the investment was compliant with the issued permit, and moreover, mechanisms protecting from blocking the location of projects which are not being implemented. Another equally important amendment is spreading the payment for issuance of permit for construction and utilisation of artificial islands, structures and facilities offshore in the exclusive economic area so as to take into account the financial reality of preparation of this kind of undertakings. Moreover, the Act removes the risk of overly long arrangements between competent authorities in the process of issuance of permit for construction of artificial islands, structures and facilities.

It should be stressed that the Energy Law Act together with implementing regulations settles the issues of connecting new sources to the grid in a comprehensive manner. A detailed description of connection is provided in item (e) of chapter 4.2.6 — Electricity infrastructure development.

To synthesise the information included therein:

- the applicant submits an application for connection to the grid to the appropriate electricity system operator,
- the application should contain the entity's data, the characteristics of the planned installation, the legal title to the land on which it is to be constructed and the requirements concerning connecting this installation to the grid,
- in the case of connection to a grid with rated voltage over 1 kV, except for connection of units with installed power of up to 2 MW, the energy enterprise involved in electricity transmission or distribution (the operator) is additionally obliged to prepare the so-called expert opinion on the impact of the connected source on the functioning of the electricity system,
- entities interested in connecting the source to a grid with rated voltage above 1 kV are additionally obliged to provide, along with the application, an advance for connection in the amount of PLN 30 for each 1 kW of power specified in the application for connection, but not more than PLN 3 million,
- the appropriate electricity system operator, on the basis of the submitted application for connection of the new source to the grid and upon the entity meeting all of the above-mentioned conditions, is obliged to issue the conditions for connecting to the grid (along with conditions, a draft agreement on connection conditions is submitted) within 30 days (for sources connected to a grid of up to 1 kV) or 150 days (for sources connected to a grid of above 1 kV),
- the connection conditions take into account the requirements, obligations and preferences of both parties, i.e. the entrepreneur interested in connecting the source to the grid and the electricity system operator,
- the issued connection conditions constitute the electricity system operator's obligation to conclude and agreement on connection to the grid with the entity interested in connecting a given source to the grid,
- the operator is obliged to conclude the above-mentioned agreement on connection within 2 years, which enables physical connection of the source to the grid,
- one of the conditions for connection to the grid, and later for the agreement, is a connection fee for a given source, which differs and depends, *inter alia*, on the length of connection, the condition of electricity infrastructure or other technical conditions,
- the fee is determined by the appropriate operator on the basis of real expenditure incurred for implementation of the entire connection,
- RES installations with power of up to 5 MW and co-generation sources with power of up to 1 MW bear half of the fee calculated by a given operator.

The total permissible waiting time for the entity interested in connection to the grid, as well as for compliance with all conditions of the electricity system operator (including incurring the necessary costs) amounts to:

- in the case of connection to a grid with rated voltage of up to 1 kV — up to 29 months,
- in the case of connection to a grid with rated voltage above 1 kV — up to 25 months.

From the point of view of the development of RES in Poland, proposing new regulations aimed at earlier notification of investors interested in construction of RES installations about the possibilities to connect to the grid will be of crucial importance.

#### **Additional notes to chapter 4.2.9 — District heating and cooling infrastructure development (Article 16(11) of Directive 2009/28/EC)**

It is assumed that under implementation of the directive, a solution will be proposed, involving imposition of obligatory share of green energy in the systemic heat supplied to buildings. Another suggested obligation will apply to the buildings in the scope of the share of green heat. In theory, such an obligation could be, to a large extent, implemented by systemic heat suppliers, which at the same time would persuade enterprises involved in district heat distribution to develop their infrastructure. It is estimated that the cost of purchase of CO<sub>2</sub> emission rights will make the costs of heat generation from biomass competitive in relation to the costs of heat generation from other fuels.

It should also be emphasised that Article 9a(7) of the Energy Law Act of 10 April 1997 (Journal of Laws of 2006 No 89, item 625 as amended) specifies the obligation to purchase heat from renewable sources.

This obligation is deemed to be met if the heat offered for sale, generated in renewable energy sources, was purchased in the amount it was offered in or in the amount equal to the needs of the customers of the energy enterprise implementing this obligation and connected to the heating grid to which the renewable energy source is connected, proportionally to the share of this source in the total power ordered by the customers, taking into account the characteristics of reception and the possibilities to transmit the heat generated in this source, provided that the costs of purchase of this source will not cause an increase in heat prices or rates of charges for heat supplied to customers in a given year by more than the value of average annual growth index of prices on consumer goods and services in total in the preceding calendar year. If more than one energy enterprise is involved in trade in heat and sells this heat to customers connected to interconnected and cooperating heating grids, the purchase obligation applies to heat generated in renewable energy sources connected to these grids, in an amount proportional to the share of each of these enterprises in total sale of heat by all energy enterprises supplying heat to customers connected to the grid. Justified costs incurred in relation to carrying out the above-mentioned obligation, taken into account in tariffs, shall be costs of purchase of heat which will not cause in the energy enterprise, in a given year, an increase in prices or fee rates for heat supplied to the customers, by more than the value of the average annual index of prices of consumer goods and services in total in the preceding calendar year, specified in the communication of the President of the Central statistical Office, announced in Monitor Polski — the Official Gazette of the Republic of Poland.

Article 18 of the Energy Law Act, on the other hand, specifies that the community's own tasks in the scope of supplying electricity, heat and gas fuels include, *inter alia*, planning and arranging heat, electricity and gas fuel supply on the area of community.

The community implements the above-mentioned tasks according to the local spatial development plan, and in case there is no such plan — to the directions of the community development, included in the study of conditions and direction of spatial development of the community. It may be therefore stated that the community has full autonomy in planning and shaping development as regards heating and cooling systems.

Moreover, Article 38(2) of the Act of 15 April 2011 on energy efficiency (Journal of Laws No 94, item 551) introduced the following amendment to the Construction Law Act of 7 July

1994 (Journal of Laws of 2010 No 243, item 1623 as amended), affecting the development of infrastructure in the scope of local heating and cooling, which will enter into force on 1 July 2012.

In the case of building structures to which heat will be supplied from an individual heat source which is not a renewable energy source, a heat source in co-generation or a waste heat source from industrial installations, for which the predicted peak heating power of installations and equipment for heating these facilities is at least 50 kW and located on land with technical conditions for supplying heat from the heating grid, where at least 75% of heat during a calendar year is heat generated from renewable energy sources, heat in co-generation or waste heat from industrial installations, while the heat prices applied by the energy enterprise involved in heat generation and supplying heat to this heating grid are lower than the applicable average heat sales price referred to in Article 23(2)(18(c) of the Energy Law Act of 10 April 1997, for a heat source using the same type of fuel, the following should be enclosed to the application for building permit:

- a) a refusal to issue the connection conditions by the energy enterprise transmitting or distributing heat or
- b) the audit referred to in Article 28(3) of the Act of 15 April 2011 on energy efficiency (Journal of Laws No 94, item 551), indicating that supply of heat to this facility from the heating grid provides lower energy efficiency than from a different individual heating source which may be used to supply heat to this facility.

The Energy Policy of Poland until 2030 adopted by the Council of Ministers on 10 November 2009, in its chapter 3.1.2, specifies the objective indicating endeavour to replace, by the year 2030, heating plants supplying centralised heating systems of Polish cities with co-generation sources. A detailed objective in improving energy efficiency is, *inter alia*, the double increase in generation of electricity in technology of high-efficiency co-generation by 2020 as compared to 2006, provided for in point 2.1.

The following measures detail the adopted direction:

- Measure 1.3 — stimulating development of co-generation through support mechanisms, taking into account co-generation from sources up to 1 MW and appropriate community policy. The indicated manner of stimulating co-generation was preparation and successive implementation of new principles regulating the district heat prices, which will ensure liquidation of cross-financing of heat generation in association with income on electricity generation and certificated through introduction of benchmarking in the scope of the manner of determining heat prices.
- Measure 2.41 — the necessity to change regulatory mechanisms through introduction of methods of shaping the heat prices using reference prices and stimuli for optimisation of the costs of heat supply. The recommended manner of implementation is preparing new principles regulating district heat prices through introducing the benchmark.
- Measure 2.42 — preferring co-generation of electricity as the technology recommended for construction of new generation powers.

The Act of 8 January 2010 amending the Energy Law Act and some other acts (Journal of Laws of 2010 No 21, item 104) obliged the President of ERO to collect and process information concerning energy enterprises, including calculation and announcement, on 31 March each year, of the average prices from the preceding calendar year for sale of heat generated in units owned by enterprises with licences which are not co-generation units, depending on the type of primary fuel used: coal fuels, gas fuels, heating oil and renewable energy sources.

Pursuant to Article 23(2)(3)(f) of the Energy Law Act, the President of ERO is entitled to obtain the so-called reference index, referred to in Article 47(2f) thereof. According to that provision, planned income on the sale of heat is adopted for calculation of prices and rates of fees in the tariff for heat for co-generation is calculated using the reference index determined by the President of ERO, according to the methodology specified in provisions issued on the basis of

Article 46(5) and (6) of the discussed Law and average sales prices of heat, referred to in Article 23(2)(18)(c) of the above-mentioned Law.

In accordance with the principles specified in the Energy Law Act, as of 3 November 2010, the Regulation of the Minister of Economy of 17 September 2010 on the detailed rules for the development and calculation of tariffs and heat supply settlements (Journal of Laws No 194, item 1291) entered into force. The Regulation specified simplified methods of calculation of prices and rates for heat generated in co-generation units using benchmarking methods.

Due to entry into force of the new tariff regulation for heat, it is anticipated that the number of sources without co-generation units will be decreasing. The motivation for investment in new sources with co-generation units and the stimulus facilitating the decision to convert sources to thermal power plants is the provision excluding reductions in growth of income. The provision of § 47 of the tariff regulation for heat stipulated that in the case of commissioning co-generation units after the effective date of the provisions of the new tariff regulation for heat, allowing for simplified shaping of heat prices, the new enterprises are able to apply the price equal to the reference price in calculation of planned income in relation to new co-generation units.

#### **Additional notes to chapter 4.2.10 — Biofuels and other bioliquids — sustainability criteria and verification of compliance (Articles 17 to 21 of Directive 2009/28/EC)**

Drafts of the new act amending the Act on biocomponents and liquid biofuels and amendment of the Environmental Protection Law Act are currently being developed in Poland. These acts will regulate detailed issues concerning, *inter alia*, criteria of sustainable development of biofuels. The issues of sustainable development for bioliquids will be included in the Act on RES; however, they will refer to the criteria included in the above-mentioned draft acts. The position of the Government on this issue is currently being developed; hence the answer to the question regarding planned changes, including concerning the authorities which will ensure verification of compliance, will be possible at a later date, i.e. after the draft document is submitted for parliamentary works.

#### **Additional notes to chapter 4.4 — Support schemes to promote the use of energy from renewable resources in heating and cooling applied by the Member State or a group of Member States**

Plans for 2010 provided for completion of works on measure 4.4, included in the Programme of implementing measures for the years 2009–2012 to the Energy Policy of Poland until 2030. This measure provides for introducing additional support instruments encouraging more extensive production of heat and cold from renewable energy sources. The above-mentioned measure was to be implemented by:

- preparing the system to support the use of heat and cold from geothermal resources (including using heat pumps) and solar energy (using solar panels),
- analysing plausibility of implementation of additional support mechanisms for district heat and cold energy generated from renewable energy sources,
- possible preparation of draft regulation in the scope of support of district heat and cold from RES.

The Ministry of Economy, responsible for implementation of the measure, planned to conduct an internal analysis concerning the above-mentioned analysis. Due to the complexity, multiple layers and issues of the measure, it was impossible to complete it in 2010. An external analysis will be commissioned in 2011, which will provide the basis for consideration of the grounds for implementing systemic support for heat generated by renewable energy sources. Subsequently, the Ministry of Economy will commence legislative work on detailed solutions regarding support for heat.

#### **Additional notes to chapter 4.5 — Support schemes to promote the use of energy from renewable resources in transport applied by the Member State or a group of Member States**

Currently in Poland, works are being conducted on changing the support mechanisms for the market for biocomponents and liquid biofuels. The support mechanism is being reconstructed due to adoption of the Act of 26 November 2010 *amending certain acts related with implementation of the Budget Act* (Journal of Laws No 238, item 1578 as amended) and the Act of 27 May 2011 *amending the Act on monitoring and control of liquid fuel quality and certain other acts* (Journal of Laws No 169, item 1200 as amended). The planned solutions include, *inter alia*, support for research & development works in the scope of used and new, advanced technologies for biofuel production and support for construction of installations for their production. The target new support scheme for producers of biocomponents and biofuels will be specified in the draft assumptions for amendment to the Act of 25 August 2006 *on biocomponents and liquid biofuels and certain other acts* (Journal of Laws No 169, item 1199 as amended) and implementing regulation to the above-mentioned Act.

Another factor promoting the use of second-generation biofuels will be creating, pursuant to the provisions of Directive 2008/28/EC, the possibility of double inclusion of the input of those biofuels to implementation of objectives in the scope of share of energy from renewable sources in transport.

Currently, the Ministry of Economy is also working on an incentive scheme for the purchase of electric cars. Introduction of, *inter alia*, a system of reliefs and incentives for owners of hybrid and electric cars is also being considered. However, since the works are at a very early stage, no additional explanations can be provided in this scope.

#### **Additional notes to chapter 4.6.1 — Biomass supply: both domestic and trade**

The chapter covers the following ratios regarding biomass:

- Bulk density of biomass *from* forestry: 0.54 Mg/m<sup>3</sup>
- Energy content of raw materials supplied directly from forestry: 7 MJ/kg (with humidity of approx. 50%)
- Energy content of raw materials supplied indirectly from forestry: 7 MJ/kg (with humidity of approx. 50%)
- Energy content of agricultural produce: 12 MJ/kg (with humidity of approx. 25%)
- Energy content of by-products: 10 MJ/kg (with humidity of approx. 35%)
- Energy content of municipal waste: 9 MJ/kg (with humidity of approx. 45%)
- Energy content of industrial waste: 10 MJ/kg (with humidity of approx. 35%)
- Energy content of sewage sludge: 8 MJ/kg

In view of the above, the values in tables 7 and 8 will slightly change and as a result will be coherent and comparable to one another.

All values in tables 7 and 8 apply to primary energy in individual carriers.

**Table 7. Biomass supply in 2006**

Sector of origin		Amount of domestic resource	Imported		Exported	Net amount	Primary energy production (ktoe)
			EU	Non-EU	EU/non-EU		
<b>A) Biomass from forestry</b>	<b>Of which:</b>						
	1. direct supply of wood biomass from forests and other wooded land for energy generation (thousand m <sup>3</sup> )	12 493 (= 6 746 thousand Mg)	-	-	-	12 493 (= 6 746 thousand Mg)	1 028
	<i>Optional — if information is</i>						

	<i>available, you can further detail the amount of feedstock belonging to this category:</i>						
	a) felling (thousand m <sup>3</sup> ),	9 117 (= 4 923 thousand Mg)	-	-	-	9 117 (= 4 923 thousand Mg)	823
	b) residues from felling	1 619 (= 874 thousand Mg)	-	-	-	1 619 (= 874 thousand Mg)	146
	(tops, branches, bark, stumps) (thousand m <sup>3</sup> )	340 (= 184 thousand Mg)	-	-	-	340 (= 184 thousand Mg)	31
	c) landscape management	1 517 (= 819 thousand Mg)	-	-	-	1 517 (= 819 thousand Mg)	137
	residues (woody biomass from parks, gardens, tree rows, bushes) (thousand m <sup>3</sup> ) d) other (cleaning, wooded land renovation) (thousand m <sup>3</sup> )						
	2. indirect supply of wood biomass for energy generation (thousand Mg)	5 930	-	-	-	5 930	991
	<i>Optional – if information is available, you can further detail:</i>						
	a) residues from sawmilling, woodworking, furniture industry (bark, sawdust) b) by-products of the pulp and paper industry (black liquor, tall oil) c) processed wood-fuel – pellets (thousand Mg) d) post consumer recycled wood (recycled wood for energy generation, household waste wood) e) other (please define)	270	-	-	235	35	45
B)	<i>Of which:</i>						
biomass from agriculture and fisheries:	1. agricultural crops and fishery products directly provided for energy generation	2 164	9	-	290	550	620



	<i>Optional – if information is available, you can further detail:</i> a) arable crops (cereals, sugar beet, silage maize) (thousand Mg) b) plantations c) short rotation trees (thousand Mg) d) other energy crops (grasses) e) algae f) other (please define)	831	9	-	290	550	238
	2. agricultural by-products/ processed residues and fishery by-products for energy generation (thousand Mg)	1 200	-	-	-	1 200	287
	<i>Optional – if information is available, you can further detail:</i> a) straw b) manure c) animal fat d) meat and bone meal e) cake by-products (incl. oil seed and olive oil cake for energy) f) fruit biomass (including shell, kernel) g) fishery by-products g) clippings from vines, olives, fruit trees d) other (please define)						
C) biomass from waste:	<i>Of which:</i>						
							0
	1. biodegradable fraction of municipal solid waste including biowaste (biodegradable garden and park waste, food and kitchen waste from households, restaurants) (thousand Mg)						
	caterers and retail premises, and comparable waste from food processing plants and gas from waste (thousand Mg)	89	-	-	-	89	19
	2. biodegradable fraction of industrial waste, including paper, cardboard, pallets (thousand Mg)	84	-	-	-	84	21
	3. Sewage sludge (thousand Mg)	215	-	-	-	215	16

Source: Our work based on the data of: State Forests National Forest Holding, Central Statistical Office, Wood Technology Institute, Polish Economic Chamber of Wood Industry, Association of Polish Papermakers, Institute of Soil Science and Plant Cultivation (IUNG), Demand for food (2008), Fish market (2008), Milk market (2009), Potato market (2009), Poultry and egg market (2009), Meat market (2009), Cereal market (2009), Fruit and vegetable market (2009), IERiGZ, ARR, ARiMR, MRiRW, Ministry of the Environment. The table structure and headings are consistent with Decision 2009/548/EC.

**Table 8. Forecast of national biomass supply in 2015 and 2020**

Sector of origin		2015		2020	
		Estimated amount of domestic resource in thousand Mg	Primary energy production (ktoe)	Estimated amount of domestic resource in thousand Mg	Primary energy production (ktoe)
A) Biomass from forestry:	1. direct supply of wood biomass from forests and other wooded land for energy generation	6 411	1 071	6 081	1 016
	2. indirect supply of wood biomass for energy generation	5 572	931	6 375	1 065
B) Biomass from agriculture and fisheries	1. agricultural crops and fishery products directly provided for energy generation	1 414	405	4 056	1 162
	2. agricultural by-products/ processed residues and fishery by-products for energy generation	5 690	1 358	7 428	1 773
C) Biomass from waste:	biodegradable fraction of municipal solid waste including biowaste (biodegradable garden and park waste, food waste from households, restaurants, caterers and retail premises, and comparable waste from food processing plants) and gas from waste	4 239	932	6 373	1 369
	biodegradable fraction of industrial waste (including paper, cardboard, pallets)	645	154	1 127	269
	3. sewage sludge	340	65	628	120

*Source: Our work based on the data of:*

*State Forests National Forest Holding, Central Statistical Office, Wood Technology Institute, Polish Economic Chamber of Wood Industry, Association of Polish Papermakers, Institute of Soil Science and Plant Cultivation (IUNG), Demand for food (2008), Fish market (2008), Milk market (2009), Potato market (2009), Poultry and egg market (2009), Meat market (2009), Cereal market (2009), Fruit and vegetable market (2009), IERiGZ, ARR, ARiMR, MRiRW, Ministry of the Environment. The table structure and headings are consistent with Decision 2009/548/EC.*

It should be stressed that Poland has appropriate production capacity and resources to cover the domestic demand for biomass, including biomass for production of transport biofuels. The current import of biofuels is disadvantageous from Poland's point of view. The planned Act amending the Act on biocomponents and liquid biofuels and the Environmental Protection Law is

intended to introduce new mechanisms promoting and optimising the use of national biomass resources and existing production capacity in order to lead to biofuel independency. However, due to the fact that works on the Act are still ongoing, it is impossible to predict the final outcome. At the current stage, it is also impossible to assess the effectiveness or the impact of drafted amendments. Lack of import of biofuels in table 12 indicates that Poland is attempting to make optimal use of its domestic capacity.

#### **Additional notes to chapter 4.6.2 — Measures to increase biomass availability, taking into account other biomass users (agriculture and forest-based sectors)**

Poland is one of the leading European countries when it comes to forest area. Forests cover 29% of the country's territory, which amounts to 9.1 million ha.

The development of the situation in the wood sector and its impact on energy industry can be linked to increasing forest coverage in Poland.

Increasing forest coverage is a permanent component of spatial, ecological and economic policy of the country and one of the crucial components of forestry policy. The need to increase forest coverage was explicitly included in the national forestry policy from 1997. This policy indicates, as one of crucial objectives, increase in the national forest coverage to 30% in 2020 and 33% after 2050, as well as ordering agricultural-forestry border with benefit for the landscape, forestry and agriculture.

The great majority of forests are state forests, of which nearly 1.6 million ha are managed by the State Forests National Forest Holding.

State Forests are the main supplier of wood to the Polish market. The offer of wood sale is limited by opportunities to obtain wood, specified in forest development plans, prepared for 10 years. In modern forestry, obtaining wood is subordinated to the durability of forests and increasing their resources. Information obtained from State Forests indicate that in 2010, 33.75 million m<sup>3</sup> of wood was obtained. The plan for 2011 assumes obtaining 34.2 million m<sup>3</sup>.

Activation of areas with low usability for agricultural purposes will have positive effects on the availability of wood, and hence on the possibility of its utilisation in the energy industry.

It should also be noted that the promotion of rural area development has also great impact on increasing the availability of the so-called agro biomass. Resources related with development of renewable energy sources are available, *inter alia*, under Rural Development Programme 2007–2013, in particular under the following measures: 121. Modernisation of agricultural holdings, 123. Increasing the value added of basic agricultural and forestry produce, 311. Differentiation towards non-agricultural activity, 312. Establishment and development of micro-enterprises and 321. Basic services for rural economy and population.

#### **Additional notes to chapter 5.1 — Total contribution expected of each renewable energy technology to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity, heating and cooling and transport**

Installed capacity for solid biomass in tables 10a and 10b concern only units generating electricity using only biomass as fuel. Such cases enable determination of the installed capacity of a given source. In Poland, apart from electricity generation in units dedicated exclusively to incineration of biomass (according to data of the Energy Regulatory Office — 19 units), there are large systemic installations generating electricity in the process of co-incineration of biomass with other fossil fuels, e.g. coal (42 units). In this case, in accordance with the applicable regulation of the Minister of Economy of 14 August 2008 *on detailed scope of obligations in respect to obtaining certificates of origin and submitting them for cancellation, payment of a substitution fee, purchase of electricity and heat from renewable energy sources, as well as the obligation to confirm the data on the amount of electricity produced from a renewable energy source* (Journal of Laws No 156, item 969 and of 2010 No 34, item 182), energy produced from renewable energy sources includes a portion of electricity or heat corresponding to the share of chemical energy of

biomass or biogas in chemical energy of the fuel used to generate energy, calculated on the basis of real calorific values of these fuels. Since the composition of the mixture of biomass and another fuel differs in individual installations and can be varied in different time intervals, it is impossible to calculate and provide the rated installed capacity for such units. On the other hand, in the case of installations utilising exclusively biomass, the annual capacity of such units assumed for the entire period is 5 500 MWh/1 MW.

**Table 11. Estimation of total contribution (final energy consumption) expected from each renewable energy technology in Poland to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in heating and cooling 2010–2020 (ktoe)**

RECOMMENDED OPTION	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Geothermal (excluding low temperature geothermal heat in heat pump applications)	11.4	23	24	29	35	43	57	70	86	105	107	178
Solar	0.2	21	45	83	107	114	176	258	324	406	441	506
Biomass:	88.5*	3 911	3 969	4 021	4 084	4 151	4 227	4 393	4 570	4 725	5 002	5 089
solid	68.9*	3 846	3 871	3 890	3 919	3 953	3 996	4 118	4 250	4 361	4 594	4 636
biogas	19.6	65	98	131	165	198	231	275	320	364	408	453
bioliquids	0	0	0	0	0	0	0	0	0	0	0	0
Renewable energy from heat pumps:	**	25	35	42	51	61	72	85	99	114	130	148
– of which are aerothermal ***	-	-	-	-	-	-	-	-	-	-	-	-
– of which are geothermal ***	-	-	-	-	-	-	-	-	-	-	-	-
– of which are hydrothermal ***	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>100.1</b>	<b>3 980</b>	<b>4 073</b>	<b>4 175</b>	<b>4 277</b>	<b>4 369</b>	<b>4 532</b>	<b>4 806</b>	<b>5 079</b>	<b>5 350</b>	<b>5 680</b>	<b>5 921</b>

Source: our study. The table structure and headings are consistent with Decision 2009/548/EC.

\* the data concern only biomass used to generate systemic — district heat. The data concerning biomass used for local heating are not collected

\*\* data in the scope of usage of heat from heat pumps were not collected

\*\*\* it is impossible to further detail data concerning heat pumps; the available allow for estimation of development of the heat pump market as a whole

**Table 12. Estimation of total contribution expected from each renewable energy technology in Poland to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in the transport sector 2010–2020 (ktoe)**

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Bioethanol/ bio-ETBE</b>	<b>38</b>	<b>279</b>	<b>299</b>	<b>308</b>	<b>330</b>	<b>323</b>	<b>334</b>	<b>347</b>	<b>374</b>	<b>398</b>	<b>429</b>	<b>451</b>
<i>of which biofuels Article 21(2)</i>	0	0	0	0	0	0	0	0	44	44	44	44
<i>of which are imported</i>	-	-	-	-	-	-	-	-	-	-	-	-
<b>Biodiesel</b>	<b>16</b>	<b>687</b>	<b>755</b>	<b>835</b>	<b>891</b>	<b>958</b>	<b>993</b>	<b>1 058</b>	<b>1 153</b>	<b>1 229</b>	<b>1 348</b>	<b>1 451</b>
<i>of which biofuels Article 21(2)</i>	0	0	44	88	88	88	88	88	88	88	132	132
<i>Of which are imported</i>	-	-	-	-	-	-	-	-	-	-	-	-
<b>Hydrogen from renewable resources</b>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Renewable electricity</b>	<b>0</b>	<b>15</b>	<b>17</b>	<b>19</b>	<b>20</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>38</b>
<i>of which are road transport</i>	0	0	0	0	0	0	0	0	0	0	0	8
<i>of which are non-road transport</i>	0	15	17	19	20	22	23	24	25	26	27	30
<b>Others (as biogas, vegetable oils, etc.) – please specify</b>	0	0	0	0	13	13	26	26	26	66	66	66
<i>of which are biofuels Article 21(2)</i>	0	0	0	0	13	13	26	26	26	66	66	66
<b>TOTAL</b>	<b>54</b>	<b>981</b>	<b>1 071</b>	<b>1 162</b>	<b>1 255</b>	<b>1 316</b>	<b>1 376</b>	<b>1 454</b>	<b>1 579</b>	<b>1 719</b>	<b>1 870</b>	<b>2 006</b>

Source: our study. The table structure and headings are consistent with Decision 2009/548/EC.