

**MINISTRY OF ECONOMY**

---

**NATIONAL ACTION PLAN  
FOR RENEWABLE ENERGY SOURCES  
TO 2020**

PROVISIONAL TRANSLATION

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October 2013

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## LIST OF ABBREVIATIONS

GDP	Gross domestic product
CEI	Centre for Monitoring Business Activities in the Energy Sector and Investments
EU ETS	European Union Emissions Trading System
EPEEF	Environmental Protection and Energy Efficiency Fund
HBOR	Croatian Bank for Reconstruction and Development
HEP-ODS	HEP-Distribution System Operator
HOPS	Croatian Transmission System Operator
HERA	Croatian Energy Regulatory Agency
HROTE	Croatian Energy Market Operator
MCPP	Ministry of Construction and Physical Planning
MINGO	Ministry of Economy
MENP	Ministry of Environmental and Nature Protection
RES	Renewable energy sources
RESC	Renewable energy sources and cogeneration
Register RESCPP	Register of projects and plants for the use of renewable energy sources and cogeneration and eligible producers
NAP	National Action Plan
EIS	Environmental Impact Study

## INTRODUCTION

With its entry into full membership of the European Union on 1 July 2013 and pursuant to Directive 2009/28/EC on stimulating the use of energy from renewable sources, the Republic of Croatia, together with the remaining Member States committed to increasing the use of energy from renewable sources, by which the share of energy from renewable resources in the final consumption should total at least 20 percent by 2020, viewed at the European Union level.

In order to achieve this fundamental target, each Member State is obliged to adopt a National Renewable Energy Action Plan, which defines the total national target for renewable energy use in line with the prescribed methodology and sectoral objectives and trajectories in the production of electricity, energy for heating and cooling and energy in transport from renewable energy sources. Furthermore, the National Action Plan is required to outline the existing and planned policies for renewable energy sources as instruments, measures and mechanisms to achieve the set targets by 2020.

With the aim of alignment of these national action plans, the European Commission adopted Decision 2009/548/EC establishing a template for the drafting of national renewable energy action plans pursuant to Directive 2009/28/EC. Therefore, this National Action Plan has been drafted pursuant to the template from the said Decision.

Furthermore, it is necessary to stress that even prior to entering into full membership of the European Union, the Republic of Croatia drafted the Programme of renewable energy use and the Renewable Energy Action Plan, which were among the benchmarks for the closure of Chapter 15 – Energy of the accession negotiations and for determining the long-term perspectives of developing renewable energy infrastructure in the Republic of Croatia.

Following adoption of Directive 2009/28/EC and Decision 2009/548/EC, in June 2009 the Ministry of Economy prepared a proposal of the National Renewable Energy Action Plan, in line with the provisions of the stated regulations of the European Union, and forwarded the proposed plan to the European Commission for its opinion.

Pursuant to this proposal, the National Renewable Energy Action Plan to 2020 stipulates a national renewable energy target in the Republic of Croatia of 20 percent of the final direct energy consumption in 2020. Directive 2013/18/EC from May 2013 expanded Part A of Annex I of Directive 2009/28/EC with targets to be met by the Republic of Croatia.

In January 2012, technical consultations were held at which the European Commission gave its comments on the proposed National Action Plan, and those comments have been integrated into this document.

# 1. SUMMARY OF NATIONAL RENEWABLE ENERGY POLICIES

## Energy policy

The energy policy of the Republic of Croatia is under the competence of the Ministry of Economy, Energy and Mining Directorate. The legislative framework governing the energy sector in the Republic of Croatia rests on the following regulations:

REGULATION	
Energy Act (Official Gazette 120/12)	The Act governs measures for the safe and reliable supply of energy and its efficient production and use, acts establishing and pursuant to which energy policy and energy development planning are implemented, execution of energy activities, on the market or as public services, and fundamental issues in the execution of energy activities.
Act on the Regulation of Energy Activities (Official Gazette 120/12)	The Act governs the establishment and implementation of the regulation system for energy activities, aimed, among other things, at promoting the efficient and rational use of energy, entrepreneurship in the field of energy, investments in the energy sector and environmental protection.
Electricity Market Act (Official Gazette 22/13)	The Act governs the manner of performing energy activities in the areas of electricity and the production of electricity, the transmission of electricity, distribution of electricity, supply of electricity and organisation of the electricity market.
Gas Market Act (Official Gazette 28/13)	The Act governs the rules and measures for performing energy activities in the gas sector, including liquefied gas, the rights and obligations of gas market participants, the separation of operator system activities, access of third parties to the gas system and opening the gas market. The rules laid down by this Act and its subordinate legislation are applicable to biogas, gas from biomass and other types of gas, if those types of gas can be technically and safely transported through the gas system.
Thermal Energy Market Act (Official Gazette 80/13)	This Act governs the measures for the safe and reliable supply of thermal energy, thermal energy for the use of heat for heating and cooling, conditions for obtaining concessions for the distribution of thermal energy, or concessions for the construction of distribution networks, rules and measures for the safe and reliable activities of production, distribution and supply of thermal energy in heat systems and measures for achieving energy efficiency in heat systems.
Act on the Market of Petroleum and Petroleum Derivatives (Official Gazette 57/06, 18/11 and 144/12)	This Act regulates the performance of activities from the petroleum market sector, such as the production of petroleum derivatives, transport of petroleum through oil pipelines, transport of petroleum derivatives through product pipelines, wholesale trade of petroleum derivatives, retail trade of petroleum derivatives, warehousing of petroleum and petroleum derivatives and trade, mediation and representation on the petroleum and petroleum derivatives market.
Act on Efficient Energy	This Act governs the area of efficient energy use in final consumption, the

Use in Final consumption (Official Gazette 152/08, 55/12 and 101/13)	adoption of plans and programmes to improve energy efficiency and their implementation, energy efficiency measures, and in particular activities of energy services and energy audits, obligations of the public sector, energy entities and large consumers, and consumer rights in the application of energy efficiency measures.
Act on Biofuels for Transport (Official Gazette 65/09, 145/10, 26/11 and 144/12)	This Act governs the production, trade and warehousing of biofuels and other renewable fuels, the use of biofuels in transport, the adoption of plans and programmes to stimulate the production and use of biofuels in transport, the authorities and responsibilities for establishing and implementing policies to stimulate the production and use of biofuels in transport and measures to stimulate the production and use of biofuels in transport.

International agreements ratified in compliance with the Constitution of the Republic of Croatia as part of the integral legal order in the field of energy are:

- Act on Ratification of the Energy Charter Treaty (Official Gazette – International Agreements, 15/97)
- Regulation on ratification of the Energy Charter Protocols on energy efficiency and the accompanying environmental issues (Official Gazette – International Agreements, 7/98)
- Act on Ratification of Amendments to Trade Regulations of the Energy Charter Treaty (Official Gazette – International Agreements, 6/03)
- Act on Ratification of the Energy Community Treaty (Official Gazette – International Agreements, 6/06)

The Energy Strategy of the Republic of Croatia (Official Gazette 130/09) has improved the Energy Strategy from 2002 in the segments pertaining to the accession to the European Union and implementation of the common European energy policies, adopting the Energy Community Treaty, ratification of the Kyoto protocols and the fact that the energy sector is faced with a high instability of energy prices on the global market and is increasingly dependent on the imports of energy. The Strategy has three fundamental objectives:

- Security of energy supply;
- Competitiveness of the energy system;
- Sustainable energy development.

The Republic of Croatia has suitable natural capacities and natural potential for the use of renewable energy sources (RES). RES are a domestic supply of energy and their use is a means to reduced import dependency, to stimulate the development of domestic production of energy equipment and services, and a means to achieve the environmental protection goals.

The success of implementation of the Energy Strategy, in the area pertaining to RES relies on improving intersectoral cooperation among the fields of energy, mining, industry, agriculture, forestry, water management, environmental protection, construction and spatial planning.

The possibility of national technological development concerning the use of RES is favourable, and therefore the Government of the Republic of Croatia stimulates investments in research, development and their application. The favourable conditions for the development of technology



are seen in the use of biomass and the use of wind energy in wind farms, the use of energy production distribution systems and small hydroelectric plants, solar cogeneration, development of advanced electricity networks, the manner of forecasting RES production and managing electricity systems with a high share of RES.

The Republic of Croatia has chosen to use RES in line with the principles of sustainable development.

The Energy Strategy has set the following objectives concerning RES:

- increasing the share of RES in the gross final consumption of energy to 20% in 2020, while the sectoral objectives are as follows:
  - 35% share of RES in the production of electricity, including large hydroelectric plants;
  - 10% share of RES in transport;
  - 20% share of RES in heating and cooling.

Alongside such set goals, in the implementation programmes of the Strategy, the Government of the Republic of Croatia has defined the dynamics of stimulating RES in each four-year period, depending on the expected final consumption of energy, available budget for subsidies, assessed contribution of individual RES in the increase of the number of jobs in domestic industry and services, and depending on the price competition of RES. Therefore, the National Renewable Energy Action Plan represents an integral part of the implementation programme of the Energy Strategy.

The institutions in the Republic of Croatia stimulating the implementation of energy policy, i.e. whose competencies are defined in the abovelisted laws, are:

- Ministry of Economy, which is responsible for the national energy policy, improving legislation and the implementation of EU energy legislation at the national level.
- Croatian Energy Regulatory Agency (HERA), as the regulatory body for energy activities, is responsible for ensuring the objectivity, transparency and impartiality in performing energy activities, the implementation of principles of regulated access to the network/system, adoption of methodology for establish tariff items in tariff systems, establishment of an effective energy market and energy competition, protection of consumers of energy entities.
- Croatian Energy Market Operator (HROTE) is responsible for organisation of the electricity market and the gas market pursuant to the legislation. HROTE collects levies for the promotion of electricity production from RES and cogeneration from electricity suppliers, who collect this levy from electricity consumers. HROTE concludes contracts on the purchase of electricity with eligible producers and pays them the guaranteed incentive price.
- Distribution system operators are responsible for the plant and management, maintenance, development and construction of distribution networks in a given area, and crossborder transmission lines towards other networks, and ensuring the long-term capacity of the network to meet the reasonable demands for the transmission of electricity.
- The Centre for Monitoring Operations in the Energy Sector and Investments (CEI) was established with the aim of monitoring and analysing the implementation of guidelines

and planning rules, approving and monitoring investments in the energy sector, and monitoring and coordinating investment products pertaining to renewable energy sources, offering expert assistance in the preparation and contracting of investments in the energy sector, and provision of expert support in the development of proposed investment programmes on the basis of multi-year and annual programmes in the energy sector.

- Other institutions: Environmental Protection and Energy Efficiency Fund (EPEEF) in the sense of financing projects.

With the Act on the Environmental Protection and Energy Efficiency Fund (Official Gazette 107/03 and 144/12), the Environmental Protection and Energy Efficiency Fund (EPEEF) was established with the aim of financing the preparations, implementation of development of programmes and projects in the field of environmental protection, energy efficiency and the use of renewable energy sources and mitigating climate change.

EPEEF commenced its operations on 1 January 2004. The financing funds are secured through the earmarked revenues of EPEEF from environmental pollution fees, which include levies for emissions of nitrogen oxide, sulphuric dioxide and carbon dioxide, environmental use levies, waste load fees and special environmental levies for vehicles.

#### Policy of air protection and mitigating climate change

The Ministry of Environmental and Nature Protection plays a key role in creating the policy on air protection and mitigation of climate change, and in the preparation of draft proposals of acts and implementing regulations. Within the Ministry of Environmental and Nature Protection, the Directorate for Environmental Protection and Sustainable Development has been established. Its Sector for the Atmosphere, Sea and Soil is responsible for administrative and expert tasks in air protection, climate changes, and ozone layer protection.

The legislation directly or indirectly associated with the climate change mitigation policy is:

- Air Protection Act (Official Gazette 48/95, 178/04, 60/08 and 130/11);
- Regulation on the manner of trading greenhouse gas emission units (Official Gazette 69/12);
- Regulation on monitoring greenhouse gas emissions, policies and measures for their reduction in the Republic of Croatia (Official Gazette 87/12);
- Commission Regulation (EU) No 1031/2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission quotas in line with Directive 2003/87/EC;
- Regulation on unit fees, corrective coefficients and approximate criteria and benchmarks for determining fees for environmental emissions of carbon dioxide (Official Gazette 73/07 and 48/09);
- Ordinance on monitoring greenhouse gas emissions in the Republic of Croatia (Official Gazette 134/12);
- Ordinance on monitoring, reporting and verification of reports on greenhouse gas emissions from plants and aircraft in the period commencing 1 January 2013 (Official Gazette 77/13);

- Ordinance on the manner of free awarding of emission units to plants (Official Gazette 43/12);
- Ordinance on the manner of using the European Union Registers (Official Gazette 4/13);
- Ordinance on the manner of deadlines for calculation and payment of fees for the environmental emissions of carbon dioxide (Official Gazette 77/07);
- Ordinance on the availability of data on the economic consumption of fuel and CO<sub>2</sub> emissions of new personal vehicles (Official Gazette 120/07);
- Plan to protect the air and ozone layer and to mitigate climate change in the Republic of Croatia for the period 2013–2017.

The Air Protection Act (Official Gazette 48/95, 178/04, 60/08 and 130/11) lays down the competence and responsibilities for air and ozone layer protection, the mitigation of climate changes and adaptation to climate change, monitoring and assessing air quality, measures to prevent and reduce air pollution, reporting on air quality, monitoring greenhouse gas emissions and measures to mitigate and adapted to climate change, and the financing of air and ozone layer protection, the mitigation of climate change and adaptation to climate change.

The Act also stimulates the drafting of the Plan on air and ozone layer protection and mitigation of climate change, which outlines the objectives and priorities in air and ozone layer protection and the mitigation of climate change in the Republic of Croatia. The plan defines the framework for the implementation of projects and investment to achieve the set goals and establishes the protection measures and permanent improvement of air quality in the territory of the Republic of Croatia, and measures to mitigate and adapt to climate change. The Plan on air and ozone layer protection and mitigation of climate change in the Republic of Croatia for the period 2013–2017 is currently in the adoption process.

In 1996, the Republic of Croatia ratified the United Nations Framework Convention on Climate Change (UNFCCC), while the Kyoto Protocol was ratified on 27 April 2007. The Republic of Croatia took on the commitment to reduce greenhouse gas emissions by 5% in the first commitment period (2008–2012) in relation to the baseline year, 1990. The Republic of Croatia met the set target.

Since 1 January 2013, the Republic of Croatia has been included in the European Union greenhouse gas emissions trading system (EU ETS). Considering that the start of the third period of the EU ETS coincides with the start of the calendar, Croatia was included in the EU ETS prior to its formal accession to the European Union (on 1 July 2013).

The EU ETS includes the activities listed in Annex I of the Regulation on the manner of trading greenhouse gas emission units. In Croatia, the following are the most common activities in this scheme: fuel consumption in plants with capacity exceeding 20 MW, refining of mineral oil, production of raw iron or steel, production of cement clinker, production of lime, production of glass, production of ceramic products, production of isolation materials made from mineral wools, production of paper and production of nitrous acids.

Pursuant to the Treaty on the Accession to the European Union, Croatia has received a quota for greenhouse gas emissions for sources not encompassed within the emission units trading system of +11% to 2020 in relation to 2005, pursuant to the rules laid down in Decision 406/2009/EC.

The Low-emission Development Strategy (LEDS) is currently under preparation, and will establish the long-term targets (to 2050) for reducing greenhouse gas emissions, and the measures by which to achieve these targets, and their financing. The Ministry of Environmental and Nature Protection and the United Nations Development Programme (UNDP) presented the Framework for the drafting of the Strategy in May 2013. The Framework establishes the guidelines relating to the objectives, visions and priority measures and implementing instruments of the Strategy. It indicates the necessity of an all-encompassing approach, intersectoral cooperation and participation among all stakeholders, the necessity for expert analysis and strong political will. The adoption of the Strategy is expected by the end of 2014.

#### Legislation in the construction sector

The legislation in the construction sector is in the competence of the Ministry of Construction and Physical Planning, while the areas pertaining to Energy Efficiency and RES are under the competence of MINGO.

The legislative framework in the area of construction and physical planning is:

- Act on Physical Planning and Construction (Official Gazette 76/07, 38/09, 55/11, 90/11, 50/12 and 55/12);
- Package of legislative regulations transposing Directive 2002/91/EC on the energy properties of buildings:
  - Regulation on contracting and implementation of energy services in the public sector (Official Gazette 69/12),
  - Ordinance on energy audits for buildings and energy certification of buildings (Official Gazette 81/12, 29/13 and 78/13),
  - Ordinance on the conditions and criteria for persons performing energy audits of buildings and energy certification of buildings (Official Gazette 81/12, 64/13),
  - Ordinance on the control of energy certificates of buildings and report on energy audits of buildings (Official Gazette 81/12 and 79/13),
  - Ordinance on simple structures and works (Official Gazette 21/09, 57/10, 126/10, 48/11, 81/12 and 68/13),
  - Technical regulations on building heating and cooling systems (Official Gazette 110/08),
  - Technical regulations on the rational use of energy and heat protection in buildings (Official Gazette 110/08, 89/09, 79/13 and 90/13),
  - Ordinance on the conditions and criteria for establishing quality systems for services and works to certify those installing renewable energy sources – photovoltaic systems (Official Gazette 79/13 i 85/13),
  - Action Plan for the implementation of the European Directive on energy properties of buildings in the Croatian legislation, March 2008,
  - Methodology for implementing energy audits of buildings,
  - Algorithm for calculating energy properties of buildings.

The adoption of new acts in the area of physical planning and construction is underway. The legislative solutions that will replace the existing Act on Physical Planning and Construction (Official Gazette 76/07, 38/09, 55/11, 90/11 and 50/12) will regulated the areas of physical

planning, construction and the activities of the construction inspection. The new legislative solutions of the MCPP are aimed at achieving a simpler, clearer and more effective system of spatial use and protection.

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## 2. EXPECTED FINAL ENERGY CONSUMPTION 2010–2020

The Energy Strategy gives forecasts of final and overall final energy consumption to 2020, with a view to 2030, for the reference scenario and the additional energy efficiency scenario. The premise of the Strategy is the assumption of stable economic growth of the gross domestic product of 5% per year, as a logical trend from that period (2006, 2007 and 2008).

In the additional energy efficiency scenario, energy efficiency measures are defined in accordance with Directive 2006/32/EC, so as to achieve energy savings (in 2016 equivalent to average consumption of 9% in the period from 2001 to 2005). That target will be achieved through implementation of the energy efficiency measure in the industrial sector and in the transport, households and services sectors. It is assumed that the majority of energy savings will be achieved to 2016. Significant energy savings are particularly expected at the beginning of this period, when the potential of measures with low implementation costs are used. The Government of the Republic of Croatia will create the assumptions for establishment of a fully functional energy efficiency market by 2016, which will allow for a continuation of the trend of increasing energy consumption efficiency due to the increased awareness of citizens, and improved technology in energy use.

With the onset of the economic and financial crisis, there was a drop in the gross domestic product (GDP). Instead of the planned GDP growth of 21.5% in the period from 2009 to 2012, a negative rate of -9.0% was recorded, meaning a difference of 30.5% from the forecasts. The drop in industrial production and overall social standards also reduced the need for energy. Due to the above, it was necessary to adjust the scenarios from the Energy Strategy, to align them with the current situation and plans.

The new projections ensuing from the Economic Programme of the Government of the Republic of Croatia (April 2013) assume the following growth rates of the GDP: 0.7% for 2013, 2.4% for 2014, 3.5% for the period 2015–2016. There are no official projections for the period 2017–2020, though the assumed annual rate is 4%. With the assumed elasticity of growth of direct energy consumption and the GDP, at 0.61 for the period 2010–2015 and 0.46 for the period 2016–2020, the following growth rates of direct energy consumption are obtained:

Indicator	Growth rate 2013–2015	Growth rate 2016–2020
GDP, %	0.7-3.5	4.00
Elasticity	0.61	0.46
Final consumption, %	1.8	1.8

Table 1 shows the expected gross final energy consumption in Croatia for heating and cooling, supply of electricity and in transport to 2020, for the reference scenario and additional energy efficiency scenario, obtained on the basis of projections for the Energy Strategy of the Republic of Croatia and its corrections regarding the effects of the economic and financial crisis and projections of GDP growth from the new Croatian Economic Programme (April 2013).

Table 1: Expected gross final energy consumption in Croatia for heating and cooling, supply of electricity and in transport to 2020, with regard to the effects of energy efficiency and energy saving measures for the period 2010–2020 (kt<sub>oe</sub>).

	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 <sup>1</sup>	3,198	2,977	2,907	2,963	2,876	2,948	2,845	2,975	2,855	3,002	2,866
2. Electricity <sup>2</sup>	1,498	1,620	1,590	1,611	1,572	1,601	1,553	1,647	1,589	1,693	1,625
3. Transport, as in Art. 3(4a) <sup>3</sup>	1,804	2,010	1,955	1,980	1,904	1,947	1,852	1,989	1,873	2,025	1,888
4. Gross final energy consumption <sup>4</sup>	6,623	6,774	6,633	6,702	6,524	6,627	6,415	6,756	6,505	6,884	6,596
Final consumption in aviation											
Reductions for aviation limit <sup>5</sup> Art. 5(6)											
Total consumption after reduction for aviation limit											

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Table 1: Continuation

	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 <sup>1</sup>	3,029	2,876	3,064	2,918	3,099	2,959	3,134	3,001	3,170	3,043	3,205	3,084
2. Electricity <sup>2</sup>	1,739	1,661	1,793	1,698	1,846	1,735	1,899	1,772	1,951	1,809	2,004	1,847
3. Transport, as in Art. 3(4a) <sup>3</sup>	2,073	1,915	2,104	1,929	2,135	1,943	2,167	1,958	2,198	1,972	2,230	1,986
4. Gross final direct energy consumption <sup>4</sup>	7,011	6,686	7,149	6,810	7,286	6,934	7,424	7,058	7,561	7,182	7,698	7,306
Final consumption in aviation												
Reduction for aviation limit <sup>5</sup> Art. 5(6)												
Total consumption after reduction for aviation limit												

<sup>1</sup> This is final energy consumption of all energy commodities except electricity for purposes exclusive of transport, plus the consumption of heat for own use at electricity and heat plants, and heat losses in networks (items 2. Own use by plant and 11. Losses in transmission and distribution, on pages 23 and 24 of the Regulation on energy statistics, SL L304 of 14.11.2008).

<sup>2</sup> Gross electricity consumption encompasses the national gross electricity production, including auto production, plus imports, minus exports.

<sup>3</sup> Transport consumption as defined in Article 3(4a) of Directive 2009/28/EC. Renewable electricity in road transport for this figure should be multiplied by a factor of 2.5, as established in Article 3(4c) of Directive 2009/28/EC.

<sup>4</sup> As defined in Article 2(f) of Directive 2009/28/EC. This comprises final energy consumption plus network losses and own use of heat and electricity at electricity and heat plants (NB: this does not include consumption of electricity for pumped hydro storage or for transformation in electric boilers or heat pumps at district heating plants).

<sup>5</sup> According to Article 5(6), consumption for aviation has be considered only up to 6.18% (Community average), for Cyprus and Malta up to 4.12% of the gross direct energy consumption.



### 3. TARGETS AND TRAJECTORIES FOR RENEWABLE ENERGY USE

#### 3.1. OVERALL NATIONAL TARGET

The overall national target for the share of energy from RES in the gross final consumption of energy is 20% in 2020. The target use of RES for 2020 was adopted by the Republic of Croatia in accordance with the calculation pursuant to Directive 2009/28/EC and the document for the Energy-Climate Pact.

The calculation of the target is comprised of two parts: 5.5% is added to the share of RES in 2005, while the remainder is based on the remaining total potential of renewable energy according to per capita energy consumption weighted by the GDP/population index, and tied to the European Union average. These two elements are added to obtain the total share of RES in the total direct energy consumption in 2020. For the Republic of Croatia, this means:  $12.8 + 5.5 + 1.8 = 20\%$ .

The European Union supplemented Directive 2013/18/EC with Directive 2009/28/EC on the promotion of the use of energy from renewable sources, for the purpose of defining the targets for the Republic of Croatia. The adopted share of RES in the gross final energy consumption for 2005 was 12.6% and is 20% for 2020.

*Table 2: Overall national target for the share of energy from renewable sources in the gross final energy consumption for 2005 and 2020*

A. Share of energy from renewable sources in gross final energy consumption in 2005 (S <sub>2005</sub> ) (%)	12.8
B. Target of energy from renewable sources in the gross final energy consumption in 2020 (S <sub>2020</sub> ) (%)	20
C. Expected total adjusted energy consumption in 2020 (from Table 1, last cell) (kt)	7,306
D. Expected amount of energy from renewable sources corresponding to the target for 2020 (calculated as B x C) (ktoe)	1,469

### 3.2. SECTORAL TARGETS AND TRAJECTORIES

The National Action Plan for the production of energy from RES defined targets for three sectors: electricity sector, transport sector and the heating and cooling sector (Table 3).

Pursuant to the revised programme, the new shares for 2020 have been calculated as follows:

- 39.0% of the share of RES in gross final consumption of electricity;
- 10.0% of the share of RES in gross final energy consumption in transport;
- 19.6% of the share of RES in gross final energy consumption in heating and cooling.

In the electricity sector, the increase in the production of energy from RES is based on new capacities in power plants fuelled with biomass and biofuel, wind farms, solar plants, geothermal plants and small and large hydropower plants. The Energy Strategy defined a national target of 35% RES in the consumption of electricity in 2020.

In 2005, the share of RES totalled 33%, with the assumption of normalised 15-year production of electricity from hydropower plants. The electricity sector accounts for 9.8% of the overall target of 20% to 2020 with 9.8%.

The sectoral targets for RES in transport, calculated in accordance with Article 3(4) of Directive 2009/28/EC is 10%, while the actual share in the total energy consumption in transport is at the level of 6%. The transport sector accounts for 1.9% of the overall target of 20% by 2020. The trajectory of annual targets in the transport sector is defined by the National Action Plan on the stimulation of production and use of biofuels in transport for the period 2011–2020.

The trajectory for the heating and cooling sector is not fixed, but instead supplements the difference to the total target of 20%. The heating and cooling sector is exceptionally important for improving energy efficiency in the Republic of Croatia, as it is closely associated with the production of electricity in production plants for the production of electricity, and in cogeneration plants on biofuels, solar cogeneration or hybrid solar installations (photovoltaic with heat collectors) and geothermal plants, and as such contribute a share of 8.2% to the total target of 20% by 2020.

The majority of the target is achieved in households and services, particularly in tourism, followed by industry and district heating systems. Furthermore, it is necessary to stress that the National Action Plan for the production of energy from renewable energy sources to 2020 has assumed a target of 19% for heating and cooling, while the Energy Strategy has assumed a share of 21%. The difference in these shares is the result of the strict calculation methods applied as defined by Directive 2009/28/EC.

The Republic of Croatia plans to achieve the set target in renewable energy sources with exclusively domestic energy sources.

**Table 3: National targets for 2020 and estimated trajectory of renewable energy sources for heating and cooling, electricity and energy for transport (%)**

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RES-H&C <sup>1</sup>	11.0	12.1	12.8	13.5	14.3	15.1	15.9	16.7	17.4	18.2	18.9	19.6
RES-E <sup>2</sup>	33.3	33.4	34.5	35.6	36.6	37.6	38.5	38.6	38.7	38.8	38.9	39.0
RES-T <sup>3</sup>	0.5	0.6	1.4	2.2	3.0	3.8	4.5	5.6	6.7	7.8	8.9	10.0
Overall RES share <sup>4</sup>	12.8	13.3	14.2	15.1	15.8	16.4	17.5	18.1	18.6	19.1	19.6	20.1
Of which from cooperation mechanism (as % of RES)												
Surplus for cooperation mechanism (as % of RES)												

<sup>1</sup> Share of renewable energy for heating and cooling: gross final consumption of energy from renewable sources for heating and cooling (as defined in Articles 5(1b) and 5(4) of Directive 2009/28/EC, divided by gross final energy consumption for heating and cooling. Line (A) from Table 4a is divided by line (1) in Table 1.

<sup>2</sup> Share of renewable energy in electricity: gross final consumption of electricity from renewable sources for electricity (as defined in Articles 5(1a) and 5(3) of Directive 2009/28/EC, divided by the gross final consumption of electricity. Line (B) in Table 4a is divided by line (2) in Table 1.

<sup>3</sup> Share of renewable energy in transport: gross final consumption of energy from renewable sources for transport (c.f. Articles 5(1c) and 5(5) of Directive 2009/28/EC, divided by consumption in transport: 1) petrol; 2) diesel; 3) biofuels used in road and rail transport; and 4) electricity in land transport (as reflected in row 3 of Table 1). Line (J) from Table 4a is divided by line (3) in Table 1.

<sup>4</sup> Share of renewable energy in gross final energy consumption. Line (G) in Table 4a is divided by line (4) in Table 1.

<sup>5</sup> Expressed in percentage points of overall RES share.

As Part B of Annex 1 to the Directive			2011-2012	2013-2014	2015-2016	2017-2018		2020
			$S_{2005} + 20\%$ ( $S_{2020} - S_{2005}$ )	$S_{2005} + 30\%$ ( $S_{2020} - S_{2005}$ )	$S_{2005} + 45\%$ ( $S_{2020} - S_{2005}$ )	$S_{2005} + 65\%$ ( $S_{2020} - S_{2005}$ )		$S_{2020}$
RES minimum trajectory (%) <sup>1</sup>			14.3	15.0	16.1	17.6		20.1
RES minimum trajectory (ktoe)			974	1,036	1,129	1,252		1,469

<sup>1</sup>As defined in Annex I.B to Directive 2009/28/EC.

*Table 4a: Calculation table for the renewable energy contribution of each individual sector to final energy consumption (ktoe)*

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
(A) Expected gross final consumption of RES for heating and cooling	351.8	350.4	367.9	385.5	409.1	432.8	456.5	486.2	516.0	545.8	575.6	605.4
(B) Expected gross final consumption of electricity from RES	498.1	530.9	541.9	552.9	581.9	610.9	640.0	656.0	672.0	688.1	704.1	720.1
(C) Expected final consumption of energy from RES in transport	0.0	2.6	17.0	31.3	45.7	60.0	74.4	88.1	101.8	115.6	129.3	143.1
(D) Expected total RES consumption <sup>1</sup>	850	884	927	970	1,027	1,084	1,171	1,230	1,290	1,349	1,409	1,469
(E) Expected transfer of RES in other Member States	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(G) Expected consumption of RES adjusted for target (D) - (E) + (F)	850	884	927	970	1,027	1,084	1,171	1,230	1,290	1,349	1,409	1,469

<sup>1</sup> According to Article 5(1) of Directive 2009/28/EC, gas, electricity and hydrogen from renewable energy sources shall only be considered once. No double counting is allowed.

PROVISIONAL

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

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
(C) Expected RES consumption in transport <sup>1</sup>	8.7	11.6	26.6	41.6	56.6	71.6	86.7	101.6	116.6	131.6	146.6	161.6
(H) Expected RES electricity in road transport <sup>2</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	3.8	5.7	7.6	9.6
(I) Expected consumption of biofuels from wastes, residues, non-food cellulosic and lignocellulose materials in transport <sup>2</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	8.7	13.0	17.4	21.7
(J) Expected RES contribution to transport for the RES-T target: (C) + (2.5 - 1) x (H) + (2 - 1) x (I)	8.7	11.6	26.6	41.6	56.6	71.6	86.7	108.9	131.1	153.3	175.5	197.7

<sup>1</sup> Containing all RES used in transport including electricity, hydrogen and gas from renewable energy sources, and excluding biofuels that do not comply with the sustainability criteria (Article 5(1), last subparagraph). Specify here actual values without using the multiplication factors.

<sup>2</sup> Specify here actual values without using the multiplication factors.

PROVISIONAL TRAIL

## **4. MEASURES FOR ACHIEVING THE TARGETS**

### **4.1. OVERVIEW OF POLICIES AND MEASURES TO STIMULATE THE RENEWABLE USE OF ENERGY**

An overview of policies and measures is provided in Table 5.

PROVISIONAL TRANSLATION

Table 5: Overview of all policies and measures

Measure name and reference	Type of measure *	Expected results **	Target group and/or activity ***	Existing or planned	Start and end dates of the measure
<b>ELECTRICITY</b>					
1. Stimulating the use of renewable sources in the production of electricity	Legislative Financial	35% of the production of electricity from RES in the total direct electricity consumption to the end of 2020	Projects to develop plants using RES Eligible electricity producers	Existing	2007 -
<b>HEATING AND COOLING</b>					
1. Stimulating the production of heat/cooling energy from RES	Financial Legislative	Greater use of national heat potential for heating and cooling.	Cogeneration plant development projects and thermal energy development products that use RES Eligible electricity and thermal energy producers	Planned	2015 -
2. Stimulation of the use of cogeneration	Legislative Financial	To the end of 2020, the minimal share of electricity produced from cogeneration plants from eligible products and delivered to the transmission or distribution network will amount to 4% of the total final consumption of electricity.	Project leaders for the development of cogeneration plants Eligible producers of electricity	Existing	2007 -
3. Stimulating the use of RES among legal entities	Financial	Implementation of projects that contribute to achieving the target of 20% RES in direct energy consumption to 2020	Natural persons (households) Legal persons (small and medium enterprise)	Existing	2008 -
4. Use of fuels from waste in the cement industry	Legislative Financial	Contribution to achieving the target of 20% RES in direct energy consumption to 2020	Local and regional self-government units Cement factories	Existing	2011 -
<b>BIOFUELS AND OTHER BIOLIQUIDS</b>					

Measure name and reference	Type of measure *	Expected results **	Target group and/or activity ***	Existing or planned	Start and end dates of the measure
1. Obligation of the placement of biofuels on the market of the Republic of Croatia	Legislative	Increasing the consumption of biofuels. Contribution to achieving the target of 10% share of RES in energy production for transport in 2020	Distributors of diesel fuels and petrol	Existing	2010 -
2. Obligation of procurement or leasing of vehicles that can use biofuels in public transport and the public sector	Legislative	Increasing the consumption of biofuels. Contribution to achieving the target of 10% share of RES in energy production for transport in 2020	Public transport companies and the public sector	Existing	2011 -
3. Stimulating the production of biofuels	Financial Legislative	Increasing the consumption of biofuels.	Producers of biodiesel and bioethanol	Existing	2010 -
4. Financial incentives for the purchase of hybrid and electric vehicles	Financial	Increased share of electric and hybrid vehicles Primary energy savings	Buyers of hybrid and electric vehicles	Planned	2014 -
<b>INTERSECTORAL MEASURES</b>					
1. Stimulating the use of RES and energy efficiency via the Croatian Bank for Reconstruction and Development (HBOR)	Financial	Contribution to achieving the target of 20% RES in direct energy consumption to 2020.	Local and regional self-government units, municipal companies, companies, craftspersons. Corporate banks that have concluded cooperation with HBOR on implementation of the programme	Existing	2009 -
2. Stimulating the use of RES and energy efficiency through funds of the Environmental Protection and Energy Efficiency Fund (EPEEF)	Financial	Contribution to achieving the target of 20% RES in direct energy consumption to 2020	Local and regional self-government units, public institutions, companies, craftspersons, non-governmental organisations,	Existing	2004 -



Measure name and reference	Type of measure *	Expected results **	Target group and/or activity ***	Existing or planned	Start and end dates of the measure
			non-profit organisations, natural persons		
3. Energy efficiency projects with recoup through savings (ESCO model)	Financial	Increased use of heat produced from RES in public and private sector	Private and public sector Buildings, public lighting, energy supply systems	Existing	2004 -
4. Actions at the local level	Organisation/sociological type	Behavioural changes – raising awareness about RES	Local governments, interest groups, public	Existing	2004 -

\* Indicate if the measure is (predominantly) regulatory, financial or soft (i.e. information campaign).

\*\* Is the expected result behavioural change, installed capacity (MW; t/year), energy generated (ktoe)?

\*\*\*Who are the targeted persons: investors, end users, public administration, planners, architects, installers, etc? or What is the targeted activity/sector: biofuel production, energetic use of animal manure, etc?

PROVISIONAL TRANSITION PLAN

## **4.2. SPECIFIC MEASURES TO MEET THE REQUIREMENTS FROM ARTICLES 13, 14, 16, 17–21 OF DIRECTIVE 2009/28/EC**

### **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 network infrastructure:

The legislative framework that outlines the authorisation, certification and licensing procedures in the field of energy:

- Energy Act (Official Gazette 120/12),
- Electricity Market Act (Official Gazette 22/13),
- Thermal Energy Market Act (Official Gazette 80/13),
- Act on the Regulation of Energy Activities (Official Gazette 120/12),
- Regulation on fees for stimulating the production of electricity from renewable energy sources and cogeneration (Official Gazette 33/07, 133/07, 155/08, 155/09, 8/11, 144/11),
- General conditions for the supply of electricity (Official Gazette 14/06),
- Network rules for the electricity system (Official Gazette 36/06),
- Rules for the activity of the electricity market (Official Gazette 135/06, 146/10, 90/12),
- Tariff system for the production of electricity from renewable energy sources and cogeneration (Official Gazette 63/12, 121/12, 144/12),
- General conditions for the supply of heat (Official Gazette 129/06),
- Ordinance on acquiring the status of an eligible electricity producer (Official Gazette 88/12),
- Ordinance on using renewable energy and cogeneration (Official Gazette 88/12),
- Ordinance on fees for connection to the electricity grid and for increasing connection capacity (Official Gazette 28/06).

The legislation pertaining to the authorisation, certification and licensing procedures in the area of urban planning and construction:

- Act on Physical Planning and Construction (Official Gazette 76/07, 38/09, 55/11, 90/11, 50/12 and 55/12),
- Act on the procedures and conditions of construction for the stimulation of investments (Official Gazette 69/09, 128/10 and 136/12),
- Regulation on determining interventions in space and structures for which the Ministry of Environmental and Nature Protection, Physical Planning and Construction issues a location and/or building permit (Official Gazette 116/07 and 56/11),
- Ordinance on simple structures and works (Official Gazette 21/09, 57/10, 126/10, 48/11, 81/12 and 68/12).

The legislation pertaining to the authorisation, certification and licensing procedures in the areas of environmental and nature protection:

- Environmental Protection Act (Official Gazette 80/13),
- Nature Protection Act (Official Gazette 80/13),
- Air Protection Act (Official Gazette 130/11),
- Regulation on the environmental impact assessment of interventions (Official Gazette 64/08, 67/09),
- Regulations on the procedure of establishing uniform conditions of environmental protection (Official Gazette 114/08),
- Regulation on the manner of trading greenhouse gas emissions units (Official Gazette 69/12),
- Ordinance on the assessment of acceptability of plans, programs and interventions for the ecological network (Official Gazette 118/09).

The legislation pertaining to the authorisation, certification and licensing procedures in the area of water management:

- Waters Act (Official Gazette 153/09, 63/11, 130/11 and 56/13)
- Regulation on the criteria for granting concessions for the commercial use of water (Official Gazette 89/10, 46/12 and 51/13),
- Regulation on fees for the use of water (Official Gazette 82/10 and 83/12),
- Ordinance on the issuance of water use documents (Official Gazette 78/10 and 79/13).

The legislation pertaining to the authorisation, certification and licensing procedures in the area of mining:

- Mining Act (Official Gazette 56/13).

The legislation pertaining to the authorisation, certification and licensing procedures in other areas:

- Act on the General Administrative Procedure (Official Gazette 47/09),
- Concessions Act (Official Gazette 143/12).

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

- MINGO is competent for administrative and expert tasks relating to energy in the Republic of Croatia, for the drafting of proposed laws and regulations in the field of energy, planning and proposing energy development strategies and, in particular, for performing administrative and experts tasks pertaining to renewable energy and cogeneration (RESC), issuance of energy authorisations for acquiring the status of an eligible electricity producer, keeping the Register of RESCPP of those eligible producers. The Directorate for Energy and Mining within MINGO contains the Sector for Energy which is responsible for energy matters. The Sector for Energy contains the Office for Renewable Energy, Energy Efficiency and New Technologies, which is responsible for the area of RES and energy efficiency. The Sector for Mining of the Directorate for Energy and Mining is responsible for performing administrative and expert tasks pertaining to research and exploitation of mineral raw materials and the issuance of construction and usage permits for mining facilities and plants.
- In the Ministry of Construction and Physical Planning, several organisational units are responsible for these areas: Directorate for Construction, Housing and Municipal

Economy; Directorate for Physical Planning; Directorate for Energy Efficiency in Construction, Strategic Planning and International Cooperation; and the Institute for Physical Planning. The Directorate for Construction, Housing and Municipal Economy performs tasks relating to determining the conditions for the design and construction of buildings, construction permits and usage permits; the Directorate for Physical Planning performs tasks relating to physical planning in the Republic of Croatia and the alignment of spatial development, planning, use and protection of lands, monitoring spatial states and implementing physical planning documents of the Republic of Croatia and location permits; the Directorate for Energy Efficiency in Construction, Strategic Planning and International Cooperation performs tasks in the implementation of energy efficiency policy of the Government of the Republic of Croatia, in cooperation with the ministry responsible for energy drafts proposals of acts and subordinate legislation in the areas of energy efficiency and drafts and proposes the National Energy Efficiency Programme and the National Plans for its implementation; while the Institute for Physical Planning drafts and monitors the implementation of the Physical Development Strategy and Physical Planning Programme of the Republic of Croatia and other physical planning documents.

- The Ministry of Environmental and Nature Protection is responsible, through the activity of the Directorate for Environmental Protection and Sustainable Development, Sector for Atmosphere, Sea and Soil in the area relating to the adoption of measures to mitigate climate change and the issuance of permits to operators of plants emitting greenhouse gases, and for tasks of the Sector for Sustainable Development, particularly the proposing of measures and projects of Croatia's "green development", the promotion of renewable energy and energy efficiency; the Sector for Assessment of the Environment and Industrial Pollution, among other things, is responsible for tasks relating to the assessment of environmental impacts of products and strategic environmental impact assessments, prevention and responsibility for the environment, integral pollution prevention and other measures to reduce and prevent environmental pollution. The same Ministry, through the activities of the Directorate for Environmental Protection, is responsible for administrative and expert tasks relating to the conservation of biological and landscape diversity, the sustainable use of natural resources and protection of natural values.
- The Ministry of Agriculture, through the activity of the Directorate for Water Management, is responsible, among other things, for performing administrative and expert tasks relating to the direct application of the act, subordinate legislation and planning documents in the area of water management.
- HERA, as the energy activity regulator, is responsible for ensuring objectivity, clarity and fairness in the performance of energy activities, the implementation of principles of the regulated approach to the network/system, adopting methodology for determining tariff items in tariff systems, establishing an efficient energy market and market competition, and protection of energy and energy undertaking consumers.
- HROTE organises the electricity market under the supervision of HERA as the national regulator. Furthermore, it concludes contracts on electricity purchases with eligible producers that have the right to incentive prices, concludes contracts with all suppliers for the purpose of taking electricity produced from RESC and collects fees for stimulating production from REC from all suppliers on the electricity market.
- Operators of the electricity system are HOPS and HEP-ODS. HOPS is responsible for the operations and management, maintenance, development and construction of the

transmission network for a given area and crossborder transmission lines towards other networks, and for ensuring long-term network capacity to meet reasonable demand for the transmission of electricity. HEP-ODS is responsible for the delivery to customers of electricity taken from the transmission network in a given area, and for ensuring the long-term capacity of the network to meet reasonable demand for the distribution of electricity, or the supply, sale, measurement, calculation and charging of electricity, and is responsible for the maintenance of the distribution network and plant, replacement, reconstruction and development.

- The administrative bodies of the counties and the City of Zagreb competent for physical planning, construction, environmental and nature protection perform procedures for preliminary and main acceptability assessments of projects on the ecological network, environmental impact assessment, assessment procedure for the need to conduct an environmental impact assessment, procedure for the issuance of location permits, confirmation of the main project, decisions on construction and usage permits.

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

The project entitled "Support to the Ministry of Economy, Labour and Entrepreneurship in conceiving clear and unambiguous procedures in the development and issuance of permits for executing projects and constructing RES (Streamlining)", financed by funds of the GEF was completed in mid 2010. The objective of the target was to give an assessment of the current procedure for issuing permits and assessments of county physical planning documents with regard to RES and to propose amendments to remove barriers and to streamline the procedure. During 2012, new subordinate legislation was adopted which improved the permit issuance procedure in the sense of Article 13(1) of Directive 2009/28/EC. The new subordinate legislation adopted is: Tariff system for the production of electricity from renewable energy sources and cogeneration (Official Gazette 88/12) and Ordinance on acquiring the status of an eligible electricity producer (Official Gazette 88/12). Adoption of the Renewable Energy Act is expected by the end of 2013, or beginning of 2014. This would unify the regulations in the area of RES and further organise the legislation for the issuance of permits for the development and construction of plants using RES.

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

Counties, cities and municipalities have programmes to cofinance incentives for implementing RES in households. To date, several counties, cities and municipalities have implemented RES incentive programmes, which most often were in the form of incentives for the installation of solar collectors and heat pumps. As the state institution responsible for securing additional funds to finance renewable energy projects, EPEEF implemented seven tenders in late 2012 and early 2013 for cofinancing the preparation, implementation and development of projects and similar activities in the area of renewable energy use to be implemented during 2013 and 2014.

1. Tender for the submission of bids by local and regional self-government units for joint financing programmes for the use of RES in households (family homes and multiunit buildings), cofinanced by EPEEF to 40% by grants in the amount of HRK 24 million, and local and regional self-government units in the amount of a minimum of 10% of justified investment costs for natural persons for the installation of systems with:

- solar heat collectors,
- boilers using wooden chips/pellets or wood pyrolysis;
- heat pumps;
- photovoltaic collectors and accumulators for the production of electricity for own consumption.

A total of 47 counties, cities and municipalities were selected for the EPEEF funds, and during 2013, they will issue tenders for cofinancing at the local and regional levels. The total value of accepted projects is HRK 63,134,207.00, and EPEEF is participating with HRK 23,787,997.00. Therefore, EPEEF will cofinance these 47 projects pertaining to the installation of 2099 RES systems in households, comprising:

- 1511 solar heat collectors,
  - 455 biomass boilers,
  - 95 independent photovoltaic systems,
  - 35 heat pumps,
  - 3 wind generators.
2. Tender for the use of EPEEF funds for cofinancing renewable energy products, with the EPEEF allocating the amount of HRK 18,000,000.00 for the cofinancing of justified costs as follows:
    - companies – subsidies for commercial loan interest rates in the amount of justified project costs, to HRK 800,000.00 per project, or interest-free loans for 40% of the justified projects costs, to HRK 1,400,000.00 per project;
    - local and regional self-government units – to HRK 1,400,000.00 per project for 80% of justified project costs in areas of special state concern, 60% on islands and in hilly-mountainous regions, and 40% in other regions, and
    - Croatian veteran cooperatives to HRK 200,000.00 per project for 40% of the justified project costs.
  3. Tender for the user of EPEEF funds for cofinancing energy efficiency projects in construction (in residential buildings, family homes and multi-unit buildings and in non-residential buildings), in which the EPEEF cofinances local and regional self-government units, public institutions, companies, craftspersons and other legal persons in the amount of HRK 30,000.00 per household for the implementation of projects to increase energy efficiency, including the following systems:
    - heating: installation of boilers fuelled with wood chips/pellets or wood pyrolysis boilers, and heat pumps with an A energy class: air-water COP>3.2; water-water COP>4.45 and earth-water COP>4.45, and
    - cooling: installation of heat pumps with an A energy class: air-water EER>3.1 and water-water EER>5.05 and earth-water EER>5.05.
- EPEEF approved 141 projects for cofinancing in the total amount of HRK 376,975,089.21, and the participation of EPEEF in that total amount is HRK 107,711,760.63.
4. Tender for the use of EPEEF funds for cofinancing the drafting of project documentation for renewable energy projects, cofinanced by EPEEF to HRK 1,400,000.00 per project:
    - interest-free loans to companies, craftspeople and other legal persons for 40% of the justified project costs, and

- financial assistance to local and regional self-government units for 80% of the justified project costs in areas of special state concern, 60% on the islands and hilly-mountainous areas, and 40% in other areas.

EPEEF approved 85 projects for cofinancing with a total value of HRK 67,575,882.09, and the cofinancing of EPEEF is in the total amount of HRK 23,771,199.39.

5. Tender for the use of funds of the EPEEF for the cofinancing of energy efficiency projects and renewable energy use projects in buildings in the tourism sector, and other commercial buildings for public use, by which the Fund subsidises interest rates for companies, craftspersons and other legal persons to the amount of HRK 800,000.00 per project or awards interest-free loans to HRK 1,400,000 per project for 40% of justified costs for energy efficiency projects and the installation of RES systems:
  - solar heat collectors for the preparation of hot water consumption or for the preparation of hot water consumption and heating;
  - heat pumps (earth-water, water-water and air-water) for the preparation of hot water, heating and cooling consumption,
  - biomass fuelled boilers for the preparation of hot water and heating consumption,
  - photovoltaic collectors and accumulators for the production of electricity for own consumption (independent/off-grid system).

EPEEF approved 18 projects for cofinancing valued at a total of HRK 107,627,136.45, and the cofinancing of EPEEF was in the total amount of HRK 8,878,860.33.

6. Tender for the use of EPEEF funds for cofinancing projects of civil society organisations (associations) in the areas of energy efficiency and renewable energy use, in which the EPEEF offers grants in the amount of HRK 2,000,000, with donations of HRK 200,000 per project to cofinance:
  - promotion of energy efficiency and RES use in direct energy consumption categories,
  - collection of data, research and compilation of expert analyses and studies on energy consumption and the use of RES, with proposed measures to improve the current state,
  - education programmes on energy efficiency and RES use, aimed at increasing public awareness on the importance of sustainable development, and
  - educational projects of Croatian veterans' associations aiming to enable rehabilitation and the active inclusion of Croatian veterans in society, and relating to energy efficiency and RES use.
7. Tender for the public collection of bids for participation of the EPEEF in cofinancing projects to install systems for the use of liquefied petroleum gas or liquefied natural gas and solar heat collectors in households on the islands, which the Fund awards to natural persons in the form of donations up to HRK 45,800 per system.

Through the cofinancing programme, counties, cities and municipalities stimulate the installation of RES in households. To date, several counties, cities and municipalities have implemented the RES stimulation programme, most often in the form of incentives for the installation of solar collectors and heat pumps. As the state institution responsible for

securing additional funds for financing renewable energy projects, in late 2012 and early 2013, EPEEF conducted seven tenders to cofinance the preparation, implementation and development of project programmes and similar activities in the area of renewable energy use to be executed during 2013 and 2014.

- 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 network 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 identification of obstacles or non-proportional requirements in the permitting procedure for RES and cogeneration project development was one of the objectives of the project "Streamlining", which is briefly outlined under point 4.2.1c. A project result was the compilation of a list of some 80 identified shortcomings, with proposals for their remedy. Furthermore, each shortcoming was accompanied by a code identifying the type of shortcoming (systematic, administrative, technical or organisations) and the level of priority for the removal of shortcomings (low, moderate or high priority). Among the identified shortcomings, the most significant were the following: the permitting process for 'small projects' particularly for projects as part of households was not any simpler than the procedure in other projects, obtaining the previous energy authorisation caused problems for the reservation of locations by foreign investors who had not launched projects, and the question of justification of locations with regard to criteria other than energy potential (physical plans, environmental and nature protection), excessively low quotas for solar electrical plants with regard to the possibility of obtaining the status of an eligible producer, and general lack of alignment of objectives ensuing from the RES regulations with the national energy strategy, and a lack of alignment of those regulations with other separate regulations (construction, mining, water management), technical limitations of the electricity system for the connection of new RES plants due to a lack of energy regulation regarding the intermittent plant conditions of such plants, administrative barriers associated with the placement on the market for previously known and available quantities of biomass for the unhindered operation of biomass fuelled electrical plants and shortcomings pertaining to physical planning documentation with regard to determining RES plant locations. Through amendments to the subordinate legislation as described under point 4.2.1c, the majority of the identified shortcomings were removed.

- f) What level of administration (local, regional and national) is responsible for authorising, certifying and licensing renewable energy installations and for spatial planning? (If it depends on the type of installation, please specify.) 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?

For the majority of procedures, the issuance of the necessary solutions or permits lies at the state level of administration, i.e. MINGO, HERA and HROTE. In the segment of issuing permits for connection to the electricity network, connections to the transmission network (for electric plants with capacity to 10 MW) is resolved by HEP-ODS at the regional level, in line with its organisation into 21 distribution districts, which primarily overlap with the territories of the counties.



The issuance of location permits, the document that approves construction and the usage permit for the plant takes place at the state level, i.e. applications concerning construction are resolved by MCPP if these are projects in areas stipulated by the Government of the Republic of Croatia by a regulation, and for projects planned in the territory of two or more counties, or the City of Zagreb, while in other cases, these are resolved at the local and regional levels. Higher levels of administration are also responsible in resolving applications pertaining to environmental and nature protection, depending on the site of the project and the planned capacity of the plant.

With the exception of the Physical Planning Strategy and Physical Planning Programme of the Republic of Croatia, physical planning takes place at the local and regional levels. The regional administration level is represented in the counties that adopt county physical plans, or the City of Zagreb, while at the local level, the physical plans of cities, towns and municipalities are adopted.

Coordination between the various levels was addressed in the 'Streamlining' project as one of the elements of the system requiring improvement. With the adoption of the Ordinance on obtaining the status of an eligible electricity producer (Official Gazette 88/12), the coordination between levels has already been improved for electricity generation projects for simple structures (for 'small' solar projects). Further improvements to coordination are expected following the adoption to the Renewable Energy Act by the end of 2013 or in early 2014. There are currently no institutions or bodies with formal authorities for coordination, though the ministry responsible for energy has the role of the central body for implementation of RESC projects. The Centre for Monitoring Operations in the Energy Sector and Investments (CEI) has the legal obligation to monitor, supervise and remove barriers in the implementation of RES projects.

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

Availability of information on the processing of applications for the issuance of authorisations, certificates and permits is ensured through the internet application of the RESCPP Register, found on the website of the Ministry of Economy at: [oie.mingo.hr](http://oie.mingo.hr). The application contains a list of projects according to the type of plants, registration number, name of plant, project leader, group of plants pursuant to the Ordinance on the use of renewable energy sources and cogeneration, counties, locations, planned electrical and heat capacities of plants, types of decisions and date of execution of decisions.

At the same website ([oie.mingo.hr](http://oie.mingo.hr)), it is also possible to find detailed instructions and a list of steps in the development of projects for officials in administrative bodies, project leaders, project designers and investors. These instructions were drafted as part of the 'Streamlining' project. In addition to the instructions, users also have access to detailed flow charts which, like the instructions, are divided based on the type of plant, thereby allowing for a simple overview of procedure by the type and capacity of plant. The said website also contains other useful information, such as European and national energy policy, particularly RES policy, a comprehensive overview of all relevant legal regulations, instructions for project applications

and various useful documents. Other information is also available from authorised persons employed with the Ministry of the Economy.

- h) How is horizontal coordination facilitated between different administrative bodies, responsible for the different parts of the permit? How many procedural steps are needed to receive the final authorisation/licence/permit? Is there a one-stop shop for coordinating all steps? Are timetables for processing applications communicated in advance? What is the average time for obtaining a decision for the application?

Coordination between various administrative bodies for the issuance of different permits is seen in the case of the issuance of the location permit. The location permit is issued by the competent administrative body of the county, City of Zagreb, large city and the ministry responsible for physical planning and construction. In the permit issuing procedure, and prior to its issuance, at the request of the competent administrative body, it is necessary to obtain prior electricity consent from the operator of the transmission or distribution system. In such a case, there is no need for special coordination, while there are no other cases that would require such coordination, as there is no overlap of the competencies in the issuance of other permits.

The number of procedural steps for the issuance of permits depends partly on the type of production plant. For example, for production plants such as hydropower plants or geothermal plants, the number of steps is higher due to the need to obtain the concession contract and the water use permit.

The number of steps for obtaining a permit depends partly on the planned installed capacity of the production plant, with a greater number of steps required for greater capacity of the production plant. For example, for lower capacity projects, it is not necessary to conduct the environmental impact study, or to obtain the Decision on the uniform requirements for environmental protection.

Generally, the number of procedural steps to the issuance of the decision on the status of an eligible electricity producer in the most complex case is not higher than 30, taking all activities into account, including steps from the initial project phases, i.e. the drafting of preliminary project feasibility studies, registration of the activity, drafting documents to assess the acceptability of the project for the ecological network, drafting environmental impact assessments, drafting documents to obtain the uniform requirements for environmental protection and drafting the initial project design. If only those procedures steps are counting that concretely lead to the issuance of a specific document (decision, permit, authorisation), then the maximum number of steps is 20. In the issuance of documents in the field of energy, there is a maximum of nine procedural steps.

The schedule of publication of procedural steps is not released in advance, as the resolution of applications depends on the type and capacity of the plant, and generally lasts between 10 and 30 months.

There is an abbreviated procedure for simple structures, i.e. for small integrated solar electric plants until the filling of the quota, pursuant to the Tariff System for the production of electricity from renewable energy sources and cogeneration (Official Gazette 63/12, 121/12 and 144/12).

- i) Do authorisation procedures take into account the specificities 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?

Pursuant to a separate regulation from the area of construction, specific technology features are considered for simple structures. Simple structures are considered photovoltaic modules for the production of the electricity, if these are integrated solar plants (situated on the surfaces of buildings or infrastructure). For this technology, the procedure has been shortened as the leader of such a project can obtain the status of an eligible electricity producer pursuant to the electricity consent to the distribution system operator, while it is not necessary to obtain the preceding decision on obtaining the status of an eligible producer and the energy authorisation for simple structures, while the contract on the purchase of electricity is concluded between the project leader and HROTE.

The applicant for the issuance of energy authorisation is obliged to append to the application a graphical overview on a topographic map that unambiguously defines the physical space of realisation of the planned structure, and avoids any overlap of the space encompassed by other projects.

For hydroelectric plants, wind power plants, geothermal plants and solar plants with a capacity greater than 30 kW, it is necessary to define the space of the project development and the border geodetic points of the space, which results in a concrete drawing of the polygon on a topographic map. For plants using other renewable energy technology, it is sufficient to define the location of the plant with a single geodetic point.

The spatial coordinates should be delivered using the official projection coordinate system, i.e. the Mercator transversal projection HTRS96/TM with the Croatian terrestrial reference coordinate system.

For wind farms, the applicant requesting the issuance of the energy authorisation is required to submit in the graphical overview both the definition of the space of the project development and the planned distribution of wind turbines and the position of the measurement column. The prescribed minimum air distance is 2000 m between wind turbines and the nearest wind turbine of the next planned and/or built wind farm.

Project leaders for hydropower plants are required to append the concession contract for the use of water capacity pursuant to the regulations in the area of water management and concessions to the application for the issuance of the energy authorisation. The project leaders for geothermal plants are required to append to the application for the issuance of the energy authorisation the concession contract for the exploitation of mineral raw materials pursuant to the regulations in the fields of mining and concessions, if the final intended use of the mineral and geothermal waters is for energy purposes. Furthermore, in the case of a reconstruction of a hydroelectric plant with installed capacity up to and including 10 MW, in which at minimum new electrical engineering equipment with greater efficiency has been installed, the eligible producer may request the issuance of a new decision on the status of the eligible producer listing the reconstruction.

The specificity of the technology is taken into account for solar electric plants in the application of tariff items, which is also partially connected with the licensing procedure. For integrated solar plants up to and including 300 kW, corrections of the fixed tariff rates using the prescribed factors are applied. With this, the level of tariff items increases for solar plants, such that the increase is greater for plants with smaller installed capacities. Furthermore, corrections are applied for the stimulation of heat systems using RES (systems for the preparation of sanitary hot water and/or heating using RES). The condition is achieving the minimum ratio of installed capacity of the heat system on RES and the installed capacity of solar plants. As in the case of corrections for integrated systems, larger coefficients are applied for smaller capacity plants.

- j) Are there specific procedures, for example simple notification, for small-scale, decentralised installations (such as solar panels on buildings or biomass boilers in buildings)? If so, what are the procedural steps? Are the rules publicly available to citizens? Where are they published? Is the introduction of simplified notification procedures planned in the future? If so, for which types of installation/system? (Is net metering possible?)

For smaller, decentralised plants, there are currently no special procedures, other than the defined procedures for obtaining permits as for all other types and capacities of RESC as published on the website: [oie.mingo.hr](http://oie.mingo.hr). This information is available to all citizens with internet access. In the sense of announcements, local and regional self-government units release public invitations to bid on their websites for the participation of local and regional self-government units in the financing of RES use by natural persons. Other procedures are currently not planned.

- 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?

For the issuance of the energy authorisation, the application submitted by the project leader to the line ministry for energy should also include the administrative fee in the amount prescribed by the Administrative Fees Act (currently this fee is HRK 70). For applications for the issuing of the permits for performing energy activities, i.e. the preliminary and final decision on obtaining the status of an eligible electricity producer that is submitted to HERA, the fee is stipulated by the Decision on the level of fees for performing regulatory tasks of energy activities (Official Gazette 155/08, 50/09, 103/09 and 21/12). No revision of these fees is currently planned.

- l) Is official guidance available to local and regional administrative bodies on planning, designing, building and refurbishing industrial and residential areas to install equipments 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?

The local and regional administrative bodies do not have official guidance available to them. The regional energy agencies in Croatia, that territorially cover counties and the City of Zagreb, offer a certain amount of support to the local and regional bodies in planning RES projects. Bodies in other counties do not have this support. In the next two years, the Ministry of Economy plans to publish guidelines for local and regional administrative bodies in which the focus will be on further development measures that encompass the development of RES and contributions to energy efficiency such as installations that have production at the site of

consumption (micro-cogeneration, photocollectors, heat collectors) and on the development of smart networks.

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

Special training for persons handling applications in the procedures of issuing documents for renewable energy installations is included in the state examination process. All state services have the obligation to pass the state expert examination.

#### **4.2.2. TECHNICAL SPECIFICATIONS (ARTICLE 13(2) OF DIRECTIVE 2009/28/EC)**

a) To benefit from support schemes do renewable energy technologies need to meet certain quality standards? If so, which installations and what quality standards? Are there national, regional standards that go beyond European standards?

There are no limitations to the support systems in the use of technology for obtaining energy from RES in the technical sense, such as specific standards or additional certifications of equipment, outside the normal market standards.

Eligible electricity producers can obtain the right to the incentive price that is stipulated with application of the Tariff System for the production of electricity from RESC.

An eligible electricity producer is an electricity undertaking that produces energy from renewable sources or an individual production facility that simultaneously produces electricity and heat in a highly effective manner, or uses waste or renewable energy in an economic appropriate manner that is aligned with environmental protection.

The conditions for attaining the status of an eligible electricity provider are laid down by the Ordinance on attaining the status of an eligible electricity producer (Official Gazette 88/12). Namely, the project leader or electricity producer or electricity and heat producer may attain the status of an eligible producer for the production of electricity from a plant:

- that is connected to the electricity transmission or distribution network and pursuant to the terms of network use may sell electricity in the network;
- that meets the technical and operational conditions for plants with the status of eligible producers:
  - plants are connected to the electricity transmission or distribution network via the measurement site of the producer, which measures the electricity supplied to the network,
  - if the plant uses multiple connections, or measurement sites, the plant must ensure the measurement of the overall produced electricity, electricity supplied to the network, and electricity for own use, which includes the consumption of electricity for the preparation of the primary energy source,
  - if the plant produced electricity and thermal energy, the plant must ensure measurement of the total electricity generated in the plant, total thermal energy

- produced, thermal energy produced outside of cogeneration, return heat and fuel consumption,
- the calculation measurement site of the plant may not receive the parallel operations of the plant or other plants that do not use RESC or that have not attained the status of an eligible producer;
  - that belongs to one of the following groups:
    - group 1 – plant connected to a distribution network that uses RES for the production of electricity with an installed capacity up to an including 1 MW, or
    - group 2 – plant connected to the transmission or distribution network that uses RES for the production of electricity with an installed capacity greater than 1 MW, or
    - group 3 - cogeneration plants with installed capacity up to an including 1 MW, connected to the distribution network, with the condition of primary energy savings (primary energy savings, hereinafter: PES > 0), or
    - group 4 – cogeneration plants with an installed capacity greater than 1 MW, connected to the transmission or distribution network, with the condition of primary energy savings of a minimum of 10% (PES ≥ 0.10).

Primary energy savings (PES) are calculated based on the data of fuel consumption and thermal energy and electricity production during one calendar year of operations, pursuant to Annex III of Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EC.

#### **4.2.3. BUILDINGS (ARTICLE 13(3) OF DIRECTIVE 2009/28/EC)**

- a) Reference to existing national and regional legislation (if any) and summary of local legislation concerning the increase of the share of energy from renewable sources in the building sector:
- Physical Planning and Construction Act (Official Gazette 76/07, 38/09, 55/11, 90/11 and 50/12)  
This Act governs the system of physical planning and construction, the competence of state bodies and local and regional self-government bodies in administrative and other procedures, and administration and inspection supervision. As one of the objectives of construction, the Act outlines good design and construction that ensure the energy efficiency of buildings. In its provisions, it transposes the Directive on Energy Properties of Buildings 2002/91/EC and gives the foundation for the subordinate legislation that lays down, in detail, the procedures for the energy certification of buildings, the conditions for authorisation of persons to conduct the energy certification of buildings and buildings for which energy certificates are required. Furthermore, it gives the opportunity for prescribing conditions for maintenance, and for improving requirements for the energy properties of buildings.
  - Regulation on contracting and implementation of energy services in the public sector (Official Gazette 69/12)  
This Regulation prescribes the manner of contracting energy services and the content of the contract on energy services that governs the rights and responsibilities of providers and buyers of energy services as contracting sides, and the manner of monitoring the

implementation of energy services. The energy services contract is a contract on energy efficiency in the sense of the Act on the Efficient Use of Energy in Final Consumption.

- Ordinance on energy audits of structures and energy certification of buildings (Official Gazette 81/12, 29/13 and 78/13)

This Ordinance stipulates the implementation of energy audits of structures to establish the energy properties and manner of energy management in buildings that consume energy and water, determining measures to improve energy efficiency and their cost-effectiveness and conducting the energy certification of buildings, and particularly prescribes the following for public use buildings:

- obligation to conduct an energy audit,
  - annual limit values of final energy consumption of the building that serves to determine the category of a higher energy consumer,
  - obligation for energy certification of a building, or exemption from such obligation,
  - obligation of the public display of the energy certificate of the building,
  - obligation of the investor, owner and use of the building in the implementation of the energy audit of the building and the energy certification of the building,
  - percentage of implementation the energy audit of the building,
  - percentage of implementation of the energy certification of the building,
  - manner of determining the energy class of the building,
  - content and appearance of the energy certificate of the building,
  - performance of regular reviews of the heating and cooling systems,
  - register report on conducted energy audits of structures and energy certificates of buildings,
  - supervision over implementation of this Ordinance.
- Ordinance on the conditions and criteria for persons conducting energy audits of buildings and energy certification of buildings (Official Gazette 81/12 and 64/13)

This Ordinance prescribes the conditions and criteria for the issuance of authorisations to persons for conducting energy audits of structures and energy certification of buildings; proof for natural and legal persons, actions, exemptions, duties and responsibilities of authorised persons for conducting energy audits for structures and energy certification of buildings; supervision over the work of authorised persons for conducting energy audits of buildings and energy certification of buildings, register of authorised persons for performing energy audits of structures and energy certification of buildings, conditions for issuing consent for conducting training programmes, obligations of the leader of the training programmes, register of leaders of training programmes, content and manner of implementation of training programmes.

- Ordinance on the control of energy certification of buildings and reports on energy audits of structures (Official Gazette 81/12 and 79/13)

This Ordinance prescribes the conditions and criteria for the issuance and revocation of authorisation for performing controls of building energy certificates and controls of reports on structure energy audits, procedures for the issuance and revocation of authorities to persons for conducting controls, the reissuance of authorisation for performing controls, changes during authorisation, procedures of authorised persons and exemptions in the performance of tasks, register of authorised persons, selection of reports on energy audits and energy certificates for controls, content of the control, obligations of investors, owners and users of the structure during the performance of control, obligations of authorised persons for performing energy audits of structures and authorised persons for performing energy certification of buildings in the performance of

controls, procedures upon negative reports on control, fees for the performed control, supervision over the work of authorised persons for controls.

- Ordinance on simple structures and works (Official Gazette 21/09, 57/10, 126/10, 48/11, 81/12 and 68/13)

This Ordinance defines simple and other structures and works that may be built or executed without a decision on the terms of construction, confirmed main project and construction permit and/or location permit. Structures that may be built without documents approving the construction and location permit, in accordance with the main project or type project for which a decision was issued pursuant to Article 196 of the Physical Planning and Construction Act, include, among other things, solar collector systems, i.e. photovoltaic modules for the purpose of production of heat or electricity.

- Technical regulation on the rational use of energy and heat protection in buildings (Official Gazette 110/08, 89/09, 79/13 and 90/13)

This Technical regulation prescribes the technical requirements for the rational use of energy and heat protection that should be met upon the designing and construction of new buildings, and during the use of existing buildings that are heated to an internal temperature greater than 12°C, technical requirements for the rational use of energy and heat protection that should be met during the reconstruction design for existing buildings that are heated to internal temperatures greater than 12°C, other technical requirements for the rational use of energy and heat protection in buildings, properties and other requirements for buildings products in relation to their significant characteristics, which are installed in buildings for the purpose of meeting important requirements for the building: "energy savings and heat protection", the content of the building project in relation to the rational use of energy for heating and cooling and heat protection, the contents of the card for necessary thermal energy for heating and cooling the building, maintaining the building with regard to the rational use of energy and heat protection.

- Technical regulation on building heating and cooling systems (Official Gazette 110/08)

This Technical regulation prescribes, within the framework of meeting important requirements for the building, the technical properties for heating and cooling systems in buildings, and the requirements for the design, implementation, usability, maintenance and other requirements of those systems.

b) Responsible Ministry(/ies)/authority(/ies):

The legislation in the sectors of construction and energy efficiency in construction is under the competence of the MCPP, while the part pertaining to energy efficiency and RES is under the competence of MINGO.

- MCPP

- State body competent for matters pertaining to construction, physical planning, housing and energy efficiency in construction.

- Performs administrative and other tasks pertaining to establishing the conditions for the design and construction of structures, building and use permits, use, maintenance and removal of structures, construction inspection tasks, energy audits of structures and energy certification of buildings.

- MINGO



- State body competent for creating and implementing the national energy policy, action plans, promotion and application of the European Union *acquis communautaire* in the area of energy.
- Performs administrative and expert tasks relating to RES and energy efficiency as an important segment of the energy policy.

c) Revision of rules, if any, planned by: [date]

In the period since 2010, revisions have been made of the Physical Planning and Construction Act and the following subordinate legislation: Regulation on contracting and performing energy services in the public sector; Ordinance on energy audits of structures and energy certification of buildings; Ordinance on conditions and criteria for persons conducting energy audits of structures and energy certification of buildings; Ordinance on the control of energy certificates of buildings and reports on energy audits of structures; Ordinance on simple structures and works.

The Physical Planning and Construction Act (Official Gazette 76/07, 38/09, 55/11, 90/11, 50/12, 55/12 and 80/13) regulates the areas of physical planning, construction and construction inspection procedures.

MCCP has prepared drafts of new acts that will replace the Physical Planning and Construction Act (Official Gazette 76/07, 38/09, 55/11, 90/11 and 50/12). With these new legislative solutions, MPCC aims to achieve a simpler, clearer and more efficient system of the use and protection of space.

d) Summary of the existing and planned measures at regional/local levels:

At the local level, energy agencies play an important role in the promotion and stimulation of RES use and the introduction of measures to increase energy efficiency. The fundamental objective and role of energy agencies is to promote and stimulate regional sustainable development in the field of energy and environmental protection through the use of RES and to introduce measures to increase energy efficiency in counties and cities. The activities of energy agencies regarding the use of RES and implementation of measures to increase energy efficiency in buildings includes:

- the implementation and financing of projects by the principle of financing through achieved energy savings (ESCO model);
- project cofinancing;
- energy audits, energy certification and systematic monitoring of energy consumption in public buildings;
- preparation of development studies, programmes and plans, and project documentation for key reconstruction and improvement projects.

Projects:

- Stimulate the use of RES among natural persons
  - cofinancing the installation of RES systems in households
- installation of heat dividers and thermostat valves in central heating systems
  - cofinancing the installation of heat dividers and thermostat valves in district heating systems

- use of heat pumps
  - installation of heat pumps in public buildings,
  - project implemented with the financial assistance of EPEEF
- green energy
  - promotion of contracting models for the sale of heat from biomass
  - users are public buildings (schools, preschools, hospitals, administrative buildings) and private consumers
- drafting the plan and programme of energy efficiency in final energy consumption
  - planning documents that establish policies for improving energy efficiency for the final energy consumption at the county level
- public building roof fund
  - project to prepare public buildings for investments in photovoltaic plants and the production of electricity from renewable sources.

At the implementation level of the energy policy, EPEEF plays a key role in financing the drafting, development and implementation of projects in the field of energy efficiency, RES and environmental protection:

- securing the necessary resources,
- issuing public tenders for cofinancing projects and programmes,
- direct cofinancing of projects, where there are justified reasons to do so,
- contracting cofinancing of projects and programmes and technically and financially supporting their implementation,
- conducting technical and financial supervision of programmes and projects, and
- keeping records on energy and ecological effects of implemented projects.

EPEEF funding is granted to projects to improve energy efficiency, including cogeneration plants, centralised heat systems, energy audits and demonstration activities, public lighting projects, substitute fuels and use of waste heat, and products in the area of buildings and sustainable construction. RES projects for which the EPEEF awards financing include solar energy, wind energy, biomass energy, energy from small hydropower plants and geothermal energy.

e) Are there minimum levels for the use of renewable energy in building regulations and codes? In which geographical areas and what are these requirements? (Please summarise.) In particular, what measures have been built into these codes to ensure the share of renewable energy used in the building sector will increase? What are the future plans related to these requirements/measures?

In construction codes and ordinances, there are no prescribed minimum levels for the use of renewable energy.

f) What is the projected increase of renewable energy use in buildings until 2020?

*Table 6: Projected share of energy from renewable sources in buildings in final consumption, heating/cooling and electricity (in %)*

	2006	2010	2015	2020
Households	26.9	28.0	34.1	35.4

Services	19.1	21.7	30.4	35.0
Total	24.8	26.3	33.0	35.3

- g) Have obligations for minimum levels of renewable energy in new and newly refurbished buildings been considered in national policy? If so, what are these levels? If not, how will the appropriateness of this policy option be explored by 2015?

The Technical regulation on the rational use of energy and heat protection in buildings (Official Gazette 110/08, 89/09 and 79/13) implements Directive 2002/91/EC on the energy properties of buildings in the parts relating to:

- prescribing the minimum requirements for energy properties of new buildings and existing buildings undergoing substantial reconstruction.
- the need to draft reports on technical, ecological and economic justification of alternative systems for energy supply for new buildings, and to improve the energy properties of existing buildings in the case of their substantial reconstruction.

During the drafting of the main project, alternative energy supply systems will be considered, such as:

- decentralised energy supply systems using RES,
- cogeneration systems,
- remote or block heating,
- systems with heat pumps,
- systems with fuel cells.

A report is not required for buildings in which at least 70% of the necessary heat for heating is obtained from individual RES and for buildings in which more than half of the heat losses are compensated for using internal heat sources from technological processes.

With the Technical regulation on the rational use of energy and heat protection in buildings, in addition to the needed heat for heating, the consumption of primary energy in buildings for heat needs and lighting have also been restricted, thereby enabling the use of renewable energy to compensate for the energy needs of the building within the system limits for proving the minimum requirements of the building have been met.

In proving that the energy properties of buildings have been met, the calculation of primary energy for heating needs and lighting pursuant to regulations on the energy certification of buildings have been included, i.e. the algorithm for determining energy requirements and efficiency of thermal-technical systems in buildings.

- h) Please describe plans for ensuring the exemplary role of public buildings at national, regional and local level by using renewable energy installations or becoming zero energy buildings from 2012 onwards? (Please take into account the requirements under the EPBD).

Within the framework of the National Action Plan for energy efficiency, a series of sectoral measures have been defined to improve energy efficiency. In the services sector, which includes commercial services and the public sector, the focus of measures is on the public

sector, as this is the simplest sector in which to apply measures from the policy to stimulate energy efficiency. It is expected that the public sector lead by example to stimulate measures in the sector of commercial services.

Activities to improve energy efficiency in the forthcoming period were directed at constructing capacities in the public sector for continued and self-sustainable management of energy, and on measures with low implementation costs, such as stimulating behavioural changes among employees through educational workshops and seminars. In a large number of public sector buildings at the national and local levels, an organisational structure for energy management has been implemented through the appointment of energy offices and teams, and programming tools have been introduced to monitor and analyse energy consumption (ISGE). It has shown that such organisational energy efficiency measures in the public sector have brought significant energy and financial savings. The implementation of the said activities is envisaged to continue.

With the above, measures in the public sector include the energy refurbishment of public buildings, residential buildings and commercial buildings, and increasing the number of buildings with near-zero energy consumption.

The energy refurbishment of buildings includes drafting the refurbishment programme: the public sector building energy refurbishment programme, residential building energy refurbishment programme, and the commercial building energy refurbishment programme, and the implementation of those programmes. These programmes direct their attention at the refurbishment of buildings to meet low-energy standards and to achieve energy higher classes (B, A or A+). The drafting of energy audits and the public display of building energy certificates is envisaged, both prior to and following the energy refurbishment.

Special objectives of the programme include:

- reducing the total costs of energy for buildings under public ownership by 30–60%, by increasing energy efficiency;
- increasing the share of RES;
- implementing advanced consumption measurements with continuous monitoring systems and centralised cost analyses;
- contributions to achieving the goals of sustainable development.

Reference existing and new single family buildings for continental and coastal Croatia, the minimum requirements for the energy refurbishment of existing single family buildings, the reference zero energy single family buildings for continental and coastal Croatia have been defined.

Activities are planned to define the reference and near-zero energy multi-residential and non-residential buildings.

Near-zero energy buildings will be defined within the framework of the National Plan for increasing the number of buildings with near-zero energy consumption. This Plan will also set the objectives for improving energy properties in line with the requirements of Directive 2010/31/EC on the energy properties of buildings. Plans are in place to establish a system of subsidies for the construction of new buildings that will have better energy properties than those

required by the regulations. The adoption of the Plan, system scheme and start of implementation are expected by the end of 2013.

The existing programmes and projects for ensuring representative roles of public buildings at the state, regional and local level with the use of RES or improved energy efficiency of buildings:

Project: "Stimulating energy efficiency in Croatia" (EE project) began in July 2005. The primary objective of the project is to stimulate the application of economically feasible, energy efficient (EE) technology, materials and services, in households and in the public sector, aimed at reducing unnecessary energy consumption and greenhouse gas emissions into the atmosphere. The target groups of the project are households, service facilities and public facilities, for which it has been assessed that they account for a 40% share of the total energy consumption in Croatia. The results of the project should be to raise public awareness, apply measures to public structures in which municipal, city and county bodies and their administrative bodies are housed, and to give support to capacity building for the systematic energy management at the local level.

The project has developed in three large national components:

- Project: "Systematic energy management in cities and counties in Croatia" (SGE project), which implements systematic energy management in cities and counties by stimulating the application of energy efficiency principles for buildings in local or regional ownership or use.
- Programme: "House in Order", which implements systematic energy management in ministries and other state administration bodies, by stimulating the application of energy efficiency principles for buildings under the ownership and use of the central state administration.
- systematic informing and education of citizens, which deals with stimulating the use of energy efficient products, materials and systems at the national and local level, with the stimulation of transformation and sustainable development of the EE market.

Status of activities in the programmes:

- Data on energy consumption have been collected and entered into the ISGE system for about half of all buildings (5481 structures) owned and used by the public administration in Croatia. In 4474 buildings owned or used by cities and counties, the practice of regular controls of energy costs via accounts has been established, while in 1532 buildings, energy consumption is regularly monitored by reading energy and water meters twice weekly. In 1422 detached buildings, energy bills are regularly monitored, while in 1035 buildings, energy consumption is controlled by reading energy and water meters twice weekly. In 36 facilities, systems for automatic and remote monitoring of energy consumption have been installed.
- As part of the EE project, energy audits have been performed in 1126 buildings in 30 cities and seven counties, in which potential investments in measures to increase energy efficiency were identified.

- Various programmes have been conceived to educate technical and non-technical staff, public sector employees and sectors dealing with building maintenance. In total, more than 500 different workshops have been held for more than 14,000 participants.
- 107 EE info points have been opened in 47 cities and 12 counties. The open EE info points include: 36 EE info-offices, 6 EE info-centres, 37 EE info-galleries, 5 EE info-corners and 23 EE info-panels.
- As a result of the activities to increase energy efficiency in public administration buildings, the need was observed to introduce energy efficiency criteria in the public procurement process. The emphasis has been placed on energy efficient “green” public procurement, which will allow for broader and greater implementation of energy efficient products and technology in public facilities.

Projects to increase energy efficiency have been implemented with the technical and financial support of the Agency for Legal Affairs and Property Mediations, EPEEF, Croatian Bank for Reconstruction and Development and HEP-ESCO.

- i) How are energy efficient renewable energy technologies in buildings promoted? (Such measures may concern biomass boilers, heat pumps and solar thermal equipment fulfilling eco-label requirements or other standards developed at national or Community level (cf. text of Article 13(6))).

Pursuant to the Act on the Thermal Energy Market (Official Gazette 80/13), for the purpose of greater use of national thermal energy potential for heating and cooling, it has been envisaged that the Government of the Republic of Croatia will adopt a programme for the use of efficiency potential in heating and cooling. Through Programme of for the use of efficiency potential in heating and cooling, the following, among other things, will be established:

- demand for thermal energy for heating and cooling that can be met using highly efficiency cogeneration, including micro-cogeneration in the residential sector, in closed and district heating systems;
- development of infrastructure for efficient closed and district heating system so as to enable the development of highly efficient cogeneration and the use of thermal energy for heating and cooling from waste heat and RES,
- stimulating the establishment of new residential zones or new industrial plants which use thermal energy in production processes at locations where the available waste heat may contribute to meeting their demand for heating and cooling,
- stimulating the connection of residential zones and industrial plants which in production processes use thermal energy in closed and district heat systems,
- public support measures for the production of thermal energy for heating and cooling.

The Programme for the use of efficiency potential in heating and cooling for the period 2016-2013 will be adopted by 1 July 2015.

#### **4.2.4. REGULATIONS ON INFORMATION (ARTICLES 14(1), 14(2) AND 14(4) OF DIRECTIVE 2009/28/EC)**

a) Reference to existing national and or regional legislation (if any) concerning information requirements according to Article 14 of Directive 2009/28/EC:

- Right of Access to Information Act (Official Gazette 25/13)  
The Act governs the right of access to information and the reuse of information possessed by public administration bodies, prescribes the principles of the right of access to information and reuse of information, restriction of rights of access to information and the reuse of information, procedure for achieving and protecting rights of access to information and reuse of information, the scope, manner and conditions for the appointment and dismissal of the Commissioner for information and inspection supervision over the implementation of this Act.
- Act on Biofuels for Transport (Official Gazette 65/09, 145/10, 26/11 and 144/12)  
The Act stipulates that MINGO, in cooperation with the ministry responsible for environmental protection, launches and runs an info campaign to promote the use of biofuels in transport. Furthermore, the person obliged to market biofuels is also obliged to stimulate the use of biofuels in transport by publishing information on the supply of biofuels for transport on its own website and periodically via the public media.
- Energy Act (Official Gazette 120/12)  
This Act regulates the display of energy efficiency labels on household appliances.
- Act on Efficient Energy Use in Final Consumption (Official Gazette 152/08 55/12 and 101/13)  
This Act regulates the keeping, maintenance and development of the energy efficiency information system, stimulates information and educational activities in the area of energy efficiency, etc.
- Act on the Regulation of Energy Activities (Official Gazette 120/12)  
This Act governs the establishment and implementation of the regulation system for energy activities, with the goal of promoting the effective and rational use of energy, entrepreneurship in the field of energy, investments in the energy sector and environmental protection. The Act requires operators of the transmission and distribution system to publish the appropriate information to interested parties on connections, the transmission network/systems in the distribution network, taking account of the confidentiality of data.

b) Responsible body/(ies) for dissemination of information at national/regional/local levels:

- Ministry of Economy
  - Directorate for Energy and Mining
    - Energy Sector
      - Office for renewable energy, energy efficiency and new technology
      - Department for renewable energy and energy efficiency
  - State body competent for the national energy policy, action plans, the promotion and application of EU legislation in the field of energy.
  - Performs administrative and expert tasks pertaining to RES and energy efficiency, as a part of the energy policy.
- Ministry of Environmental and Nature Protection

- State body competent for environmental protection, has a key role in creating environmental protection policy and the mitigation of climate change.
- Performs administrative and expert tasks that govern matters relating to environmental impact assessments, unified requirements for environmental protection.
- Ministry of Construction and Physical Planning
  - State body competent for tasks relating to construction, physical planning, housing and energy efficiency in construction.
  - Performs administrative and other tasks relating to establishing criteria for the design and construction of buildings, building and use permits, use, maintenance and removal of structures, construction inspection tasks, energy audits of structures and energy certification of buildings.

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

Not relevant.

d) Please indicate how information is made available on supporting measures for using renewable energy sources in electricity, heating and cooling and in transport to all relevant actors (consumers, builders, installers, architects, suppliers of relevant equipment and vehicles). Who is responsible for the adequacy and the publishing of this information? Are there specific information resources for the different target groups, such as end consumers, builders, property managers, property agents, installers, architects, farmers, suppliers of equipment using renewable energy sources, public administration? Are there information campaigns or permanent information centres in the present, or planned in the future?

Information on measures for stimulating the use of RES in the production of electricity, heating and cooling, and transport is published on the websites of the main institutions for RES:

- MINGO
  - In the system of incentives for the production of electricity from RES and energy production from highly efficient cogeneration plants, the ministry keeps the RESCPP Register pursuant to the Ordinance on the use of renewable energy and cogeneration (Official Gazette 88/12).
  - Relevant regulations.
- MENP
  - Information pertaining to the procedure for assessment of the environmental impacts of interventions, determining the uniform requirements of environmental protection.
  - Information pertaining to nature conservation.
  - Relevant regulations.
- MCPP
  - Relevant regulations.
- HROTE
  - Information pertaining to:
    - RESC:
      - attaining the status of an eligible producer,



- system of incentives and incentive prices,
- amounts for stimulating the production of electricity from RESC and the distribution of incentives,
- contracts on the purchase of electricity for eligible producers.
- biofuels:
  - system of incentives and incentive prices,
  - amounts for stimulating the production of biofuels for transport,
  - amounts of incentives.
- HERA
  - Collective overview of the Register of permits for the performance of energy activities,
  - Tariff system for the production of electricity from RESC,
  - Decision on permits for performing energy activities,
  - Individual decisions made by the Executive Council of HERA in performing its public authorities,
  - List of regulations from the energy sector, with links to the Official Gazette website.

Information relating to the use of financial resources is published on the websites:

- EPEEF
  - Competitions for the project cofinancing in the area of environmental protection, energy efficiency and the use of RES, presentation of work programmes and competitions and other activities of the Fund at expert meetings, thematic workshops and round tables.
- HBOR
  - Crediting programme for projects in the area of environmental protection, energy efficiency and renewable energy.
- CEI
  - Development and keeping of the Register of Investments. In the sense of the Act on the Centre for Monitoring Operations in the Energy Sector (Official Gazette 25/12 and 120/12), the concept of investment is significant for investment projects carried out by the Republic of Croatia and legal persons in which the Republic of Croatia has a share or stake, if the value of the investment exceeds the amount of HRK 10 million, and for public-private partnership projects in the sense of regulations that govern the area of public-private partnerships, regardless of the value of the investment.

At the local level, the energy agencies play an important role in informing various target groups (end users, builders, property managers, construction agents, installers, architects, farmers, suppliers of devices that use RES, public administration) on the use of RES and the implementation of energy efficiency measures. These agencies hold lectures and workshops and issue informative brochures.

Also, considering that the local community and administration, as the most important actors for greater use of RES, do not have the capacities to initiate and implement policy in this area, civil society organisations are taking on an active role in the promotion and education in the area of RES.

At the national level, plans are in place to launch a campaign directed at end users. The campaign would consist of public media advertising (national TV, daily press), printing brochures with information on the advantages of using biofuels and making relevant information available via the ministry website. Information campaigns will also be prepared by MINGO in cooperation with MENP.

As part of the informational-educational campaign for citizens, conducted as part of the project 'Systematic energy management in cities and counties in Croatia', 107 info-points have been opened in 47 cities and 12 counties. For the purpose of promotion at the local level, 36 EE info-offices, 6 EE info-centres, 5 EE info-corners, 37 EE info-galleries and 23 info-screens have been set up to inform and education citizens about measures to increase energy efficiency.

- e) Who is responsible for publishing information on the net benefits, costs and energy efficiency of equipment and systems using renewable energy sources for heating, cooling and electricity?

MINGO is responsible for the publication of information, on the advantages of the networks, costs and energy efficiency of devices and systems using RES for heating, cooling and electricity supply.

HOPS d.o.o. publishes information on its website about the transmission network, transmission capacities, system balances and network connections.

- f) How is guidance for planners and architects provided to help them to properly consider the optimal combination of renewable energy sources, high efficiency technologies and district heating and cooling when planning, designing, building and renovating industrial or residential areas? Who is responsible for that?

Pursuant to the Technical Regulation on the rational use of energy and heat protection in buildings (Official Gazette 110/08, 89/09 and 79/13), for buildings with a useable surface area greater than 1000 m<sup>2</sup>, the application for a building permit, or the confirmation of the main project design, must be accompanied by a report on the technical, ecological and economic feasibility of alternative energy supply systems. The obligation to submit the said report is applied six months after the publication of the Alternative system applicability study on the official ministry website.

Furthermore, the new obligation from the Directive on energy properties of buildings stipulates that for buildings with a useable surface area of less than 100 m<sup>2</sup>, prior to construction, it is necessary to consider the technical, ecological and economic feasibility of alternative energy supply systems.

Alternative energy supply systems includes biomass, solar and photovoltaic systems, wind energy, cogeneration, heat pumps, absorption heat pumps (for heating and cooling), fuel cells and direct use of environmental heat (geothermal energy, warmth of shallow soil layers and surface waters for space cooling). The implemented technical, ecological and economic analysis and obtained results will be outlined in a report that will form an integral part of the main project.

When released, the Applicability Study of alternative energy systems in new and existing buildings will form the foundation for the project developers in the drafting of reports on the technical, ecological and economic feasibility of alternative energy supply systems.

The Study has not yet been released and, for the time being, there is no obligation to consider the use of alternate energy supply systems.

- g) Please describe the existing and planned information, awareness raising and training programmes for citizens on the benefits and practicalities of developing and using energy from renewable sources. What is the role of regional and local actors in the designing and managing these programmes?

As part of various projects, information campaigns are ongoing to promote energy efficiency and RES, for the purpose of informing citizens and raising public awareness on the efficient use of energy and promoting the application of cost- and energy-efficient technologies, materials and services in Croatia.

Examples:

- Energy Charter of the Mayors and Prefects of the Republic of Croatia is a declarative document by the representatives of local and regional self-government, which expresses awareness and political will of the need for good energy management at the local level, concern for environmental protection and the rational management of resources for the benefit of the local community and all its citizens.
- In less than a year, the Energy Charter of the Mayors and Prefects of the Republic of Croatia was signed by the representatives of all 127 cities and 20 counties in Croatia. Within each local government, energy management offices and teams have been set up, and will be responsible for overall energy planning and for achieving improved energy efficiency at the local level.
- The fundamental objective and role of the regional energy agencies is the promotion and stimulation of regional sustainable development in the area of energy and environmental protection, through the use of RES and the introduction of measures to increase energy efficiency. Furthermore, the agency welcomes the implementation of 'good practice' energy management, stimulates the concept of sustainable development, and provides information and advice and a series of other services based on the specific local energy needs.
- Activities of non-government associations aimed at launching projects and programmes for raising public awareness, information and education in the area of RES, energy efficiency, cleaner production and sustainable development.

#### **4.2.5. CERTIFICATION OF INSTALLERS (ARTICLE 14(3) OF DIRECTIVE 2009/28/EC)**

- a) Reference to existing national and/or regional legislation (if any) concerning certification or equivalent qualification schemes for installers according to Article 14(3) of the Directive 2009/28/EC:

The fundamental regulations pertaining to the certification of installers are:

- Tariff System for the production of electricity from renewable energy sources and cogeneration (Official Gazette 63/12, 121/12 and 144/12)
- Act on Architectural and Engineering Tasks and Activities in Physical Planning and Construction (Official Gazette 152/08, 49/11 and 25/13)
- Ordinance on consent for the commencement of construction activities (Official Gazette 43/09)
- Ordinance on the conditions and criteria for determining quality systems for services and works for certifying installers of renewable energy sources – photovoltaic systems (Official Gazette 79/13)

b) Responsible body/(ies) for setting up and authorising certification/qualification schemes by 2012 for installers of small-scale biomass boilers and stoves, solar photovoltaic and solar thermal systems, shallow geothermal systems and heat pumps:

Certification is the responsibility of MCPP, as the construction of the above devices and systems is classified under construction activities.

c) Are such certification schemes/qualifications already in place? If so, please, describe.

Pursuant to the Tariff System for the production of electricity from renewable energy sources and cogeneration (Official Gazette 63/12, 121/12 and 144/12), until the establishment of a separate system for authorisation and the issuance of certificates, such authorisations and certificates are issued by MCPP.

Namely, pursuant to the Ordinance on consent for the commencement of construction activities (Official Gazette 43/09) and the Act on Architectural and Engineering Tasks and Activities in Physical Planning and Construction (Official Gazette 152/08, 49/11 and 25/13), MCPP issues consent for the execution of works for the following groups of activities:

- H.9 works on distribution systems and pipelines,
- H.11 geotechnical works,
- H.12 electrical installations and communications works,
- H.13 engineering installations and constructions,
- I.10 works on the installation of heating and cooling installations,
- I.14 less complex electrical installations and communications works.

Consent is issued under the following conditions:

- the required expert capacity is met  
(master exam in the construction areas for group I of works)
- employment of the appropriate number of employees  
(group H works: minimum 8, group I works: minimum 2)

The Ordinance on the conditions and criteria for determining quality systems for services and works for certifying installers of renewable energy sources – photovoltaic systems (Official Gazette 79/13 and 85/13) prescribes the conditions and criteria for the certification of installers of photovoltaic systems; the professional qualifications and work experience necessary to enrol in the Programme of education, content and manner of conducting the verification of

knowledge, content and manner of performing professional development; the Register of certified installers of renewable energy systems; conditions for the issuance of consent for implementing the Training programme; obligations of the leader of the Training programme; supervision over the work of the leader of the Training programme; Register of leaders of Training programmes. The purpose of this Ordinance is the establishment of a comprehensive system of certifying installers for the tasks of installing photovoltaic systems and the Training programme for certified installers.

d) Is information on these schemes publicly available? Are lists of certified or qualified installers published? If so, where? Are other schemes accepted as equivalent to the national/regional scheme?

The MCPP website provides the following necessary/relevant information:

- publication of open invitations by colleges, expert schools, or organisations and other legal persons for the submission of applications for granting consent for the implementation of Training programmes, which include the Programme for education, verification of knowledge, issuance of certificates and implementing regular professional development of certified installers of photovoltaic systems,
- Register of leaders of Training programmes is developed and kept by MCPP in electronic form, Excerpt from the Register is published on the official ministry website,
- Register of certified installers of renewable energy systems is developed and kept by MCPP in electric form; Excerpt from the Register is published on the official ministry website,
- Register of issued consents for the performance of construction activities.

e) Summary of existing and planned measures at regional/local levels (where relevant).

The international project 'Training of Photovoltaic Installers' is currently underway. This project develops training programmes and certification schemes for installers active in the area of installing and maintaining small photovoltaic systems (PV systems), and which should be aligned with the Ordinance on the conditions and criteria for establishing quality systems for services and works for the certification of renewable energy installers – photovoltaic systems (Official Gazette 79/13 and 85/13).

#### **4.2.6. DEVELOPMENT OF ELECTRICITY INFRASTRUCTURE FOR ELECTRICITY SUPPLY (ARTICLE 16(1) AND ARTICLE 16(3) TO (6) OF DIRECTIVE 2009/28/EC)**

a) Reference to existing national legislation concerning requirements related to the energy grids (Article 16):

The fundamental regulations pertaining to energy network plants are:

- Energy Act (Official Gazette 120/12),
- Electricity Market Act (Official Gazette 22/13),
- Act on Physical Planning and Construction (Official Gazette 76/07, 38/09, 55/11, 90/11 and 50/12),

- Act on the Regulation of Energy Activities (Official Gazette 120/12),
- Ordinance on attaining the status of an eligible electricity producer (Official Gazette 88/12),
- Ordinance on the use of renewable energy sources and cogeneration (Official Gazette 88/12),
- Network Rules for the electricity system (Official Gazette 36/06),
- General conditions for electricity supply (Official Gazette 14/06),
- Tariff system for the production of electricity from renewable energy and cogeneration (Official Gazette 63/12, 121/12 and 144/12),
- Ordinance on fees for connection to the electricity network and for increasing the connection capacity (Official Gazette 28/06),
- Tariff system for the transmission of electricity, without the amount of tariff items (Official Gazette 143/06 and 26/10)
- Tariff system for the distribution of electricity, without the amount of tariff items (Official Gazette 143/06 and 26/10)
- Regulation on fees for the stimulation of electricity production from renewable energy sources and cogeneration (Official Gazette 33/07, 133/07, 155/08, 155/09, 8/11 and 144/11)
- Regulation on the minimal share of electricity produced from renewable energy and cogeneration under stimulated production (Official Gazette 33/07, 8/11)

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 network planning?

In the Republic of Croatia, the transmission of electricity, including the running of the electricity system, is a regulated energy activity performed by the transmission system operator (HOPS), which is responsible for the maintenance, development and construction of the transmission network, and for securing the long-term network capacity to meet the reasonable electricity demands of users of the transmission network.

The assumption of the Energy Strategy is that further development of the transmission network will be based on:

- continued increases in plant security and the maintenance of high accessibility;
- enabling connections of new electric plants and consumers;
- aligned strengthening of the interior sections of the Croatian transmission network (i.e. removing bottlenecks) and increasing the transmission capacity of interconnection with neighbours, were technically and/or economically justified;
- monitoring and application of modern technology and/or organisational solutions for transmission and management, and protection of transmission network structures as infrastructure critical for the functioning of society.

This has been recognised as a strategic commitment and the appropriate significance has been given to this in the drafting and approval of development plans for transmission and distribution system operators.

An indicative mid-term development plan for the Croatian transmission network was drafted in late 2011, and pursuant to the new legislation, since this year HOPS is obliged to draft a ten-year development plan for the transmission network in line with the non-binding ten-year development plan of the transmission network of the European Network of Electricity Transmission Systems Operators (ENTSO-E TYNDP).

The main conclusions of this indicative plan, in the sense of further development of the transmission network were:

- the 400 kV network will require reinforcement with new or reconstructed transmission lines and substations in the case of a larger number of production plants in the Lika and Dalmatia regions (thermal power plants, hydropower plants, wind farms);
- construction of a new interconnective 400 kV transmission line towards Bosnia and Herzegovina is planned;
- at several hubs it will be necessary to replace the existing 220/110 kV network transformers with new transformers, with the possibility of changing the angles, for the purpose of regulating the flows of active capacity;
- a significant part of total investments in development and revitalisation of the transmission network pertain to the 110 kV network, which will require local reinforcement either through the construction of new lines or through the increase in transmission capacity during the revitalisation of existing lines;
- part of the future restrictions in the network may be removed with redispatching and other active measures in running the system, which indicates the necessity of constant upgrading of the EES system management, both technologically and in terms of human resources, considering that improvements to the management system can lead to visible savings in the costs of electricity transmission;
- significant integration of wind farms in the Croatian electricity system (ES) implies significant increases in costs for energy balancing and for auxiliary services, and moderate to significant increases in investments in development and revitalisation of the transmission network, in which such costs should not further burden the operations of HOPS so as to disable the execution of obligations and towards other users of the transmission network;
- more significant integration of wind farms in the Croatian ES (i.e. more than some 400 MW) will not be possible unless the issue of secondary regulation and energy balancing in the entire Croatian ES is effectively and comprehensively resolved. Therefore, HOPS proposes the following short-term and long-term measures to resolve this issue, which are outside its competences:
  - amendments to the existing legislation with introduction of market and market mechanisms aims at resolving the regulation issue,
  - establishment of the mechanism to validate auxiliary services based on real bidder costs,
  - until the implementation of the market and market mechanisms via amendments to the existing legislation, it is necessary to ensure the mandatory provision of these auxiliary services with the regulation of cost compensation,
  - implementation of RES pursuant to subordinate legislation in the balancing mechanism as entities responsible for variations,
  - ensuring the legislative framework for cross-border exchange of regulated energy and energy balance,

- technical regulations require the compulsory equipping of all new aggregates in the Croatian ES for work in the automatic secondary P/f regulation,
- necessity of activating all existing hydropower plants that are technically capable for ensuring active regulation (Zakučac, Senj, Vinodol, Orlovac...),
- stimulate the construction of gas-fired electric plants intended for resolving regulation issues,
- strategic commitment – building reversible hydroelectric plants in Croatia – great capacity and opportunity.

For 110 kV and 220 kV networks, a series of activities are required, including:

- enabling connections of new power plants, primary based on RES, on the 110kV network.

In the sense of achieving the conditions for secure connection and RES use, it is necessary to envisage additional systems to forecast production from RES, and to improve the planning systems for system function and its management, in order to increase and more effectively use the regulation capacities of the electricity system as a whole.

The company HEP-ODS is responsible for the operation and management, maintenance, development and construction of the distribution network in a given area, and for ensuring the long-term network capacity to meet reasonable demand for the distribution of electricity. The duties of the distribution system operator are: to ensure all user unhindered access to the network at voltage levels of 10, 20, 30(35) kV, and access to information necessary to effective use of the network. Users of the distribution network can be electricity customers (consumers), electricity producers and those who are simultaneously electricity customers and producers. The production of energy in the distribution network represents the distributed production and most often this is the category of eligible producers due to the use of cogeneration or RES.

The distribution network in Croatia is characterised by great differences between individual distribution areas, in terms of the number of users, quantity and nature of energy consumption, spatial distribution, level of development and technological level of the network. The necessity of increased improvements to parts of the distribution network should be stressed, in order to improve the quality of energy supply.

Changes that should be implemented in the distribution network are:

- structural changes in the network for increased receipt of distributed production;
- technological development and alignment with advanced technological platforms in distribution networks (e.g. Smart Grids).

The increased use of RES implies distributed energy sources, which are connected to the distribution network. It is necessary to enable the receipt of distributed sources and to create the technical conditions for the work of active distribution networks.

The development and construction of distribution networks is planned and carried out by HEP-ODS through:



- annual investment plans,
- three-year plans, and
- other plans for development and construction of the distribution network,

which are based on the drafted network development studies. These studies are drafted or revised every five years, with horizontal projects of 20 years. In drafting the studies, the mutual impacts of networks and all distributed sources connected to the network or planned for connection are also examined.

- c) What will be the role of intelligent networks, information technology tools and storage facilities? How will their development be ensured?

HOPS and HEP-ODS make continuous investments in the automation of electricity networks and ICT technology in their competence. One of the strategic goals of HOPS envisages the continuation of significant investments in contemporary ICT technology for the remote management systems (coordinated supervision, management, protection and measurement) of the Croatian electricity system, which implies the modernisation of the National Dispatching Centre (NDC) and four network management centres (MC), to fulfil the commitments from the parallel work in the synchronous system of continental Europe in order to ensure constant balance between the consumption and production of electricity, as the fundamental condition of security of supply.

Plans are in place to include all VN/SN and SN/SN operations in the distribution network into the remote management system, to equip all calculation measurement sites with a connection capacity of greater than 30 kW with smart metering units and to define the priorities and goals, i.e. the development concept for the smart grid (multiple operators).

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

As a link for the networks of Central and Southeast Europe, and as part of the Mediterranean Ring, the Croatian transmission network is well connected with the networks of neighbouring countries (with the exception of Montenegro and Italy) with a large number of interconnection lines at transmission voltage levels (400, 220 and 110 kV).

Analyses conducted during the drafting of the Indicative mid-term development plan for the Croatian transmission network and ten-year development plan of the ENTSO-E transmission network established certain needs to increase the Croatian transmission network so as to meet the expected additional demands for crossborder transmission and greater integration of renewable energy, which includes the need for construction of a new interconnective 400 kV transmission line towards Bosnia and Herzegovina. The actualisation of these increases, as a project of common interest to the EU (PCI) and/or Energy Community (PECI), will unfold in line with the schedules envisaged by the said plans.

- e) How is the acceleration of grid infrastructure authorisation procedures addressed? What is the current state and average time for getting approval? How will it be improved? (Please refer to current status and legislation, bottlenecks detected and plans to streamline procedure with timeframe of implementation and expected results.)

The Government of the Republic of Croatia, by the opinion of HERA prescribes the procedures for the issuance of energy consent that establishes the individual conditions for connection to the energy network, and the contractual relations for network users and the competent energy entities in terms of connection conditions and timelines.

Documents for implementing physical planning documents and documents for the construction of structures are issued in line with the conditions and timelines for network connections as listed in the energy consent.

The methodology for determining the fees for connection to the network/system of new and for increasing the connection capacity of existing energy entities is adopted by HERA. The methodology is based on objective, transparent and unbiased principles, and the principle of economic feasibility of the connection.

HERA also oversees the application of methodologies and the prescribed fees.

f) How is coordination between grid infrastructure approval and other administrative planning procedures ensured?

The Ministry and other public administration bodies that adopt regulations that govern connections to the energy infrastructure conduct consultations during the process of preparing regulations, or they jointly prepare the regulations, which generally results in a clear procedure.

g) Are priority connection rights or reserved connection capacities provided for new installations producing electricity from renewable energy sources?

Installations producing electricity from renewable energy sources do not have priority connection rights or reserved connection capacities. The technical conditions allowing new connections must be met, in line with the Network rules of the electricity system (Official Gazette 36/06).

In line with the Electricity Market Act (Official Gazette 22/13), the transmission system operator or distribution system operator is obliged to ensure that it takes the total produced electricity from the eligible producers according to the prescribed conditions. Furthermore, the transmission system operator or distribution system operator are obliged to secure the necessary conditions for regular supply to end customers of electricity, by purchasing electricity from producers, traders, other suppliers, on the organised electricity market or from import, in which electricity produced from RES and cogeneration has priority.

Eligible producers of electricity from RES and cogeneration, regardless of whether they are part of the incentive system or not, have equal rights and obligations concerning the supply of electricity into the network and planned production.

h) Are any renewable installations ready to come online but not connected due to capacity limitations of the grid? If so, what steps are taken to resolve this and by when is it expected to be solved?

There are no such situations, as the conditions for connection to the network are defined in the phase of drafting the technical and administrative documents of the production plants, and upon construction are connected to the network once the conditions are met.

- i) Are the rules on cost sharing and bearing of network technical adaptations set up and published by transmission and distribution system operators? If so, where? How is it ensured that these rules are based on objective, transparent and non-discriminatory criteria? Are there special rules for producers located in peripheral regions and regions with low population density?

The rules on cost sharing and fees for network connections or increasing connection capacity are outlined in the Ordinance on the fees for connection to the electricity network and for increases of connection capacity (Official Gazette 28/06) and the Decision on the amount of the fee for connection to the electricity network and for increasing connection capacity (Official Gazette 52/06). There are differences in the connection of producers to low- and high-voltage network in relation to the connection of producers to the high-voltage network. In the case of connection to the low- and high-voltage networks, the producer fully finances the creation of the technical conditions in the network, while in the case of connection to the high-voltage network, the share of the producer in financing the creation of technical conditions in the network from Article 7, paragraph 5 of the Ordinance are determined according to the following principles:

- in the construction or reconstruction of 110 kV lines, based on the ratio of connection capacity of the producer and thermal transmission power of the new or reconstructed line, taking into account the criterion “n-1”, and
- in the installation of new transformation 400(220)/110 kV into existing transformer stations or the construction of new transformer stations 400(220)/110 kV for the housing of a new transformer, based on the ratio of connection capacity of the producer and the nominal capacity of the new transformer, taking into account the criterion “n-1”.

The Ordinance was issued by HERA and is publicly available.

The Ordinance on fees for connection to the electricity network and for increasing the connection capacity does not differentiate network users based on their location.

- j) Please describe how the costs of connection and technical adaptation are attributed to producers and/or transmission and/or distribution system operators? How are transmission and distribution system operators able to recover these investment costs? Is any modification of these cost bearing rules planned in the future? What changes do you envisage and what results are expected?

The Ordinance on fees for connection to the electricity network and for increasing connection capacity (Official Gazette 28/06) prescribes the methodology of establishing the fee for connection of new producer facilities to the transmission or distribution network, and for the increasing of connection capacity of connected producers.

Pursuant to the provisions of the said Ordinance, the fees for connection to the electricity network and for increasing the connection capacity is the amount paid by the manufacturer or

customer of the transmission system operator or distribution system operators for connection to the network or for increasing connection capacity. The fee shall be paid by:

- the producer or customer in the procedure of attaining the right to connection, and
- the connected producer or customer in the procedure of attaining the right to increase the connection capacity.

The Tariff system for the transmission of electricity, without the level of tariff items (Official Gazette 143/06, 26/10) and the Tariff system for the distribution of electricity, without the level of tariff items (Official Gazette 143/06, 26/10) determine the level of tariff items for the transmission or distribution of electricity, so as to secure revenues to cover the total operation costs in the future regulation year. Electricity producers (including those producing electricity from RES) do not pay the fee for use of the network for the energy they supply to the network. The tariff items for the transmission and distribution of electricity are paid by the customers.

k) Are there rules for sharing the costs between initially and subsequently connected producers? If not, how are the benefits for subsequently connected producers taken into account?

Costs are not shared, instead they are considered individually.

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 rules on cost sharing and fees for connection to the network or increasing connection capacity are published in the Ordinance on fees for connection to the electricity network and increasing connection capacity (Official Gazette 28/06) and the Decision on the amount of fees for connection to the electricity network and for increasing connection capacity (Official Gazette 52/06).

HOPS and HEP-ODS have published detailed procedures for the submission of applications for connections to the network for new producers of electricity from renewable sources.

The Energy Act (Official Gazette 120/12) and Electricity Market Act (Official Gazette 22/13) define the subordinate legislation by which these issues are regulated in detail.

#### **4.2.7. CONDITIONS OF THE USE OF THE ELECTRICITY NETWORK FOR THE SUPPLY OF ELECTRICITY (ARTICLE 16(2), AND ARTICLE 16(7) AND (8) OF DIRECTIVE 2009/28/EC)**

- a) How is the transmission and distribution of electricity from renewable energy sources guaranteed by transmission and distribution system operators? Is priority or guaranteed access ensured?

Pursuant to the Electricity Market Act (Official Gazette 22/13), the transmission system operator or distribution system operator is obliged to ensure the receipt of the total produced electricity from eligible electricity producers according to the conditions outlined by the network rules of the transmission system, network rules of the distribution system and other regulations. Based on the same Act, every legal person using RES in an economically appropriate way pursuant to the regulations from the administrative area of environmental protection may obtain the status of an eligible electricity producer. Therefore, the condition for securing the guarantee that the transmission operator or distribution operator will take the electricity from the plant using RES is the attainment of the status of an eligible electricity producer for that plant.

The transmission system operator or distribution system operator is obliged to enable access to the grid for the electricity producer. Access may be rejected or restricted only if the technical or plant capacities of the system are limited, if maintenance works or construction of the system are in progress or if there is a threat to human life or property.

- b) How is it ensured that transmission system operators, when dispatching electricity generating installations give priority to those using renewable energy sources?

Pursuant to the Electricity Market Act, the transmission system operator and distribution system operator are obliged, in line with the requirements for the reliability and security of the plan, to ensure and control the taking of the total produced electricity from renewable energy sources from eligible electricity producers pursuant to the valid conditions, particularly the network rules for the transmission system and network rules for the distribution system.

Eligible producers of electricity from RESC, independent of whether they are or are not in the incentives system, have equal rights and obligations concerning the supply of electricity into the grid and planned production.

- c) How are grid- and market-related operational measures taken in order to minimise the curtailment of electricity from renewable energy sources? What kinds of measures are planned and when is implementation expected?

The new regulations concerning renewable energy sources and the electricity market that are in preparation consider a series of operative and other measures for the inclusion of eligible producers on the electricity market. Operative measures for the transmission network have been in place since 2007 and the adoption of the “Criteria for the determination of candidates for obtaining prior electricity consent for the connection of wind power plants to the transmission and distribution network“, followed by the “Additional technical conditions for the connection of wind power plants to the transmission and distribution network“, and the “Additional technical conditions for the connection of wind power plants to the transmission network“. The continued development and capacity strengthening for forecasted production from wind power plants in HOPS has facilitated the inclusion of renewable energy sources into the system in a manner that does not threaten the electricity system operations. Several program support packages have been installed for the forecasted production from wind power plants and personnel

responsible for development, operations and management of the transmission system have received training.

For HEP-ODS, network rules have been developed for wind plants connected to the distribution network, which ensures the secure and reliable operation of wind power plants in the Croatian electricity system. This includes detailed analyses of the technical conditions for connection of wind power plants to the distribution system and measures for secure use, operation and exploitation of wind power plants in the “wind code” distribution system.

Following from the Energy Act and the Electricity Market Act, it is necessary to draft new subordinate legislation that will improve market functioning and the calculation classes for balancing costs caused by eligible producers in the incentives system.

d) Is the energy regulatory authority informed about these measures? Does it have the competence to monitor and enforce implementation of these measures?

In accordance with the Energy Act (Official Gazette 120/12), Act on the Regulation of Energy Activities (Official Gazette 120/12) and Electricity Market Act (Official Gazette 22/13), HERA monitors and analyses the work and operations of energy entities. The said legislative framework is compliant with Directive 2009/72/EC and the Interpretative Note on Directive 2009/72/EC Concerning Common Rules for the Internal Market in Electricity and Directive 2009/73/EC Concerning Common Rules for the Internal Market in Natural Gas.

e) Are plants generating electricity from renewable energy sources integrated in the electricity market? Could you please describe how? What are their obligations regarding participation in the electricity market?

In the Republic of Croatia, there is a differentiation of public services of the supply of electricity to tariff customers and the electricity market. Tariff customers pay for electricity at regulated prices, and the body responsible for the public supply services to tariff customers is HEP-ODS d.o.o. (a member of the HEP Group). The electricity market has been established as a bilateral market that is based on bilateral agreements. Bilateral agreements on the sale of electricity are concluded between suppliers that supply energy exclusively to eligible customers and traders or producers. The producer is obliged, in addition to the agreement on the sale of electricity, to conclude an agreement on use of the network with the transmission system operator or distribution system operator.

Pursuant to the Rules of activity of the electricity market (Official Gazette 135/06, 146/10 and 90/12), eligible electricity producers, which include producers using RES, sell electricity pursuant to the subordinate legislation regulating the area of RES and cogeneration, and based on the agreement of the sale of electricity concluded with HROTE. According to the Tariff system for the production of electricity from RES and cogeneration (Official Gazette 63/12, 121/12 and 144/13), the sale of electricity pursuant to the sales agreement is not considered the trade of electricity.

Every year by 30 September, the eligible producers are obliged to submit to HROTE and HERA the production plan for the following calendar year for the plant for which the decision on attaining the status of an eligible producer. In the sense of next-day market planning, eligible

producers who hold the right to incentive prices are obliged to plan, or pay fees for deviations, for the further possibility of connection and greater use of RES in middle and high voltage.

In the sense of the accuracy of submitted production plans, HOPS may request a verification of the criteria for determination of such plans, and consequentially warn eligible producers if they have influence on the security of the system operation. In the current preparation of new regulations regarding renewable energy and the electricity market, consideration is being given to ways to make eligible producers accountable for their deviations from the submitted plans.

- f) What are the rules for charging transmission and distribution tariffs to generators of electricity from renewable energy sources?

According to the current Tariff system for the transmission of electricity, without levels of tariff items (Official Gazette 143/06 and 26/10) and the Tariff system for the distribution of electricity, without levels of tariff items (Official Gazette 143/06 and 26/10), electricity producers (including those producing electricity from RES) are not charged for the use of the network for the energy they supply to the network. Tariff items for the transmission and distribution of electricity are paid by the customers.

#### **4.2.8. INTEGRATION OF BIOFUELS INTO THE NATURAL GAS NETWORK (ARTICLE 16(7) AND ARTICLE 16(7) AND (10) OF DIRECTIVE 2009/28/EC)**

- a) How is it ensured that the charging of transmission and distribution tariffs does not discriminate against gas from renewable energy sources?

The Gas Market Act (Official Gazette 28/13) equivocates natural gas and gas from RES. Namely, the Gas Market Act clearly states that all rules pertaining to natural gas also pertain to all other types of gas (biogas, city gas, gas from biomass and liquefied natural gas) to that extent in which such gases may be technically and safely mixed into the stream of natural gas, and thus distributed through the gas system.

- b) Has any assessment been carried out on the need to extend the gas network infrastructure to facilitate the integration of gas from renewable sources? What is the result? If not, will there be such an assessment?

Such an assessment has not been conducted. However, considering that the Republic of Croatia has a relatively developed gas transport network, it can be considered that the development of the gas infrastructure is not a hindrance for the integration of gas from renewable sources (biogas plants).

- c) Are technical rules on network connection and connection tariffs for biogas published? Where are these rules published?

The Network rules for the gas distribution system (Official Gazette 50/09), and the Network rules for the gas transport system (Official Gazette 50/09) pertain to both standard natural gas and to biogas connections, in which it is stated that only biofuels in which the resulting gas mixture meets the standard quality from Annex 1 of the General conditions for the supply of

natural gas (Official Gazette 43/09) may be mixed in. Therefore, it can be concluded that the technical rules for the connection of biogas to the transport and distribution system is clear, and are published in the Official Gazette (the official journal of the Republic of Croatia).

The methodology of calculating charges for connection to the distribution or transport system, and for capacity increases is defined by the Ordinance on charges for connections to the gas distribution or transport system and for increasing connection capacity (Official Gazette 137/11, 12/12 and 15/12) and are identical for natural gas and for biogas.

#### **4.2.9. DEVELOPMENT OF DISTRICT HEATING AND COOLING SYSTEM INFRASTRUCTURE (ARTICLE 16(11) OF DIRECTIVE 2009/28/EC)**

- a) Please provide an assessment of the need for new district heating and cooling infrastructure using renewable energy sources and contributing to the 2020 target. Based on this assessment, are there plans to promote such infrastructures in the future? What are the expected contributions of large biomass, solar and geothermal facilities in the district heating and cooling systems?

To 2020, an increase in the use of RES in district heating and cooling systems is expected, from the current 1.1 PJ to 2.9 PJ. District heating based on RES is primarily expected in smaller urban centres with up to 10,000 residents, in areas rich in forest biomass and areas with geothermal sources. In these areas, district heating systems and the infrastructure (network) have not yet been developed, such that development will begin from the very beginning. It can be assumed that new district heating systems will be developed in 10 to 15 cities. By 2020, the construction of about 30 km of the district heating infrastructure (network) can be expected.

#### **4.2.10. BIOFUEL AND OTHER BIOLIQUIDS – SUSTAINABILITY CRITERIA AND COMPLIANCE CHECKS (ARTICLES 17 TO 21 OF DIRECTIVE 2009/28/EC)**

- a) How will the sustainability criteria for biofuels and bioliquids be implemented at national level?

The Act on Biofuels for Transport (Official Gazette 65/09, 145/10, 26/11 and 144/12) prescribes the obligation for meeting the sustainability criteria in the production and use of biofuels as a condition for the recognition of biofuel energy, to meet the national targets for the marketing of biofuels, the obligation of marketing biofuels, and the condition for meeting the right to payment of incentives for the production of biofuels in the Republic of Croatia, independent of whether the raw materials are grown in the Republic of Croatia or are imported.

The Act prescribes the adoption of a separate ordinance that will lay down the manner, conditions and schedule for the application of sustainability criteria in the production and use of biofuels, and the methodology for the calculation of the reduction of greenhouse gas emissions in relation to emissions arising from the use of diesel fuels and petrol.



The Ordinance on the manner and conditions for the application of sustainability criteria in the production and use of biofuels was adopted on 1 July 2013 (Official Gazette 83/13). The Ordinance contains provisions that are aligned with Directive of the European Parliament and of the Council 2009/28/EC pertaining to the sustainability criteria.

- b) How will it be ensured that biofuels and bioliquids that are counted towards the national renewable target, towards national renewable energy obligations and/or are eligible for financial support comply with the sustainability criteria set down in Article 17(2) to (5) of Directive 2009/28/EC?

Independent verification of compliance with sustainability criteria in the production and use of biofuels will be established and applied, in line with the Ordinance on the manner and conditions of sustainability criteria in the production and use of biofuels. This will be organised as follows:

1. Eligible producers of biofuels will have to ensure independent verification that the sustainability criteria are met, by an independent assessor or auditor.
  2. Eligible producers will, for each biofuel consignment, have to issue an accompanying confirmation that sustainability criteria are met, to keep records on savings of greenhouse gas emissions, the quantity and origin of raw materials for the production of biofuels and alignment with sustainability criteria, and enable access of assessors or independent auditors to all necessary information.
  3. Raw materials supplier for the production of biofuels must, for each consignment for the production of biofuels, keep records on the quantity and type of raw materials, the site of origin of the raw materials procured by the prior steps in the supply chain, and enable access of assessors or independent auditors to all necessary information. In so doing, the producer of raw materials of agricultural origin in the Republic of Croatia that are used for the production of biofuels must be entered into the Register of agricultural holdings, and the compliance of production of raw materials with the sustainability criteria is proven through insight into the documentation of the Payments Agency in Agriculture, Fisheries and Rural Development on the submission of the application for direct payments and IACS rural development measures of the agricultural producer for the current year.
  4. The distributor of biofuels must secure independent verification of the fulfilment of sustainability criteria for biofuels, issue the accompanying confirmations on compliance with sustainability criteria of fuel and enable access of assessors and independent auditors to all necessary information.
  5. The independent verification of sustainability criteria is conducted by an assessor or independent auditor holding the appropriate authorisation pursuant to regulations in the area of environmental protection.
- c) If a national authority/body will monitor the fulfilment of the criteria, does such a national authority/body already exist? If so, please specify. If not, when is it envisaged to be established?

The Ordinance on the manner and conditions of application of sustainability criteria in the production and use of biofuels envisages that the independent auditor or assessor will be

competent for the verification of fulfilment of criteria, pursuant to environmental protection regulations.

- d) Please provide information on the existence of national law on land zoning and national land register for verifying compliance with Article 17(3) to (5) of Directive 2009/28/EC. How economic operators can access to this information?

Specific regulations defining individual categories or land status include:

- Agricultural Lands Act (Official Gazette 39/13)
- Forests Act (Official Gazette 140/05, 82/06, 129/08, 80/10, 124/10 and 25/12)
- Act on Physical Planning and Construction (Official Gazette 76/07, 38/09, 55/11, 90/11 and 50/12)
- Environmental Protection Act (Official Gazette 30/94, 72/94, 107/03, 162/03, 70/05, 139/08, 57/11 and 80/13)
- Waters Act (Official Gazette 153/09, 63/11, 130/11 and 56/13).

Access to information is prescribed in the Environmental Protection Act (Official Gazette 80/13) and the Act on the Right to Access Information (Official Gazette 25/13). If the economic operator requires data pertaining to, for example, habitat maps, this can be obtained by filling out the Request for access to information and its submission to the State Institute for Nature Protection.

- e) As far as protected areas are concerned, please provide information under which national, European or international protection regime they are classified.

The Nature Protection Act (Official Gazette 80/13) defines nine categories of protected areas: strict reserve, national park, special reserve, nature park, regional park, nature monuments, significant landscape, forest-park and park architecture monument. The competent body (MENP) classified these categories into three classes, depending on their significance: international, national and local significance. Furthermore, the Act prescribes the establishment of the ecological network, which has been implemented through adoption of the Regulation on the proclamation of the ecological network (Official Gazette 109/07). The National Ecological Network includes all ecologically significant areas for the Republic of Croatia and for EU NATURA 2000. With regard to the possible significant impacts on nature and the ecological network, the Ordinance on the assessment of acceptability of plans, programmes and interventions for the ecological network (Official Gazette 118/09) regulates the entire assessment procedure, which is carried out by the line ministry or county administrative body depending on the category of protection of the area in question.

- f) What is the procedure for changing the status of land? Who monitors and reports at national level on land status changes? How often are the land zoning register updated (monthly, annually, bi-annually, etc.)?

The legal documents that define the different categories/zoning of lands also define the specific conditions within which rezoning is possible. The competent authority (ministry) and inspection supervise the implementation of provisions of these regulations. The company Croatian Forests

(Hrvatske šume d.o.o.) manages forests and forest lands under ownership of the Republic of Croatia, and during the drafting or revision of forest management plans, monitor all changes associated with forests and forest lands.

The Agricultural Lands Act stipulates that unforested forest lands and lands covered with initial or degradation succession stages of forest stands (macchia, garrigues, thickets, etc.) which are suitable for agriculture shall be considered agricultural lands. The suitability of these lands for agricultural production is determined by the Agricultural Land Agency, with the approval of the ministry responsible for forestry. Lands given this approval are thus removed from the forest management plans.

Pursuant to the provisions of the Forests Act, the line ministry keeps records on the state and changes to areas of forest management areas based on annual reports submitted to the county state administration offices, or the administration body of the City of Zagreb responsible for forestry, by 31 January for the preceding year.

- g) How is compliance with good agro-environmental practices and other cross-compliance requirements (required by Article 17(6) of Directive 2009/28/EC) ensured and verified at national level?

The conditions for cross-compliance are prescribed by the Ordinance on the conditions for cross-compliance in agricultural production (Official Gazette 10/10), while good agro-environmental practices are prescribed under the Ordinance on good agro-environmental practices (Official Gazette 65/13).

Meeting the conditions of cross-compliance in agricultural production is controlled by the Payments Agency for Agriculture, Fisheries and Rural Development, while the agricultural inspection is responsible for implementation of inspections controls. The implementation of field controls in one calendar year must encompass at least 1% of all those who submitted applications for the payment of direct payments for that production year.

Pursuant to the above, the manufacturer of raw materials of agricultural origin in the Republic of Croatia that is used for the production of biofuels should be entered into the Register of agricultural holdings, and the production of raw materials in line with the sustainability criteria is proven by insight into the documentation of the Payment Agency for Agriculture, Fisheries and Rural Development on the submission of an application for direct payments, and the IACS rural development measures for agricultural producers for the current year.

- h) Do you intend to help develop voluntary 'certification' scheme(s) for biofuel and bioliquid sustainability as described in the second subparagraph of Article 18(4) of Directive 2009/28/EC? If so, how?

No, we will accept the certification scheme adopted by the EC.

#### 4.3. SUPPORT PROGRAMMES FOR THE PROMOTION OF USE OF RENEWABLE ENERGY FOR ELECTRICITY SUPPLY THAT ARE APPLIED IN A GIVEN MEMBER STATE OR GROUP OF MEMBER STATES

##### Regulations

Obligation/target	<b>To end 2020, 35% of electricity production from RES, including large hydropower plants, in the total consumption of electricity.</b>
What is the legal basis for this obligation/target?	– Energy Strategy of the Republic of Croatia (Official Gazette 130/09)
Are there any technology-specific targets?	<p>The Energy Strategy of the Republic of Croatia defines the framework targets for RES. Considering the economic and financial crisis, the forecasts of economic growth and direct energy consumption have not been achieved, such that the objectives listed in the Energy Strategy have been corrected and adapted to the new situation and plans. With regard to this, the objectives for RES are considered within the framework of the revised Action Plan, have been set such that the valid technical and financial elements and the possibility of connection to the electricity network are feasible. Threats that the project will not be realised due to the inability of connection to the electricity network have been removed, which does not limit future projects of any technology, if the secure function of the network can be ensured, i.e. the same level of security of supply can be retained. With the adoption of the Third package of energy legislation into the national energy legislation, significant changes have been introduced in the planned further affirmation of RES, such that the security of supply and security of the electricity system itself are ensured.</p> <p>The targets are as follows:</p> <p><b>Biomass:</b></p> <ul style="list-style-type: none"> <li>– Use of 26 PJ from biomass to 2020. A part of that biomass will be used in biomass-fuelled power plants with a total capacity of about 85 MW to 2020.</li> </ul> <p><b>Biogas:</b></p> <ul style="list-style-type: none"> <li>– From agricultural production at least 20% of total conditional cattle heads will be used for energy purposes in 2020, producing about 2.6 PJ of energy from biogas, or about 100 million m<sup>3</sup> of biogas.</li> </ul> <p><b>Wind energy:</b></p> <ul style="list-style-type: none"> <li>– Installations of 400 MW in wind energy to 2020.</li> </ul> <p><b>Large hydropower plants:</b></p> <ul style="list-style-type: none"> <li>– Construct new or increase capacity in existing hydropower plants in the amount of 300 MW to 2020.</li> </ul> <p><b>Small hydropower plants:</b></p> <ul style="list-style-type: none"> <li>– Construct at least 100 MW of small hydropower plants to 2020.</li> </ul> <p><b>Geothermal energy:</b></p> <ul style="list-style-type: none"> <li>– Economically justified use of existing geothermal wells and economically favourable classification of wells for the use of</li> </ul>

	<p>geothermal energy and the use of moderate temperature deposits for development.</p> <p>Solar energy:</p> <p>– Installation of 52 MW in photovoltaic systems to 2020.</p>									
What are the concrete obligations/targets per year (per technology)?	<table border="1"> <thead> <tr> <th>Year</th> <th>Share of energy from RES in electricity production (%)</th> <th>Energy from RES in electricity production<sup>1</sup> (ktoe)</th> </tr> </thead> <tbody> <tr> <td>2015</td> <td>38.5</td> <td>640.0</td> </tr> <tr> <td>2020</td> <td>39.0</td> <td>720.1</td> </tr> </tbody> </table> <p><sup>1</sup> from additional energy efficiency scenario</p>	Year	Share of energy from RES in electricity production (%)	Energy from RES in electricity production <sup>1</sup> (ktoe)	2015	38.5	640.0	2020	39.0	720.1
Year	Share of energy from RES in electricity production (%)	Energy from RES in electricity production <sup>1</sup> (ktoe)								
2015	38.5	640.0								
2020	39.0	720.1								
Who has to fulfil the obligation?	<p>MINGO is competent for the implementation of measures to achieve targets.</p> <p>Pursuant to the Energy Act (Official Gazette 120/12) and based on the Energy Strategy, the Implementation programme for the Energy Strategy is adopted. This lays down the measures, activity leaders and dynamics of the unfolding of energy policy and implementation of national energy programmes, means of achieving cooperation with local and regional self-government bodies in the areas of planned energy sector development, and cooperation with energy entities and with international organisations.</p> <p>The Implementation programme of the Energy Strategy is adopted for a period of ten years, and every two years, MINGO proposes amendments to the programme.</p> <p>After the expiry of the period for which the Implementation programme of the Energy Strategy was adopted, or earlier if the circumstances have been significantly altered, the Government submits a report on the implementation of the Energy Strategy, with a proposal of necessary amendments to the Strategy.</p>									
What is the consequence of non-fulfilment?										
Is there any mechanism to supervise fulfilment?										
Is there any mechanism to modify obligations/targets?										

## Financial support

Name of the programme.	<b>Promoting the use of renewable sources in electricity production</b>
Short description of the scheme	<p>The legislative framework for promoting the use of RES in electricity production was adopted in 2007, and after several years of practice was amended in 2012, thereby removing certain barriers to the development of electricity production products from eligible producer plants. The legal framework, not including the fundamental regulations (Energy Act, Electricity Market Act and accompanying subordinate legislation), is comprised of: Regulation on the minimum share of electricity produced from renewable energy sources and cogeneration with stimulated production; Regulation on fees for the stimulation of electricity production from renewable energy sources and cogeneration; Regulation on establishment of a guarantee system for the origin of electricity; Tariff system for the production of electricity from renewable energy sources and cogeneration; Ordinance on the use of renewable energy sources and cogeneration and the Ordinance on attaining the status of an eligible electricity producer.</p>

	<p>The Regulation on the minimum share of electricity produced from renewable energy sources and cogeneration with stimulated production (Official Gazette 33/07 and 8/11) stipulates the minimum share of electricity from stimulated production in the total final consumption of electricity, and outlines the national targets in electricity production from plants using RES and cogeneration. The Regulation does not apply to electricity generated in hydropower plants with installed capacities greater than 10 MW. The incentives system will exist until the creation of conditions for the sale of electricity from RES on the open electricity market. HROTE concludes contracts on the purchase of electricity with eligible producers for stimulating the production until the total planned production of electricity from plants using RES achieves the prescribed minimum level. HROTE purchased all electricity under stimulated production.</p> <p>The Regulation on fees for the stimulation of electricity production from renewable sources and cogeneration (Official Gazette 33/07, 133/07, 155/08, 155/09, 8/11 and 144/11) stipulates that all electricity customers; tariff and eligible customers – pay the stimulation fee. The funds of the stimulation fee are used for the payment of the incentive price to eligible producers for supplied electricity, for financing the operations of HROTE in the incentives system, and for paying the balancing costs of the electricity system that arise due to variations in the planned values and produced electricity from plants of eligible producers entitled to the incentive price.</p> <p>The Regulation on the establishment of a guarantee system of origin of electricity (Official Gazette 84/13) establishes the system guaranteeing the origin of electricity, for the purpose of proving the share or quantity of electricity produced from renewable sources and cogeneration in the total supplied quantity of electricity from the supplier to final customers. For electricity generated from production plants holding the status of an eligible producer of electricity, and which has a valid agreement on the purchase of electricity concluded pursuant to the tariff system on for the production of electricity from renewable sources and cogeneration, the guarantee of origin of electricity is not issued.</p> <p>According to the Tariff system for the production of electricity from renewable sources and cogeneration (Official Gazette 63/12, 121/12 and 144/12), the right to state subsidies through incentive prices is granted to electricity producers using RES, under the condition that it has obtained the decision on the attainment of the status of an eligible electricity producer, and that it has concluded an agreement with HROTE on the purchase of electricity. HROTE pays the eligible producer the incentive price in line with the Tariff system.</p> <p>The Ordinance on the use of renewable energy sources and cogeneration (Official Gazette 88/12) lays down the plants using RES</p>
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	<p>and cogeneration, and prescribes the form, content and keeping of the RESCPP Register.</p> <p>The Ordinance on attaining the status of an eligible electricity producer (Official Gazette 88/12) prescribes the conditions for attaining the status of an eligible electricity producer, the manner of attaining and loss of the status of an eligible electricity producer, and the manner of reporting by the eligible producer.</p>																																													
<p>Is it a voluntary or obligatory scheme?</p>	<p>The scheme is obligator for all those obliged to pay the charge for the promotion of electricity production from RESC, but is not obligatory for all development projects for plants using RES, only for those with the intent of attaining the status of an eligible electricity producer and attaining the right to the incentive price.</p>																																													
<p>Who manages the scheme? (Implementing body, monitoring authority)</p>	<p>MINGO is responsible for implementation of the scheme, while in the sense of implementation, and particularly in the sense of issuance of permits, decisions and consent, HERA, HROTE and the electricity system operators HOPS and HEP-ODS play important roles in the scheme. MINGO oversees the calculation, payment and spending of the stimulation fee funds.</p> <p>HERA supervises the application of the tariff system and supervises the eligible producers in meeting the requirements.</p> <p>The Centre for Monitoring Operations in the Energy Sector and Investments is competent for supervision and removing barriers in the implementation of RES projects.</p>																																													
<p>What are the measures taken to ensure availability of necessary budget/funding to achieve the national target?</p>	<p>Funding is secured through the stimulation fee for the production of electricity from RESC that is paid by all electricity customers, proportional to the total calculated consumption.</p> <p>The total stimulation fees for electricity from RESC collected from tariff customers and the purchase of electricity from RESC by suppliers:</p> <table border="1" data-bbox="638 1328 1460 1769"> <thead> <tr> <th>Godina</th> <th>Visina naknade (kn/kWh)</th> <th>Iznos naknade (kn)</th> <th>Visina PPC (kn/kWh)</th> <th>Otkup električne energije iz obnovljivih izvora energije od opskrbljivača (kn)</th> </tr> </thead> <tbody> <tr> <td>2007.</td> <td>0,0089</td> <td>67.623.718,31</td> <td>0,2625</td> <td>125.208,30</td> </tr> <tr> <td>2008.</td> <td>0,0089</td> <td>142.981.911,85</td> <td>0,2625 / 0,4400</td> <td>13.642.151,31</td> </tr> <tr> <td>2009.</td> <td>0,0089</td> <td>137.778.295,08</td> <td>0,4400 / 0,4342</td> <td>20.755.454,07</td> </tr> <tr> <td>2010.</td> <td>0,005</td> <td>78.411.768,20</td> <td>0,4342</td> <td>36.549.402,44</td> </tr> <tr> <td>2011.</td> <td>0,005</td> <td>77.847.509,78</td> <td>0,4342</td> <td>97.935.393,16</td> </tr> <tr> <td>2012.</td> <td>0,005</td> <td>76.608.346,10</td> <td>0,4342 / 0,53</td> <td>190.065.457,98</td> </tr> <tr> <td>UKUPNO:</td> <td></td> <td><b>504.643.203,22</b></td> <td></td> <td><b>169.007.609,28</b></td> </tr> <tr> <td><b>UKUPNO NA KNADA I OTKUP (kn):</b></td> <td></td> <td colspan="3"><b>673.650.812,50</b></td> </tr> </tbody> </table> <p>Year  Fee rate (HRK/kWh)  Amount of fee (HRK)  PPC Rate (HRK/kWh)  Purchase of electricity from renewable energy sources from suppliers (HRK)</p>	Godina	Visina naknade (kn/kWh)	Iznos naknade (kn)	Visina PPC (kn/kWh)	Otkup električne energije iz obnovljivih izvora energije od opskrbljivača (kn)	2007.	0,0089	67.623.718,31	0,2625	125.208,30	2008.	0,0089	142.981.911,85	0,2625 / 0,4400	13.642.151,31	2009.	0,0089	137.778.295,08	0,4400 / 0,4342	20.755.454,07	2010.	0,005	78.411.768,20	0,4342	36.549.402,44	2011.	0,005	77.847.509,78	0,4342	97.935.393,16	2012.	0,005	76.608.346,10	0,4342 / 0,53	190.065.457,98	UKUPNO:		<b>504.643.203,22</b>		<b>169.007.609,28</b>	<b>UKUPNO NA KNADA I OTKUP (kn):</b>		<b>673.650.812,50</b>		
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	<p><b>TOTAL FEES AND PURCHASES (HRK)</b></p> <p>The paid amounts to eligible producers, paid amounts for energy balancing and paid amounts for charges for supplier expenses:</p> <table border="1" data-bbox="639 383 1453 887"> <thead> <tr> <th>Godina</th> <th>Iznos sredstva isplaćenim povlaštenim proizvođačima (kn)</th> <th>Isplaćena sredstva za energiju uravnoteženja - 10% visine PPC (kn)</th> <th>Isplaćena sredstva na ime naknade za troškove opskrbljivača</th> </tr> </thead> <tbody> <tr> <td>2007.</td> <td>310.039,60</td> <td>12.520,83</td> <td></td> </tr> <tr> <td>2008.</td> <td>26.185.223,45</td> <td>1.364.215,12</td> <td></td> </tr> <tr> <td>2009.</td> <td>36.586.041,23</td> <td>2.075.545,40</td> <td></td> </tr> <tr> <td>2010.</td> <td>70.395.378,75</td> <td>3.654.940,24</td> <td></td> </tr> <tr> <td>2011.</td> <td>182.182.258,56</td> <td>9.793.539,33</td> <td>1.167.712,67</td> </tr> <tr> <td>2012.</td> <td>331.748.777,98</td> <td>19.006.545,80</td> <td>1.149.125,17</td> </tr> <tr> <td><b>UKUPNO:</b></td> <td><b>647.407.719,57</b></td> <td><b>35.907.306,72</b></td> <td><b>2.316.837,84</b></td> </tr> <tr> <td><b>UKUPNA ISPLAĆENA SREDSTVA (kn):</b></td> <td colspan="3" style="text-align: center;"><b>685.631.864,13</b></td> </tr> </tbody> </table> <p><b>Year</b>  <b>Amount of funds paid to eligible producers (HRK)</b>  <b>Paid funds for energy balancing – 10% of PPC rate (HRK)</b>  <b>Paid funds as fees for supplier expenses</b></p> <p><b>Total paid funds (HRK):</b></p>	Godina	Iznos sredstva isplaćenim povlaštenim proizvođačima (kn)	Isplaćena sredstva za energiju uravnoteženja - 10% visine PPC (kn)	Isplaćena sredstva na ime naknade za troškove opskrbljivača	2007.	310.039,60	12.520,83		2008.	26.185.223,45	1.364.215,12		2009.	36.586.041,23	2.075.545,40		2010.	70.395.378,75	3.654.940,24		2011.	182.182.258,56	9.793.539,33	1.167.712,67	2012.	331.748.777,98	19.006.545,80	1.149.125,17	<b>UKUPNO:</b>	<b>647.407.719,57</b>	<b>35.907.306,72</b>	<b>2.316.837,84</b>	<b>UKUPNA ISPLAĆENA SREDSTVA (kn):</b>	<b>685.631.864,13</b>		
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<p>How is long-term security and reliability addressed by the scheme?</p>	<p>The Decision on attaining the status of an eligible producer is issued for a validity period of 14 years. The agreement on the purchase of electricity is also concluded for a fixed period of 14 years, which is an additional condition for attaining the right to the incentive price. This guarantees the long-term security and reliability of the scheme.</p>																																				
<p>Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?</p>	<p>Amendments to the Regulation on the minimum share of electricity from renewable sources, two ordinances and the tariff system regulating the incentive prices for electricity in 2012 marked the revision of the scheme that commenced in 2007. This also represented the optimisation of the scheme. The charges for fees were corrected several times through amendments to the appropriate regulations whereby these charges are stipulated.</p> <p>In the sense of adaptation of the programme, corrections to the tariff items are important for changes to the market conditions from the aspects of technological advances, changes to the average market prices for electricity production from renewable sources, and other factors. Amendments are adopted at the proposal of the ministry responsible for energy to 31 October of the current year, with a start of application in the following year. Furthermore, in the agreement on the purchase of electricity, the incentive price is corrected for the inflation index in the preceding calendar year.</p>																																				
<p>Does support differ according to technology?</p>	<p>The Tariff system for the production of electricity from renewable sources prescribes the level of tariff items categorised by installation</p>																																				



	<p>capacity and by the type of technology used for electricity production. With regard to the installed capacity of a plant, there are plants to 1 MW inclusive and plants with capacity greater than 1 MW. Within individual technology types, solar plants (only with capacity to 1 MW inclusive), plants fuelled with solid biomass and plants on biogas, there is further differentiation of the level of tariff items according to the installed plant capacity. For example, solid biomass fuelled plants in the group of plants with capacity to 1 MW inclusive are divided into plants with a capacity to 300 kW inclusive and plants with capacity greater than 300 kW. The level of tariff items is greater for solid biomass plants with lower installed capacity. For hydropower plants, the differentiation within the plant type is achieved through a definition of the threshold of produced electricity in MWh.</p>
What are the expected impacts in terms of energy production?	By end 2020, the minimum share of electricity produced by eligible producers will total 13.6% in the total final electricity production, and that production will be stimulated.
Is support conditional on meeting energy efficiency criteria?	The condition for plants fuelled by biogas and biomass in achieving tariffs and concluding contracts on the purchase of electricity with a market operator in a manner that the minimum total annual efficiency of the plants is 50% in the transformation of primary energy fuel in the delivered electricity and produced useful heat.
Is it an existing measure? Could you please indicate national legislation regulating it?	This is a measure in effect since 2007.
Is this a planned scheme? When would it be operational?	<ul style="list-style-type: none"> <li>- Energy Act (Official Gazette 120/12) General interest for the promotion of RESC.</li> <li>- Electricity Market Act (Official Gazette 22/13) Status of an eligible producer, collection and distribution of fees, alignment with minimum targets, guarantee of origin.</li> <li>- Regulation on fees for the stimulation of electricity production from renewable energy sources and cogeneration (Official Gazette 33/07, 133/07, 155/08, 155/09, 8/11 and 144/11) Collection, distribution and payment of charges for the promotion of electricity production from plants using RESC.</li> <li>- Regulation on the establishment of a system of guarantee of electricity origin (Official Gazette 84/13) Establishment of a guarantee system for the origin of electricity, aimed at proving the share or quantity of electricity produced from renewable energy sources and cogeneration in the total supplied quantity of electricity by the supplier to the end customer.</li> <li>- Tariff system for the production of electricity from renewable sources of energy and cogeneration (Official Gazette 63/12, 121/12 and 144/12) Stimulatory price of electricity paid by HROTE for supplied electricity produced from plants using RESC</li> <li>- Ordinance on the use of renewable energy sources and cogeneration (Official Gazette 88/12)</li> </ul>

	<p>Conditions and possibilities for the use of RES and cogeneration: planning, administrative procedures (permits), entry into the RESCPP Register.</p> <p>– Ordinance on attaining the status of an eligible electricity producer (Official Gazette 88/12)</p> <p>Procedure for attaining the status of an eligible electricity producer and types of RESC for which the status of an eligible producer may be obtained.</p>																		
What start and end dates (duration) are set for the whole scheme?	The start of the scheme was set with the entry into force of the subordinate legislation that prescribed the procedure for obtaining permits for the development and construction of plants using RES, i.e. 1 July 2007. The completion of the overall scheme has not yet been determined.																		
Are there maximum or minimum sizes of system which are eligible?	There is no minimum size of system that is eligible for support through the tariff system, other than plants for animal fat, for which there is no prescribed level of tariff items for installed capacities of less than 1 MW. With regard to the upper limits of systems, hydropower plants are eligible with an installed capacity exclusively to 10 MW, and electric plants on biogas and electric plants on animal fat with installed capacity to 5 MW inclusive. For other systems, there are no upper limits prescribed.																		
What are the conditions to get the fixed tariff?	The right to the fixed tariff may be attained by an electricity producer under the condition that it: <ul style="list-style-type: none"> <li>– obtains the decision on attainment of the status of an eligible electricity producer, and</li> <li>– concludes a contract with HROTE on the purchase of electricity.</li> </ul>																		
Is there a cap on the total volume of electricity produced per year or of installed capacity that is entitled to the tariff?	There are no caps to the total annual electricity production. Through the tariff system, restrictions are prescribed with regard to the installed capacity for hydropower plants (10 MW), and biogas plants and animal fat plants (5 MW). Furthermore, for integrated solar plants that conclude a contract on the purchase of electricity, there is cap of 15 MW of the total installed capacity of all electric plants in the current year, while for solar plants that are not integrated, that cap is 10 MW. For plants using hydrogen fuel cells, the cap is set at 1 MW total installed capacity for all plants, for those plants for which a prior decision on the attainment of the status of an eligible producer was obtained.																		
Is it a technology specific scheme? What are the tariff levels for each?	<p>The scheme is not intended for specific technology, rather includes all RES technology. The levels of fixed tariff systems, expressed in HRK/kWh is given in the table below:</p> <table border="1"> <thead> <tr> <th>Type of plant</th> <th>≤1 MW</th> <th>&gt;1 MW</th> </tr> </thead> <tbody> <tr> <td>Solar plants</td> <td></td> <td></td> </tr> <tr> <td>Solar plants with installed capacity to 10 kW inclusive</td> <td>1.10</td> <td>-</td> </tr> <tr> <td>Solar plants with installed capacity greater than 10 kW up to and including 30 kW</td> <td>1.10</td> <td>-</td> </tr> <tr> <td>Solar plants greater than 30 kW</td> <td>1.10</td> <td>PPC</td> </tr> <tr> <td>Hydropower plants</td> <td></td> <td></td> </tr> </tbody> </table>	Type of plant	≤1 MW	>1 MW	Solar plants			Solar plants with installed capacity to 10 kW inclusive	1.10	-	Solar plants with installed capacity greater than 10 kW up to and including 30 kW	1.10	-	Solar plants greater than 30 kW	1.10	PPC	Hydropower plants		
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	Hydropower plants up to and including 500 MWh produced in a calendar year	1.20	-
	Hydropower plants from greater than 500 MWh up to and including 1000 MWh produced in a calendar year	0.80	-
	Hydropower plants with greater than 1000 MWh produced in a calendar year	0.60	-
	Hydropower plants with installed capacity up to an including 10 MW		
	Energy up to and including 5000 MWh produced in a calendar year	-	1.00
	Energy greater than 5000 MWh to up to and including 15,000 MWh produced in a calendar year	-	0.70
	Energy for more than 15,000 MWh produced in a calendar year	-	0.57
	Wind power plants	0.72	0.71
	Power plants on solid biomass, excluding municipal waste		
	Power plants on biomass, with installed capacity up to and including 300 kW	1.30	-
	Power plants on biomass, with installed capacity greater than 300 kW	1.20	-
	Power plants on biomass, with installed capacity up to an including 2 MW	-	1.20
	Power plants on biomass, with installed capacity greater than 2 MW to up to and including 5 MW	-	1.15
	Power plants on biomass, with installed capacity greater than 5 MW to up to and including 10 MW	-	1.05
	Power plants on biomass, with installed capacity greater than 10 MW	-	0.90
	Geothermal power plants	1.20	1.20
	Power plants on biogas from agricultural cultures and organic remains and waste of plant and animal origin		
	Plants on biogas with installed capacity up to and including 300 kW	1.42	-
	Plants on biogas with installed capacity greater than 300 kW	1.20	-
	Plants on biogas with installed capacity up to and including 2 MW	-	1.20
	Plants on biogas with installed capacity greater than 2 MW up to and including 5 MW	-	1.12
	Power plants on liquid biofuels	PPC	PPC
	Plants on landfill gas and gas from wastewater purification plants	PPC	PPC
	Other plants on renewable resources	PPC	PPC
	Plants on animal fat with an installed capacity up to and including 5 MW	-	1.65
	PPC means that the level of the tariff item is defined as the average sales price of electricity (PPC), and this is the price of electricity production for tariff customers from the category of households with a single tariff calculation of electricity.		
Are there other criteria differentiating tariffs?	There are no other criteria.		
For how long is the fixed tariff	The electricity purchase agreement is concluded for a set period of 14		

guaranteed?	years. Every year, MINGO may proposed changes to the tariff system that include the correction of tariff items for changes for changes to market conditions from the aspects of technological advances, changes in the average market price for systems producing electricity from RES and all other relevant factors that may directly influences the realisation costs of the project.
Is there any tariff adjustment foreseen in the scheme?	In addition to the correction of the tariff systems listed in the previous response, there are no other tariff adjustments.

Name of scheme	<b>Stimulating the use of RES and energy efficiency via the Croatian Bank for Reconstruction and Development (HBOR)</b>
Short description of the scheme	<p>For financing projects from the area of environmental protection, HBOR approves loans via its Credit Line for environmental protection, energy efficiency and RES projects.</p> <p>The objective of the programme to credit environmental protection, energy efficiency and RES projects is the realisation of investment projects directed at environmental protection, energy efficiency and the use of RES.</p> <p>Loans are intended for investment into lands, construction of buildings, equipment and devices.</p> <p>Loan users may be local and regional self-government units (municipalities, towns and counties, and the City of Zagreb), provided they meet the stipulated legal requirements; municipal companies, companies, craftspersons and other legal persons or corporate banks that have concluded cooperation contracts with HBOR on implementation of this scheme.</p> <p>Corporate banks may use these loans under the condition that the funds are placed to end users of the loans in line with the crediting scheme.</p> <p>Means of crediting:</p> <ul style="list-style-type: none"> <li>- crediting end users via corporate banks,</li> <li>- direct crediting.</li> </ul> <p>The acceptability of each individual project based on energy efficiency and RES use is assessed individually.</p>
Is it a voluntary or obligatory scheme?	This is a voluntary scheme.
Who manages the scheme? (Implementing body, monitoring authority)	<p>HBOR implements this scheme through:</p> <ul style="list-style-type: none"> <li>- direct crediting to the loan user,</li> <li>- crediting end users through corporate banks that have agreements with HBOR on implementation of this scheme.</li> </ul>
What are the measures taken to ensure availability of necessary budget/funding to achieve the national target?	Funds are secured through HBOR.

Does support differ according to technology?	There are no different supports for different technologies. The acceptability of each individual project is assessed individual from the basis of energy efficiency and RES.
What are the expected impacts in terms of energy production?	There are no expected impacts in terms of energy production. The expected result is the implementation of projects that will contribute to achieving the national RES targets.
Is support conditional on meeting energy efficiency criteria?	Support is not conditional on meeting energy efficiency criteria. The acceptability of each individual project is assessed individual from the basis of energy efficiency and RES.
Is it an existing measure? Is this a planned scheme? When would it be operational?	This is an existing measure that has been in effect since 2009.
please indicate national legislation regulating it?	<ul style="list-style-type: none"> <li>- State Aid Act (Official Gazette 72/13)</li> <li>- Decision on the publication of rules on state aid for environmental protection (Official Gazette 154/08)</li> </ul>
What start and end dates (duration) are set for the whole scheme?	2009 -
Are there maximum or minimum sizes of system which are eligible?	There are no maximum or minimum sizes of system eligible for this support. There is a minimum amount of the loan that is granted, while there is no limit for a maximum amount.
What is granted by the scheme? (subsidies, capital grants, low interest loans, tax exemption or reduction, tax refunds)	Within the scheme, the following can be granted: <ul style="list-style-type: none"> <li>- loans,</li> <li>- incentive interest rates.</li> </ul>
Who can benefit from this scheme?	Credit users, builders, installers, architects, suppliers of the required devices can benefit from this Scheme.
Are applications continuously received and granted or are there periodical calls? If periodical, could you please describe the frequency and conditions?	Applications are received and granted continuously.

Name of scheme	<b>Promoting RES user and energy efficiency through the funds of the Environmental Protection and Energy Efficiency Fund (EPEEF)</b>
Short description of the scheme	EPEEF secures funds for the financing of preparation, implementation and development of programmes and projects in the area of environmental protection, improving energy efficiency and the use of RES, and mitigating climate change. The funds for financing are secured through the allocated revenues of the EPEEF from levies collected from environmental polluters, which includes levies for emissions of nitrous oxides, sulphuric dioxide and

	<p>carbon dioxide, levies for environmental waste loading, levies for environmental users, and species levies for the environment for motor vehicles. Also, since 2013, funds for financing have been secured through allocated revenues of the EPEEF generated through the sale of greenhouse gas emission units via auctions.</p> <p>Funds of EPEEF are granted to projects that improve energy efficiency, including cogeneration plants, district heating systems, energy audits and demonstrative activities, public lighting projects, alternative fuels and the use of waste heat, and projects in the areas of buildings and sustainable construction.</p> <p>RES projects granted funds by EPEEF include solar energy, wind energy, biomass energy, energy from small hydropower plants and geothermal energy.</p> <p>EPEEF grants funds to local and regional self-government units, public institutions, companies, craftspersons, non-governmental organisations, non-profit organisations and legal persons via loans, subsidised interest rates, financial aid and donations.</p>
<p>Is it a voluntary or obligatory scheme?</p>	<p>This is a voluntary scheme.</p>
<p>Who manages the scheme? (Implementing body, monitoring authority)</p>	<p>The scheme is managed by EPEEF.</p>
<p>What are the measures taken to ensure availability of necessary budget/funding to achieve the national target?</p>	<p>Funding is secured through the allocated revenues of EPEEF from:</p> <ul style="list-style-type: none"> <li>- levies for environmental polluters,</li> <li>- levies for those using the environment,</li> <li>- levies for environmental waste loading,</li> <li>- special environmental levies for motor vehicles.</li> </ul> <p>Funds for financing may be obtained from:</p> <ul style="list-style-type: none"> <li>- budgets of local and regional self-government pursuant to jointly established programmes,</li> <li>- revenues achieved on the basis of international bilateral and multilateral cooperation in programmes, project and similar activities in the area of environmental protection and energy efficiency,</li> <li>- revenues and receipts from the management of available EPEEF funds</li> <li>- donations, aid and the like.</li> </ul> <p>From 2005 to end 2012, EPEEF approved HRK 580 million (paid out HRK 449 million) for the financing of 1558 projects (1327 completed), with a total value of HRK 2.4 billion, of which 120 projects were for the use of RES.</p> <p>In households, almost 1000 photovoltaic collector systems, heat solar collectors, biomass stove and boilers and heat pumps were installed.</p> <p>In a tender at the end of 2012, cofinancing was approved for 47 programmes of local and regional self-government units, awarding financial aid of nearly HRK 24 million for the installation of 2099 RES</p>

	<p>systems: 1511 solar heat collectors, 455 biofuel stoves and boilers, 35 heat pumps, 95 photovoltaic systems and 3 wind generator systems. In the period from 2013-2015, EPEEF plans to earmark HRK 564 million for the cofinancing of energy efficiency and RES projects, of which HRK 272 million will be for energy efficiency and RES use projects in buildings, and HRK 111 million for RES use projects.</p>
How is long-term security and reliability addressed by the scheme?	The scheme is regulated under the national legislation. In that manner, long-term security and reliability is ensured.
Does support differ according to technology?	<p>EPEEF announces tenders for the cofinancing of projects in the area of environmental protection, improving energy efficiency and use of RES and mitigating climate change.</p> <p>EPEEF issues tenders according to its work programme and financing plan, and the intent of tenders depends on whether the support will differ for different technology.</p>
What are the expected impacts in terms of energy production?	<p>There are no expected impacts in the sense of energy production.</p> <p>The expected use is the implementation of projects that contribute to achieving the national RES targets.</p>
Is support conditional on meeting energy efficiency criteria?	Support is not conditional to meeting energy efficiency criteria.
Is it an existing measure? Is this a planned scheme? When would it be operational?	This is an existing measure that has been in effect since 2004.
please indicate national legislation regulating it?	<ul style="list-style-type: none"> <li>- Act on the Environmental Protection and Energy Efficiency Fund (Official Gazette 107/03, 144/12)</li> <li>- Statute of the Environmental Protection and Energy Efficiency Fund (Official Gazette 193/03, 73/04, 116/08, 101/09 and 118/11)</li> <li>- Air Protection Act (Official Gazette 130/11)</li> <li>- Ordinance on the procedures of publishing tenders and deciding on the selection of users of funds of the Environmental Protection and Energy Efficiency Fund (Official Gazette 153/11)</li> <li>- Ordinance on the conditions and manner of granting funds of the Environmental Protection and Energy Efficiency Fund, and criteria and benchmarks for assessing applications for the granting of resources from the Fund (Official Gazette 18/09 and 42/12)</li> <li>- Regulation on unit fees, corrective coefficients and approximate criteria and benchmarks for establishing separate environment levies for motor vehicles (Official Gazette 2/04)</li> <li>- Ordinance on the manner and schedule of calculation and payment of the separate environment levies for motor vehicles (Official Gazette 20/04)</li> <li>- Regulation on unit fees, corrective coefficients and approximate criteria and benchmarks for determining levies for environmental emissions of sulphur oxides expressed as sulphuric dioxide and nitrogen oxides expressed as nitrous oxide (Official Gazette 71/04)</li> <li>- Ordinance on the manner and schedule for the calculation and payment of levies for environment emissions of sulphur oxides</li> </ul>

	<p>expressed as sulphuric dioxide and nitrogen oxides expressed as nitrous oxide (Official Gazette 95/04)</p> <ul style="list-style-type: none"> <li>- Regulation on unit charges, corrective coefficients and approximate criteria and benchmarks for establishing levies for environmental waste loading (Official Gazette 71/04)</li> <li>- Ordinance on the manner and schedule of calculating and payment of levies for environment waste loading (Official Gazette 95/04)</li> <li>- Ordinance on conditions to be met by those using the funds of the Environmental Protection and Energy Efficiency Fund (Official Gazette 183/04)</li> </ul>
What start and end dates (duration) are set for the whole scheme?	2004 -
Are there maximum or minimum sizes of system which are eligible?	There are no minimum or maximum sizes of systems that are eligible for the support.
What is granted by the scheme? (subsidies, capital grants, low interest loans, tax exemption or reduction, tax refunds)	<p>The scheme includes the granting of:</p> <ul style="list-style-type: none"> <li>- interest free loans,</li> <li>- subsidies,</li> <li>- financial aid,</li> <li>- donations.</li> </ul> <p>Funds are awarded pursuant to the public tender procedure.</p>
Who can benefit from this scheme?	Users of funds from EPEEF, buildings, installers, architects, suppliers of necessary devices can benefit from this scheme.
Are applications continuously received and granted or are there periodical calls? If periodical, could you please describe the frequency and conditions?	EPEEF calls the tenders. The frequency and terms of the tenders depend on the work programme and financial plan for EPEEF for each year.

Name of the scheme	<b>Energy efficiency projects with recoup through savings (ESCO model)</b>
Short description of the scheme	<p>The ESCO model represents intelligent energy solutions and represents the concept of companies that plan, implement and finance projects in the area of energy efficiency.</p> <p>ESCO projects include modernisation, reconstruction and restoration of existing plants and facilities, with the objective of rational energy consumption, in a manner that savings are achieved in energy costs and maintenance, and through these savings, the return on investment is generated.</p> <p>ESCO projects include the development, implementation and financing with the aim of improving energy efficiency and reducing plant and maintenance costs, which includes the use of RES.</p> <p>Areas of operation are the public and private sector, including buildings (schools and preschools, offices, hotels, universities, hospitals), public lighting, industry and energy supply systems (cogeneration, remote</p>



	heating). Furthermore, ESCO projects can include domestic enterprise, engineering and consulting companies, equipment producers, banks and other business entities.
Is it a voluntary or obligatory scheme?	This is a voluntary scheme.
Who manages the scheme? (Implementing body, monitoring authority)	The scheme is managed by the service provider (ESCO) that develops, implements and finances energy efficiency projects on a market basis. Currently, the key creator for the energy efficiency projects in Croatia is the company HEP ESCO d.o.o.
What are the measures taken to ensure availability of necessary budget/funding to achieve the national target?	Funds for investments are secured by: <ul style="list-style-type: none"> <li>- ESCO</li> <li>- Domestic commercial banks – through loans;</li> <li>- Global Environment Fund (GEF) – through donations;</li> <li>- International Bank for Reconstruction and Development (IBRD) – through loans</li> </ul>
Does support differ according to technology?	Supports do not differ for different technology.
What are the expected impacts in terms of energy production?	No expected impacts in terms of energy production are expected. Expected results are the increase in the use of heat produced from RES in the public and private sector.
Is support conditional on meeting energy efficiency criteria?	Energy efficiency is the foundation of ESCO projects. The objective of ESCO projects is the rational consumption of energy in a manner that generates returns on investment through savings in energy and maintenance costs. These projects can include RES to achieve this objective.
Is it an existing measure? Is this a planned scheme? When would it be operational?	This is an existing measure, which has been in effect since 2004.
What start and end dates (duration) are set for the whole scheme?	2004 -
Are there maximum or minimum sizes of system which are eligible?	There are no maximum or minimum system sizes that are eligible for support.
What is granted by the scheme? (subsidies, capital grants, low interest loans, tax exemption or reduction, tax refunds)	As part of the programme, financial resources for energy efficiency are granted.
Who can benefit from this scheme?	Public and private sector (buildings, public lighting, industry and energy supply systems).
Are applications continuously received and granted or are there periodical calls? If periodical, could you please describe the frequency and conditions?	Applications are received and granted continually.

Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?

It is possible that the same project be supported by multiple measures. For example:

- HEP ESCO projects may be cofinanced by EPEEF.
- Projects obtaining a loan through the Crediting scheme for environmental protection, energy efficiency and RES projects through HBOR may receive reduced interest rates, if EPEEF approves the interest rate subsidy.
- In co-financed programmes, projects and similar activities relating to the promotion of RES, environmental protection and energy efficiency, EPEEF cooperates with banks and other financial institutions.

PROVISIONAL TRANSLATION

#### 4.4. SUPPORT PROGRAMMES FOR PROMOTING THE USE OF RENEWABLE ENERGY FOR HEATING AND COOLING THAT ARE APPLIED IN A CERTAIN MEMBER STATE OF GROUP OF MEMBER STATES

- a) How are the support schemes for electricity from renewable energy sources adapted to encourage the use of CHP from renewable energy sources?

Name of scheme.	<b>Promoting the use of cogeneration</b>
Short description of the scheme.	<p>The legal framework for the promotion of use of cogeneration for electricity production was adopted in 2007, and after several years of practice, was amended in 2012, which removed certain barriers the development of projects for electricity production from the plants of eligible electricity producers. In addition to the fundamental regulations (Energy Act, Electricity Market Act and accompanying subordinate legislation), the legal framework for the promotion of use of cogeneration for electricity production consists of: Regulation on the minimum share of electricity produced from renewable energy sources and cogeneration whose production is stimulated; Regulation on fees for the stimulation of electricity production from renewable energy sources and cogeneration; Regulation on the establishment of the guarantee system for the origin of electricity; Tariff system for the production of electricity from renewable energy sources and cogeneration; Ordinance on the use of renewable energy sources and cogeneration, and the Ordinance on attaining the status of an eligible electricity producer.</p> <p>The Regulation on the minimum share of electricity produced from renewable energy sources and cogeneration whose production is stimulated (Official Gazette 33/07 and 8/11) stipulates the minimum share of electricity from stimulated production in the total final consumption of electricity, and outlines the national targets in electricity production from plants using RES and cogeneration. The Regulation does not apply to electricity generated in cogeneration plants in the category of public heating plants that produce electricity and thermal energy for the supply of customers and not for their own purposes. HROTE concludes contracts on the purchase of electricity with eligible producers for stimulating the production until the total planned production of electricity from cogeneration plants achieves the prescribed minimum level. HROTE purchases all electricity under stimulated production.</p> <p>The Regulation on fees for the stimulation of electricity production from renewable sources and cogeneration (Official Gazette 33/07, 133/07, 155/08, 155/09, 8/11 and 144/11) stipulates that all electricity customers; tariff and eligible customers – pay the stimulation fee. The funds of the stimulation fee are used for the payment of the incentive price to eligible producers for supplied electricity, for financing the operations of HROTE in the incentives system, and for paying the</p>

	<p>balancing costs of the electricity system that arise due to variations in the planned values and produced electricity from plants of eligible producers who are entitled to the incentive price.</p> <p>The Regulation on the establishment of a guarantee system of the origin of electricity (Official Gazette 84/13) establishes the system guaranteeing the origin of electricity, for the purpose of proving the share or quantity of electricity produced from renewable sources and cogeneration in the total supplied quantity of electricity from the supplier to final customers. For electricity generated from production plants holding the status of an eligible producer of electricity, and which has a valid agreement on the purchase of electricity concluded pursuant to the tariff system on for the production of electricity from renewable sources and cogeneration, the guarantee of origin of electricity is not issued.</p> <p>According to the Tariff system for the production of electricity from renewable sources and cogeneration (Official Gazette 63/12, 121/12 and 144/12), the right to state subsidies through incentive prices is granted to electricity producers using cogeneration, under the condition that it has obtained the decision on the attainment of the status of an eligible electricity producer, and that it has concluded an agreement with HROTE on the purchase of electricity. HROTE pays the eligible producer the incentive price in line with the Tariff system.</p> <p>The Ordinance on the use of renewable energy sources and cogeneration (Official Gazette 88/12) lays down the plants using RES and cogeneration, and prescribes the form, content and keeping of the RESCPP Register.</p> <p>The Ordinance on attaining the status of an eligible electricity producer (Official Gazette 88/12) prescribes the conditions for attaining the status of an eligible electricity producer, the manner of attaining and loss of the status of an eligible electricity producer, and the manner of reporting by the eligible producer.</p>
<p>Is it a voluntary or obligatory scheme?</p>	<p>The scheme is compulsory for those obliged to pay the levy for the promotion of electricity from RESC, but is not compulsory for all projects to develop cogeneration plants, only for those that have the intent of achieving the status of an eligible electricity producer and entitlement to the incentive price.</p>
<p>Who manages the scheme? (Implementing body, monitoring authority)</p>	<p>MINGO is competent for implementation of the programme.</p> <p>In the sense of implementation, and particularly in the sense of the issuance of permits, decisions and consent, the following are important bodies: HERA, HROTE, HOPS and HEP-ODS.</p> <p>MINGO oversees the calculation, payment and expenditure of the funds of the stimulation fees.</p> <p>HERA oversees the application of the Tariff system and supervision over eligible producers in meeting the conditions.</p>

	The Centre for Monitoring Operations in the Energy Sector and Investments is responsible for the supervision over and the removal of barriers in the implementation of projects from the energy sector.
What are the measures taken to ensure availability of necessary budget/funding to achieve the national target?	Funds were secured through fees for the stimulation of electricity production from RESC that are paid by all electricity customers, proportionate to the total calculated consumption. From 2005 to end 2012, EPEEF cofinanced 19 projects for biomass fuelled boilers and cogeneration. In the period from 2013 to 2015, EPEEF is planning to grant HRK 111 million for the cofinancing of RES projects, including biomass cogeneration plants.
How is long-term security and reliability addressed by the scheme?	The Decision on attaining the status of an eligible producer is issued for a validity period of 14 years. The agreement on the purchase of electricity is also concluded for a fixed period of 14 years, which is an additional condition for attaining the right to the incentive price. This guarantees the long-term security and reliability of the scheme.
Is the scheme periodically revised? What kind of feedback or adjustment mechanism exists? How has the scheme been optimised so far?	Amendments to the Regulation on the minimum share of electricity from renewable sources, two ordinances and the tariff system regulating the incentive prices for electricity in 2012 marked the revision of the scheme that commenced in 2007. This also represented the optimisation of the scheme. The charges for fees were corrected several times through amendments to the appropriate regulations whereby these charges are stipulated.  In the sense of adaptation of the programme, corrections to the tariff items are important for changes to the market conditions from the aspects of technological advances, changes to the average market prices for electricity production from renewable sources, and other factors. Amendments are adopted at the proposal of the ministry responsible for energy to 31 October of the current year, with a start of application in the following year. Furthermore, in the agreement on the purchase of electricity, the incentive price is corrected for the inflation index in the preceding calendar year.
Does support differ according to technology?	The Tariff rates and their amounts differ depending on the installed electrical capacity of the plant – differences exist between micro-cogeneration ( $\leq 30$ kW), small cogeneration ( $> 30$ kW and $\leq 1$ MW), medium cogeneration ( $>1$ MW and $\leq 35$ MW) and large cogeneration ( $> 35$ MW).
What are the expected impacts in terms of energy production?	To end 2020, the minimum share of electricity produced from cogeneration plants from eligible producers and delivered to the transmission or distribution network, will be 4% of the total final electricity consumption. That production will be stimulated.
Is support conditional on meeting energy efficiency criteria?	The support is condition on the fulfilment of energy efficiency criteria only for cogeneration plants using fossil fuels, while this condition is not applied to plants using RES.
Is it an existing measure? Is this a planned scheme? When would it be operational?	Existing measure, in effect since 2007.

<p>please indicate national legislation regulating it?</p>	<ul style="list-style-type: none"> <li>- Energy Act (Official Gazette 120/12) General interest for the promotion of RESC.</li> <li>- Electricity Market Act (Official Gazette 22/13) Status of an eligible producer, collection and distribution of levies, alignment with minimum targets, guarantee of origin.</li> <li>- Regulation on charges for the promotion of electricity production from renewable energy sources and cogeneration (Official Gazette 33/07, 133/07, 155/08, 155/09, 8/11 and 144/11) Collection, distribution and payment of fees for the stimulation of electricity production from plants using RESC.</li> <li>- Regulation on the establishment of a system of guarantee of electricity origin (Official Gazette 84/13) Establishment of a guarantee system for the origin of electricity, aimed at proving the share or quantity of electricity produced from renewable energy sources and cogeneration in the total supplied quantity of electricity by the supplier to the end customer.</li> <li>- Tariff system for electricity production from renewable energy sources and cogeneration (Official Gazette 63/12, 121/12, 144/12) Stimulatory electricity prices paid by HROTE for the supply of electricity produced from plants using RESC.</li> <li>- Ordinance on the use of renewable energy and cogeneration (Official Gazette 88/12) Conditions and possibilities of use of RESC: planning, administrative procedures (permits), entry into the RESCPP Register.</li> <li>- Ordinance on attaining the status of an eligible electricity producer (Official Gazette 88/12) Procedure for attaining the status of an eligible electricity producer and types of RESC for which it is possible to attain the status of an eligible producer.</li> </ul>
<p>What start and end dates (duration) are set for the whole scheme?</p>	<p>The start of the scheme was determined by the entry into force of the subordinate documents that prescribed the permit issuance procedure for the development and construction of plants using RES, i.e. 1 July 2007. The date of completion of the whole scheme has not yet been determined.</p>
<p>Are there maximum or minimum sizes of system which are eligible?</p>	<p>The Ordinance on attaining the status of an eligible electricity producer states that only those cogeneration plants that achieved primary energy savings (PES) can attain the status of an eligible producer. Primary energy savings for micro and small cogeneration must be greater than zero (<math>PES &gt; 0</math>), while cogeneration in plants with capacity greater than 1 MW connected to the transmission or distribution network must have at least 10% primary energy savings (<math>PES \geq 0.10</math>).</p>
<p>What are the conditions to get the fixed tariff?</p>	<p>The right to the stimulatory price is attained by electricity producers who use cogeneration, under the condition that it:</p> <ul style="list-style-type: none"> <li>- has obtained the decision on attaining the status of an eligible electricity producer (issued by HERA)</li> <li>- concluded the agreement with HROTE on the purchase of electricity.</li> </ul>
<p>Is there a cap on the total volume of electricity produced</p>	<p>There are no caps on total annual volume of electricity produced.</p>

per year or of installed capacity that is entitled to the tariff?											
Is it a technology specific scheme? What are the tariff levels for each?	<table border="1"> <tr> <td>Group of plants</td> <td>C</td> </tr> <tr> <td>Cogeneration plants with installed electricity capacity up to and including 30 kW, micro-generation, and all cogeneration plants using hydrogen fuel cells</td> <td>0.61</td> </tr> <tr> <td>Cogeneration plants with installed electricity capacity greater than 30 kW and up to and including 1 MW, small cogeneration</td> <td>PPC</td> </tr> <tr> <td>Cogeneration plants with installed electricity capacity greater than 1 MW up to and including 35 MW, medium cogeneration, connected to the distribution or transmission network</td> <td>PPC</td> </tr> <tr> <td>Cogeneration plants with installed electricity capacity greater than 35 MW, large cogeneration, and all cogeneration plants connected to the distribution network</td> <td>PPC</td> </tr> </table> <p>PPC means that the level of the tariff items is defined as the average sales price of electricity (PPC), and this is the price of electricity production for tariff customers from the category of households with single tariff calculation of electricity.</p>	Group of plants	C	Cogeneration plants with installed electricity capacity up to and including 30 kW, micro-generation, and all cogeneration plants using hydrogen fuel cells	0.61	Cogeneration plants with installed electricity capacity greater than 30 kW and up to and including 1 MW, small cogeneration	PPC	Cogeneration plants with installed electricity capacity greater than 1 MW up to and including 35 MW, medium cogeneration, connected to the distribution or transmission network	PPC	Cogeneration plants with installed electricity capacity greater than 35 MW, large cogeneration, and all cogeneration plants connected to the distribution network	PPC
Group of plants	C										
Cogeneration plants with installed electricity capacity up to and including 30 kW, micro-generation, and all cogeneration plants using hydrogen fuel cells	0.61										
Cogeneration plants with installed electricity capacity greater than 30 kW and up to and including 1 MW, small cogeneration	PPC										
Cogeneration plants with installed electricity capacity greater than 1 MW up to and including 35 MW, medium cogeneration, connected to the distribution or transmission network	PPC										
Cogeneration plants with installed electricity capacity greater than 35 MW, large cogeneration, and all cogeneration plants connected to the distribution network	PPC										
Are there other criteria differentiating tariffs?	There are no other criteria.										
For how long is the fixed tariff guaranteed?	The agreement on the purchase of electricity is concluded for a set period of 14 years. Each year, the ministry responsible for energy can propose amendments to the tariff system that include corrections of tariff items for changes in market conditions from the aspect of technological advances, changes to the average market price for systems producing electricity from renewable sources, and all other relevant factors that can directly impact the costs of project implementation.										
Is there any tariff adjustment foreseen in the scheme?	In addition to the correction of the tariff system listed in the previous response, there are no other tariff adjustments.										

b) What support schemes are in place to encourage the use of district heating and cooling using renewable energy sources?

Name of scheme	<b>Promoting the production of heating/cooling energy from RES</b>
Short description of the scheme	<p>The planned scheme to promote energy production from RES envisages placing a greater emphasis on the production of thermal energy for heating and cooling. The Thermal Energy Market Act (Official Gazette 80/13) gives priority to the construction of production plants using cogeneration or RES and/or those that use waste as an incoming energy source, before other production plants in seeking out energy solutions when making decisions on the construction of energy facilities.</p> <p>The energy undertaking using a cogeneration facility and using waste, biodegradable parts of waste or RES for the production of thermal energy in an economically appropriate manner, in line with the regulations governing environmental protection and waste management, may attain the status of an eligible producer of electricity and thermal energy. Eligible producers of electricity and thermal energy from cogeneration are required to obtain a permit for the production of thermal energy.</p>

	<p>For the more efficient use of energy in cogeneration plants, and with the simultaneous satisfaction of customer needs for thermal energy, planned electricity production conditional on the simultaneous consumption of thermal energy for heating and/or cooling has the priority of receipt into the electricity network.</p> <p>Pursuant to the Thermal Energy Market Act, for the purpose of greater use of the national thermal energy potential for heating and cooling, the Government of the Republic of Croatia will adopt a scheme to use the potential for efficiency in heating and cooling. Through the scheme for the use of potential for efficiency in heating and cooling, public support measures for the protection of thermal energy for heating and cooling will be established. The scheme will be adopted by 1 July 2015 for the period 2016–2030.</p>
Is it a voluntary or obligatory scheme?	This is a voluntary programme.
Who manages the scheme? (Implementing body, monitoring authority)	<p>MINGO is responsible for the establishment, implementation and monitoring of the scheme.</p> <p>The Centre for Monitoring Operations in the Energy Sector and Investments is authorised for the supervision of and removal of barriers in the implementation of projects in the energy sector.</p>
What are the measures taken to ensure availability of necessary budget/funding to achieve the national target?	<p>Pursuant to the Thermal Energy Market Act, through the Scheme for the use of potential for efficiency in heating and cooling, public support measures for the protection of thermal energy for heating and cooling will be established.</p> <p>Funds will be secured through EU funds.</p> <p>In the period from 2013 to 2015, EPEEF plans to invest HRK 111 million in the cofinancing of RES projects, including projects for the production of heating/cooling energy from RES.</p>
How is long-term security and reliability addressed by the scheme?	With the purpose of greater use of the national potential of thermal energy for heating and cooling, the Government of the Republic of Croatia will adopt a scheme to use the potential for efficiency in heating and cooling for the period from 2016 to 2030.
Is the scheme periodically revised? What kind of feedback or adjustment mechanism exists? How has the scheme been optimised so far?	–
Does support differ according to technology?	–
What are the expected impacts in terms of energy production?	The expected results will be the implementation of projects that contribute to achieving the national target for RES for heating and cooling.
Is support conditional on	–



meeting energy efficiency criteria?	
Is it an existing measure? Is this a planned scheme? When would it be operational?	This scheme is currently in the planning phase. The scheme should be adopted by 1 July 2015.
Please indicate national legislation regulating it?	<ul style="list-style-type: none"> <li>- Energy Act (Official Gazette 120/12)</li> <li>- Electricity Market Act (Official Gazette 22/13)</li> <li>- Thermal Energy Market Act (Official Gazette 80/13)</li> <li>- Act on Sustainable Waste Management (Official Gazette 94/13)</li> </ul>
What start and end dates (duration) are set for the whole scheme?	2015 -
Are there maximum or minimum sizes of system which are eligible?	-

c) What support schemes are in place to encourage the use of small-scale heating and cooling from renewable energy sources?

Name of scheme	<b>Promoting the use of RES among natural persons</b>
Short description of the scheme	<p>Cofinancing the costs of project procurement and installation of RES systems in households.</p> <p>Total costs of equipment and system installation for the use of RES in households is cofinanced through grants in the form of vouchers in the amount of 40-50% by cities, counties or EPEEF. At least 50% of the total procurement costs and installation of the system equipment for RES use in households is financed through grants, in which the EPEEF cofinances 40% and the local and regional self-government unit finances at least 10%.</p> <p>RES systems are considered:</p> <ul style="list-style-type: none"> <li>- solar collector systems for the preparation of hot water consumption and heating of the facility;</li> <li>- photovoltaic systems for the production of electricity;</li> <li>- biomass fuelled systems for heating and the preparation for consumable hot water;</li> <li>- systems for heating and the preparation for consumable hot water with pyrolytic combustion boilers;</li> <li>- systems with heat pumps for the preparation for consumable hot water, heating and cooling;</li> <li>- systems with wind generators and reservoirs for the production of electricity for own production for houses and flats (natural persons) and for small and medium entrepreneurship (legal persons).</li> </ul>
Is it a voluntary or obligatory scheme?	This is a voluntary scheme.
Who manages the scheme? (Implementing body, monitoring authority)	Counties, cities and municipalities call and implement tenders for the submission of applications by natural persons for cofinancing the installation of systems for the use of RES in households.

	<p>Energy development agencies carry out preparations and implement tenders, select beneficiaries for the funds, report on the implementation of projects, evaluate projects, review installed RES systems and promote project activities.</p> <p>EPEEF secures funding for the cofinancing of 40% of justified costs of installation of RES systems in households, publishes public tenders for local and regional self-government units for cofinancing their programmes to promote RES use in households, conducts selection of the best programmes, concludes contracts on joint financing of projects of natural persons with selected local and regional self-government units, and technically and financially monitors and supports the implementation of those projects.</p>
What are the measures taken to ensure availability of necessary budget/funding to achieve the national target?	<p>Funding is secured through the allocated revenues of EPEEF in the amount of 40% and through the budgets of local and regional self-government units in the minimum amount of 10%, and the remainder is secured by the natural person/end user.</p> <p>From 2005 to end 2012, EPEEF approved HRK 580 million (paid out HRK 449 million) for the financing of 1558 projects (1327 completed), worth HRK 2.4 billion, of which 120 projects are the use of RES. In households, nearly 1000 systems were installed, including photovoltaic collectors, solar heat collectors, biomass fuelled boilers and heat pumps.</p> <p>In the period from 2013 to 2015, EPEEF plans to invest HRK 111 million in the cofinancing of RES projects.</p>
How is long-term security and reliability addressed by the scheme?	Through the Act on the Environmental Protection and Energy Efficiency Fund, its annual allocated revenues are secured.
Is the scheme periodically revised? What kind of feedback or adjustment mechanism exists? How has the scheme been optimised so far?	-
Does support differ according to technology?	<p>Counties, cities and municipalities issue tenders for the cofinancing of installation of RES systems in households.</p> <p>Tenders are called pursuant to the financial work plan and programme, and the Ordinance on promoting the use of RES among natural persons in the area of counties/cities/municipalities, such that the intent of the tender will differ with regard to differing technology.</p>
What are the expected impacts in terms of energy production?	<p>There are no expected impacts in terms of energy production.</p> <p>The expected result is the implementation of projects that contribute to achieving the national RES targets.</p>

Is support conditional on meeting energy efficiency criteria?	The support is not conditional on meeting energy efficiency criteria.
Is it an existing measure? Is this a planned scheme? When would it be operational?	This is an existing measure, which has been in effect since 2008.
Please indicate national legislation regulating it?	<ul style="list-style-type: none"> <li>- Energy Act (Official Gazette 120/12)</li> <li>- Electricity Market Act (Official Gazette 22/13)</li> <li>- Thermal Energy Market Act (Official Gazette 80/13)</li> </ul>
What start and end dates (duration) are set for the whole scheme?	2008 -
Are there maximum or minimum sizes of system which are eligible?	<p>There are no maximum or minimum sizes of systems that are eligible for support.</p> <p>The maximum amount of cofinancing is limited.</p>

d) What support schemes are in place to encourage the use of heating and cooling from renewable energy sources in industrial applications?

Name of scheme	<b>Use of fuel from waste in the cement industry</b>
Short description of the scheme	<p>This measure requires the coordination with activities in the Sector for sustainable development of MENP that is responsible for performing tasks concerning waste management. One of the main objectives defined in the Waste Management Plan in the Republic of Croatia for the period 2007 to 2012 (Official Gazette 85/07, 126/10 and 31/11) is the reduction of the share of biodegradable waste in municipal waste disposal. The use of waste as a fuel also means reducing the consumption of fossil fuels in the energy sector. One of the activities that moves towards meeting this objective is the use of waste as a fuel for the production of electricity and heat, i.e. as an alternative fuel for rotation ovens in the cement industry.</p> <p>It is planned that fuel from waste is produced from mechanically and biologically treated municipal waste at the sites of regional and county waste management centres. The use of the biodegradable fractions of waste as a fuel for the production of electricity and heat, and in the cement industry is important from the aspect of reducing greenhouse gas emissions, conserving primary energy sources and reducing the quantity of waste deposited in landfills. The biodegradable fraction of waste is considered neutral in terms of carbon dioxide, and reducing the quantity of disposed biodegradable waste also achieves reduced methane emissions.</p> <p>A precondition for the implementation of this measure is securing the waste in a stable quantity, composition and structure.</p>

	Article 53 of the Act on Sustainable Waste Management (Official Gazette 94/13) stipulates waste silt as a separate waste category. This could also be used as a fuel, which would resolve the issue of its disposal.
Is it a voluntary or obligatory scheme?	This is a voluntary scheme.
Who manages the scheme? (Implementing body, monitoring authority)	MENP, local and regional self-government units (waste management centres) and EPEEF are competent for the implementation of measures in the part of preparing fuel from waste.  Cement plants are included in the implementation of measures in the part pertaining to the use of waste as an alternative fuel for rotational ovens.
What are the measures taken to ensure availability of necessary budget/funding to achieve the national target?	Funds for financings are secured through the budgets of local and regional self-government units and from the earmarked revenues of EPEEF. Funds will also be secured through EU funds.  Cement plants will secure the funds for the preparation and receipt of fuel from waste.
How is long-term security and reliability addressed by the scheme?	-
Is the scheme periodically revised? What kind of feedback or adjustment mechanism exists? How has the scheme been optimised so far?	-
What are the expected impacts in terms of energy production?	There are no expected impacts in the sense of energy production. The expected result is the implementation of measures so as to contribute to achieving the national RES targets.
Is it an existing measure? Is this a planned scheme? When would it be operational?	This is an existing measure, which has been in effect since 2011.
Please indicate national legislation regulating it?	- Waste Act (Official Gazette 178/04, 111/06, 60/08 and 87/09) - Act on Sustainable Waste Management (Official Gazette 94/13) - Waste Management Strategy of the Republic of Croatia (Official Gazette 130/05) - Waste Management Plan in the Republic of Croatia for the period 2007–2015 (Official Gazette 85/07, 126/10 and 31/11)
What start and end dates (duration) are set for the whole scheme?	2011 -

#### 4.5. SUPPORT SCHEMES FOR THE PROMOTION OF USE OF RENEWABLE ENERGY IN TRANSPORT, WHICH ARE APPLIED IN A CERTAIN MEMBER STATE OR GROUP OF MEMBERS STATES

a) What are the concrete obligations/targets per year (per fuel or technology)?

A total share of 10% renewable energy in transport in 2020 is prescribed by the Act on Biofuels for Transport (Official Gazette 65/09, 145/10, 26/11 and 144/12). Pursuant to that Act, the National Action Plan for the promotion of production and use of biofuels in transport for the period 2011–2020 was adopted. This establishes the targets by year, and the trajectories. With regard to the economic and financial crisis, the forecasts of final energy consumption, production and use of biofuels in transport have not been met, and as such the targets listed in the NAP for biofuels in transport were corrected and adapted to the new situations and plans. Relating to this, the obligations/targets for RES as considered within the framework of this Action Plan are shown in the table below and in Figure 1.

%	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Share of RES in transport	0.59	1.39	2.23	3.00	3.77	4.49	5.62	6.73	7.82	8.89	9.95
Share of electricity from RES in transport	0.46	0.50	0.54	0.57	0.59	0.61	0.72	0.83	0.90	1.04	1.14
Share of biofuels in transport	0.13	0.89	1.69	2.44	3.18	3.88	4.89	5.89	6.92	7.85	8.81

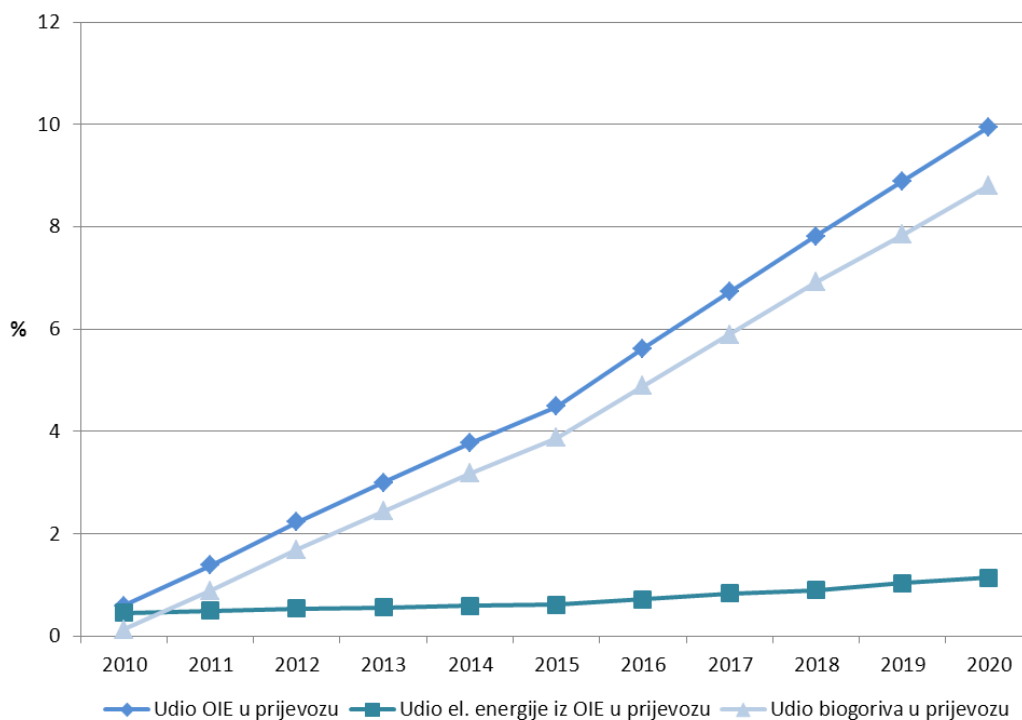


Figure 1: Target shares for RES in transport

**Share of RES in transport**  
**Share of electricity from RES in transport**  
**Share of biofuels in transport**

The share of biofuels in the total share of energy from RES in transport is divided by type of biofuel, as show in the following table and Figure 2.

Year	Share of biofuel from RES-P	Type of biofuel					
		Biodiesel 1st generation	Biodiesel-waste edible oil	Biodiesel 2 <sup>nd</sup> generation	Bioethanol 1 <sup>st</sup> generation	Bioethanol 2 <sup>nd</sup> generation	Biogas (biomethane)
	%	%					
2010	0.13	0.13	0.01	0.00	0.00	0.00	0.00
2011	0.89	0.79	0.10	0.00	0.00	0.00	0.00
2012	1.69	1.47	0.22	0.00	0.00	0.00	0.00
2013	2.44	1.92	0.34	0.00	0.17	0.00	0.00
2014	3.18	2.46	0.37	0.00	0.35	0.00	0.00
2015	3.88	2.60	0.31	0.13	0.84	0.00	0.00
2016	4.89	3.33	0.33	0.28	0.88	0.02	0.06
2017	5.89	4.09	0.31	0.43	0.90	0.04	0.12
2018	6.92	4.87	0.29	0.59	0.91	0.06	0.18
2019	7.85	5.58	0.28	0.75	0.90	0.08	0.25
2020	8.81	6.30	0.28	0.91	0.89	0.11	0.32

- b) Is there differentiation of the support according to fuel types or technologies? Is there any specific support to biofuels which meet the criteria of Article 21(2) of the Directive?

The Act on Biofuels for Transport prescribes measures for promoting the production of all types of biofuels, including those that meet the criteria from Article 21(2) of the Directive, through payments to eligible producers by the amount of biofuels produced and placed on the market of the Republic of Croatia via the person obliged to market biofuels or the end user, under the condition that the sales price of biofuels, without taxes and compulsory charges, does not exceed the highest level of the sales price of biofuels and the condition that biofuels met the sustainability requirements.

The unit amount of the monetary support for the production of biofuels is determined on the basis of a difference between the market price of fossil fuels in relation to the price of biofuels on the referential international market, increased by the justified difference of the domestic production costs and the price of biofuels on the referential international market.

The Regulation on the promotion of the production of biofuels for transport defines the types of fuels whose production is stimulated, i.e. biodiesel and bioethanol. There are differences in the unit amount of monetary support for the production of biodiesel and bioethanol. The Decision on the unit amount of monetary support for the production of biofuel in 2013 was confirmed to remain at the same level, i.e. HRK 2.82/L for biodiesel and HRK 0.26/L for bioethanol. There are no differences with regard to production technology.

There are currently no separate supports for biofuels that meet the criteria from Article 21(2) of the Directive. However, there are provisions in the Regulation on the promotion of production of biofuels for transport by which the Government of the Republic of Croatia can establish other biofuels whose production should be promoted in line with scientific and technical/technological advances in the production of biofuel. It should be stated that there is special monetary support available from EPEEF for the collection of waste edible oils, however, the possible use of this raw material for the production of biofuel is not separately stimulated.

## Regulations

Obligation/target	<p><b>Minimum compulsory target for the placement of biofuels on the market for use in transport in the Republic of Croatia is determined as a part of the overall share of energy from renewable sources in the total annual final consumption of energy in transport, in which only the energy of diesel fuel, motor petrol and biofuels consumed in road and rail transport and electricity consumed in transport are calculated, and expressed as a percentage in the National Action Plan, with consideration of the prescribed energy values of fuel.</b></p> <p><b>The National Action Plan for the promotion of the production and use of biofuels in transport for the period 2011–2020 defines a minimum share of 10% RES (biofuel + electricity from RES + biohydrogen) in the energy used for transport (petrol + diesel fuel + electricity for transport) to 2020. The targets by years and types of fuel are defined by the National Action Plan for Biofuels (NAP for Biofuels).</b></p>
What is the legal basis for this obligation/target?	<ul style="list-style-type: none"> <li>– Act on Biofuels for Transport (Official Gazette 65/09, 145/10, 26/11, 144/12)</li> <li>– Regulation on the promotion of production of biofuels for transport (Official Gazette 22/11)</li> <li>– Ordinance on measures for promoting the use of biofuels in transport (Official Gazette 42/10)</li> <li>– National Action Plan for the promotion of production and use of biofuels in transport for the period from 2011 to 2020</li> </ul>
Are there any technology-specific targets?	Yes, in the sense of the type of biofuel
What are the concrete obligations/targets per year (per technology)?	Targets by years and by type of biofuel are outlined in point 4.5a) of the Action Plan
Who has to fulfil the obligation?	Those obliged to market biofuels – distributors of diesel fuels and petrol
What is the consequence of non-fulfilment?	<p>Misdemeanour provisions for companies and responsible persons are stipulated by the Act on Biofuels for Transport.</p> <p>Payment of a separate levy for the environment for every MJ of energy for obligations not met as additional environmental pollution.</p>
Is there any mechanism to	MINGO

supervise fulfilment?	
Is there any mechanism to modify obligations/targets?	The obligation may be amended through amendments to the NAP for Biofuels in the case of the non-fulfilment of the annual targets. Based on the report on the actual achieved shares of biofuels, MINGO will revise the trajectories and establish new obligations for distributors.

Name of scheme	<b>Obligation of placement of biofuels on the market of the Republic of Croatia</b>
Short description of the scheme	<p>The measure is directed at stimulating the use of biofuels.</p> <p>Those obliged to place biofuels on the market – distributors of diesel fuel and petrol for motor vehicles and boats which, according to a separate law governing excise duties, are required to pay excise duties, have the legal obligation to place a defined share of biofuels on the market, based on the quantity of petrol and diesel fuel they market at the annual level. The share of biofuels that these obliged parties must place on the market corresponds to the national target for the placement of biofuels on the market for that year.</p> <p>In the case this obligation is not met, the distributor pays a separate environmental levy pursuant to the decision issued by MINGO.</p>
Is it a voluntary or obligatory scheme?	This is a compulsory scheme for distributors of diesel fuel and petrol.
Who manages the scheme? (Implementing body, monitoring authority)	<p>MINGO is responsible for the establishment and supervision of measures</p> <p>HROTE is responsible for the implementation of measures.</p>
What are the measures taken to ensure availability of necessary budget/funding to achieve the national target?	Source of financing of measures are those obliged to market biofuels.
How is long-term security and reliability addressed by the scheme?	The measure is prescribed by the national regulation. This ensures its long-term security and reliability.
Is the scheme periodically revised? What kind of feedback or adjustment mechanism exists? How has the scheme been optimised so far?	-
What are the expected impacts in terms of energy production?	<p>An increase in the consumption of biofuels in the transport sector in the Republic of Croatia.</p> <p>Meeting the national objectives for the marketing of biofuels and the</p>



	national targets for energy consumption from renewable sources in the total final energy consumption.
Is it an existing measure? Is this a planned scheme? When would it be operational?	Existing measure, in effect since 2010
Please indicate national legislation regulating it?	<ul style="list-style-type: none"> <li>– Act on Biofuels in Transport (Official Gazette 65/09, 145/10, 26/11, 144/12)</li> <li>– Ordinance on the measures for promoting the use of biofuels in transport (Official Gazette 42/10)</li> <li>– National Action Plan for promoting the production and use of biofuels in transport for the period from 2011 to 2020</li> </ul>
What start and end dates (duration) are set for the whole scheme?	2010 -

Obligation/target	<p><b>Obligation of procurement or leasing of vehicles that can use biofuels in public transport and the public sector</b></p> <p><b>Fuel users in public road transport, fuel users in public coastal marine transport and fuel users in the public sector are obliged to secure that in one year at least 70% of the leased or newly purchased vehicles or boats use: biofuel mixed in diesel fuel or petrol in a share greater than the standard for which special labelling is not required at sales locations, or biodiesel in the form of pure biofuel or biogas in the form of pure biofuel or hybrid driver or electric drive or hydrogen.</b></p>
What is the legal basis for this obligation/target?	<ul style="list-style-type: none"> <li>– Act on Biofuels in Transport (Official Gazette 65/09, 145/10, 26/11, 144/12)</li> <li>– Ordinance on measures to promote the use of biofuels in transport (Official Gazette 42/10)</li> <li>– National Action Plan for the promotion of production and use of biofuels in transport for the period from 2011 to 2020</li> </ul>
Are there any technology-specific targets?	There are no technology-specific targets.
What are the concrete obligations/targets per year (per technology)?	There are no concrete obligations for a given technology.
Who has to fulfil the obligation?	Public sector, budget users in state and local government, public companies and companies performing public transport
What is the consequence of non-fulfilment?	Misdemeanour provisions for organisations/companies and the responsible person as stipulated in the Act on Biofuels for Transport
Is there any mechanism to supervise fulfilment?	MINGO
Is there any mechanism to modify obligations/targets?	Fuel users in public transport and fuel users in the public sector compile reports based on their own records on the fulfilment of obligations concerning the lease or purchase of motor vehicles or boats that can use renewable energy. The report contains data and an

	analysis of the fulfilment of commitments in the previous year and future measures, including activities in the case the planned obligations are not met.
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## Financial support

Name of scheme	<b>Promoting the production of biofuels</b>
Short description of the scheme	The production of biofuels is stimulated through payments to eligible producers by the unit quantity of biofuel produced and placed on the market of the Republic of Croatia via the persons obliged to place biofuels on the market or with the final user, under the condition that the sales price of biofuels, without taxes and compulsory fees, does not exceed the maximum level of the sales price of biofuels and the condition that the biofuels meet the sustainability requirements as stipulated in the Act on Biofuels in Transport.
Is it a voluntary or obligatory scheme?	This is a voluntary scheme.
Who manages the scheme? (Implementing body, monitoring authority)	MINGO is responsible for the establishment and supervision of measures. HROTE is responsible for the implementation of measures.
What are the measures taken to ensure availability of necessary budget/funding to achieve the national target?	The amount of the share from revenues from excise duties that is allocated for the production of biofuels is stipulated by a government decision that is adopted by the end of November of the current year for the following year, in line with the total planned costs of the system to promote the production of biofuels, at the proposal of the Ministry of Economy. The Ministry of Economy is obliged prior to the submission of the proposed decision from paragraph 1 of this Article to obtain the consent of the Ministry of Finance. The regulation on the promotion of production of biofuels regulates the manner of use of the share from revenues from excise duties that is allocated for the production of biofuels and the rights of the market operator to compensation for their work in the system to promote the production of biofuels.
How is long-term security and reliability addressed by the scheme?	The promotion scheme is prescribed under the national regulations. This ensures its long-term security and reliability.
Is the scheme periodically revised? What kind of feedback or adjustment mechanism exists? How has the scheme been optimised so far?	The amount of fees paid by the distributor will be adjusted each year based on the required quantities of biofuel, the price of biofuel on the international market, domestic costs of production of biofuel and plans for placement on the market by mineral fuel distributors.
Does support differ according to technology?	Support differs for biodiesel and bioethanol.
What are the expected impacts in terms of energy production?	Development of the biofuel market. Increases in the production and marketing of biofuels in the Republic of Croatia. Increase in the consumption of biofuels. Fulfilment of the national target of the share of RES in energy for

	transport.
Is it an existing measure? Is this a planned scheme? When would it be operational?	Existing measure, in effect since 2010
Please indicate national legislation regulating it?	<ul style="list-style-type: none"> <li>– Act on Biofuels for Transport (Official Gazette 65/09, 145/10, 26/11, 144/12)</li> <li>– Regulation on the promotion of production of biofuel for transport (Official Gazette 22/11)</li> <li>– Regulation on the quality of biofuels (Official Gazette 141/05, 33/11)</li> <li>– Ordinance on the conditions and procedures for achieving incentives for the production of biofuels for transport (Official Gazette 91/2011)</li> <li>– Ordinance on measures for the promotion of use of biofuels in transport (Official Gazette 42/10)</li> <li>– Ordinance on the manner and conditions for the application of sustainability requirements in the production and use of biofuels (Official Gazette 83/13)</li> <li>– National Action Plan for the promotion of production and use of biofuels in transport for the period from 2011 to 2020</li> </ul>
What start and end dates (duration) are set for the whole scheme?	2010 -
Are there maximum or minimum sizes of system which are eligible?	Biofuel producers must have the status of an eligible producer and produce more than 1 TJ of biofuel annually.

Name of scheme	<b>Financial support for the purchase of hybrid and electric vehicles</b>
Short description of the scheme	<p>Electric and hybrid vehicles are, at this current time due to their technological development, significantly more expensive than conventional vehicles with internal combustion engines. It is necessary to stress that electric vehicles are significantly more efficient from the aspect of primary energy use and are virtually neutral from the aspect of carbon dioxide emissions, if electricity obtained from RES is used to charge them. For the purpose of promoting a greater market share of electric and hybrid vehicles, the introduction of an incentive payment or subsidy by introduced for those purchasing hybrid and electric cars through the awarding of grants.</p> <p>Funds for the payment of incentives/subsidies would be funds collected by the EPEEF from the special environment levies on motor vehicles.</p>
Is it a voluntary or obligatory scheme?	This is a voluntary scheme.
Who manages the scheme? (Implementing body, monitoring authority)	MENP MINGO
What are the measures taken to ensure availability of necessary budget/funding to	<p>Financing would be secured through EPEEF.</p> <p>Funds for payment of the incentive/subsidy would be funds collected by EPEEF through the special environment levy for motor vehicles.</p>

achieve the national target?	
How is long-term security and reliability addressed by the scheme?	-
Is the scheme periodically revised? What kind of feedback or adjustment mechanism exists? How has the scheme been optimised so far?	-
What are the expected impacts in terms of energy production?	Increasing the share of electric and hybrid vehicles. Savings in primary energy use.
Is it an existing measure? Is this a planned scheme? When would it be operational?	This is a scheme in the planning phase. The scheme will begin to be operational in 2014
Please indicate national legislation regulating it?	-
What start and end dates (duration) are set for the whole scheme?	2014 -

PROVISIONAL TRANSLATION

## 4.6. CONCRETE MEASURES FOR PROMOTING THE USE OF ENERGY DERIVED FROM BIOMASS

### 4.6.1. BIOMASS SUPPLY: DOMESTIC PRODUCTION AND IMPORTS/EXPORTS

Table 7: Biomass supply in 2006

Sector of origin		Quantity of domestic sources <sup>1</sup>	Import		Export	Net quantity	Production of primary energy (kt)
			EU	Non-EU	EU/Non-EU		
A) Biomass from forestry <sup>2</sup>	<i>Of which:</i>	1,142,746				1,142,746	346.96
	1) Direct supply of wood biomass for energy production from forests and other forested lands	991,207				991,207	300.95
	<i>Optional – if such information are available, list details on the raw materials falling into these categories:</i>						
	a) tree cutting b) remnants after tree cutting (tips, branches, bark, stumps) c) remnants from landscape management (wood biomass from parks, gardens, tree rows, hedges) d) other (define)						
	2) Direct supply of wood biomass for energy production	151,538				151,538	46.01
	<i>Optional – if such information are available, list details on:</i>						
	a) remnants from primary processing, wood processing, furniture industry (bark, sawdust) b) by-products from the cellulose and paper industry (black liquor, liquid resin) c) processed heating wood d) post-consumer recycled wood (recycled wood for energy production, waste wood in households) e) other (define)						
B) Biomass from agriculture and fisheries	<i>Of which:</i>						
	1) Agricultural crops and fisheries products directly intended for energy production						
	<i>Optional – if such information are available, list details on:</i>						
	a) farm crops (cereals, oil crops, sugar beet, corn silage) b) plantations c) high growth trees d) other crops for energy production (grasses) e) algae f) other (define)						
	2) Agricultural by-products and remains after processing, and by-products in fisheries for the production of energy						
	<i>Optional – if such information are available, list details on:</i>						
	a) hay b) manure c) animal fat d) flour and bonemeal e) by-products of cake (including cake of oil crops and processed olive oil for energy production)						

	f) biomass from fruit (including shells, stones) g) by-products from fisheries h) material from grape vines, olives, orchards i) other (define)						
C) Biomass from waste	Of which:	9,169				9,169	2.19
	1) Biodegradable parts of municipal waste, including biowaste (biodegradable waste from gardens and parks, waste food and kitchen waste from households, restaurants, hotels and shops, and comparative waste from factories for food processing) and landfill gas						
	2) Biodegradable parts of industrial waste (including paper, cardboard, palettes)						
	3) Sewage silt						

<sup>1</sup> Quantity of source expressed in m<sup>3</sup> (if possible, or in another appropriate unit of measure) for category A and its subcategories, and in tonnes for categories B and C and their subcategories.

<sup>2</sup> Biomass obtained from forestry should also include biomass obtained from the forestry industry. In the category of biomass obtained from solid fuels arising from forestry processing, products such as chips, pellet and briquettes should be entered into the appropriate subcategories according to their origin.

Please explain the conversion factor/calculation methodology used above for the conversion of the amount of available resources to primary energy.

- Heating wood: density 580 kg/t and lower heating value of 4.2 kWh/kg (0.361 toe/ t)
- Bark: density 550 kg/t and lower heating value of 4.2 kWh/kg (0.361 toe/ t)
- Remnants from wood industry: density 580 kg/t and lower heating value of 4.2 kWh/kg (0.361 toe/ t)
- Sewage silt, remnants from landscape management: density 680 kg/t and lower heating value of 4.9 kWh/kg (0.421 toe/t)
- Agricultural biomass: density 450 kg/t and lower heating value of 4.2 kWh/kg (0.361 toe/ t)

Please specify on what basis the biodegradable fraction of municipal solid waste and of industrial waste was calculated.

- On the biodegradable fraction of municipal waste 28.6% and lower heating value of 0.358 toe/t
- On the biodegradable fraction of industrial waste 40% and lower heating value of 0.358 toe/t

**Table 7a: Assessed domestic production of biomass in 2015 and 2020**

Sector of origin		2015		2020	
		Expected quantities of domestic sources	Production of primary energy (ktoe)	Expected quantities of domestic sources	Production of primary energy (ktoe)
A) Biomass from forestry	1) Direct supply of wood biomass for the production of energy from forests and other forested lands	1,387,807	290.69	1,458,977	305.59
	2) Direct supply of wood biomass for energy production	1,194,336	248.01	1,255,584	260.73
B) Biomass from agriculture and fisheries	1) Agricultural crops and fisheries products directly intended for energy production, but not in a manner that would compete with the production of food and feed	802,533	130.42	1,336,013	217.12
	2) Agricultural by-products and remnants after processing, and by-products in fisheries for energy production				
C) Biomass from waste	1) Biodegradable parts of municipal waste, including biowaste (biodegradable waste from gardens and parks, waste from food and kitchen waste from households, restaurants, hotels and shops, and comparative waste from food processing factories) and landfill gas		13.14		34.77
	2) Biodegradable fractions of industrial waste (including paper, cardboard, palettes)				
	3) Sewage silt				

What is the estimated role of imported biomass up to 2020? Please specify the quantities expected (ktoe) and indicate possible import countries.

In addition to the information provided above, could you please describe the current situation of agricultural land used for dedicated energy production as follows:

In the Republic of Croatia, there are no agricultural lands used for the growing of crops for energy production.

**Table 8: Current agricultural lands for the growing of crops intended for energy production in 2006 (table not filled out as it currently is not applicable for Croatia)**

Agricultural lands for the growing of crops intended for energy production	Area (in ha)
1. Land for fast growth tree plantations (willow, poplar)	
2. Land for other crops for obtaining energy, such as grasses (canary grass, hemp, giant Chinese silver grass), sorghum	

#### **4.6.2. MEASURES FOR INCREASING THE AVAILABILITY OF BIOMASS, WITH CONSIDERATION OF OTHER BIOMASS USERS (SECTORS BASED ON AGRICULTURE AND FORESTRY)**

##### **Mobilisation of new biomass sources**

a) Please specify how much land is degraded

Taking into account the definition of degraded lands in Annex V of Directive 2009/28/EC, there is 410.5 ha halomorphic soil in the Republic of Croatia, accounting for 0.01% of the total surface area of agricultural lands, and falling under temporary unsuitable soils for agricultural production. Soil salinisation is limited to the area of Slavonia and eastern Baranja, the Neretva Valley and the narrow coastal belt of Dalmatia and the islands. Furthermore, 0.95% of the surface area of agricultural lands in the Republic of Croatia is under lithosols (this type of soil is considered unsuitable for agricultural production), and 0.02% of agricultural land under arenosols, which is considered partially suitable for agricultural productions, as are regosols, which account for 1.48% of agricultural lands in the Republic of Croatia.

The data on polluted agricultural soils that cannot be used for the production of agricultural products for human food and animal feed have not been precisely determined. According to preliminary data, a total of 38 localities in the Republic of Croatia have been identified with polluted soil, and 1151 localities have been identified as potentially polluted. Polluted localities are connected to inadequate waste disposal and with industrial pollution that arises as a consequence of the use of technology that uses potentially toxic substances.

b) Please specify how much unused arable land there is.

The Agricultural Land Act (Official Gazette 39/13) stipulates that arable lands must be maintained suitable for agricultural production, which implied preventing its overgrowth with weeds or perennial vegetation, and reductions of its fertility. Furthermore, the Act prescribes the obligation for agricultural land owners and users to cultivate arable lands, with the use of the necessary agrotechnical measures, in a manner that does not diminish its value. The Act also prescribes the level of monetary fines for legal persons, responsible persons and natural persons in the case that arable lands are not maintained in a suitable state for agricultural production, and are not cultivated using the appropriate agrotechnical measures. As evident from the above, non-use of arable lands is not permitted in the Republic of Croatia.

For the implementation of tasks to protect, use, disposal of, trade and consolidate agricultural lands, in 2009 the Government of the Republic of Croatia established the Agency for Agricultural Lands. Pursuant to the provisions of the said Act, unused arable land (defined as those lands that are not in function or are overgrown in perennial vegetation) under government ownership comprises an integral part of the Land Fund the Agency manages. The Agency may issue public calls to give these arable lands into lease or exchange them, exceptionally it may sell them and manage them for the purpose of consolidation. The decision to call a public tender is made by the Agency. Following public tenders implemented in the period from 2003 to 2011, a total of 53,966.87 ha of unused arable lands remain in state ownership, which has remained available and may be given for concession or multi-year lease.



- c) Are any measures planned to encourage unused arable land, degraded land, etc. to be used for energy purposes?

The current valid legal provisions do not envisage incentive measures for the use of arable lands, degraded and other agricultural land for the purpose of energy production.

The Energy Strategy of the Republic of Croatia (Official Gazette 130/09) recognises the important of synergy of activity of the development policies of several ministries, and has defined several strategic objectives in relation to the production of biomass from RES:

- it will stimulate the development of the Croatian wood processing industry;
- it will develop the forestry economy and allow for the sustainable use of biomass;
- it will stimulate reforestation and the growth of short rotation cultures on forest areas with varying degrees of degradation;
- it will stimulate the use of biomass power plants with the cogeneration of electricity and heat;
- it will stimulate the use of biomass for heat production.

The Ordinance on the use of renewable energy sources and cogeneration (Official Gazette 88/12) defined RESC that is used for energy production, prescribed the conditions and possibilities for use of RESC, and prescribed the form, content and manner of keeping the RESCPP Register. MINGO is responsible for keeping the RESCPP Register and for the publication of data.

For the implementation of several of the above strategic objectives, the Decision on the one-time monetary incentive for the production of biofuel (Official Gazette 121/12) in 2013 defined an amount of HRK 2.82/L for the production of biodiesel and HRK 0.26/L for the production of bioethanol.

As of 31 May 2013, a total of 17.15 MW of electricity was generated in cogeneration plants that are included in the incentive system, and which use biomass as a raw material.

In addition to unused agricultural lands, in the Republic of Croatia there are forest land areas that are not covered in forest vegetation, and which could potentially be afforested with high growth species for the purpose of energy production. The Ordinance on forest management (Official Gazette 111/06, 141/08) divides forest lands into two basic categories:

- covered forest lands, and
- uncovered forest lands:
  - uncovered productive forest lands,
  - uncovered unproductive forest lands (forest cuts, roads, etc.),
  - uncovered unfertile forest lands (forest roads wider than 3 m, rock quarries, karst land).

According to the above classification, uncovered productive forest lands are potentially available for the breeding of species for the purpose of energy production. According to the data of the Forest Management Plan, the basic area of this type of land in the overall forest lands in the Republic of Croatia for the period 2006–2015 is 8%. These lands are found primarily in the karst

areas of Croatia, and are also the site of regular reforestation as prescribed in the Programmes for managing karst management units. During 2011, reforestation was carried out on 2082 ha of this type of land. Reforestation is carried out in line with the said programmes using those species which are most suitable for afforestation on karst, without particular consideration of the contribution of a given species for the purposes of energy production.

Pursuant to the provisions of the Air Protection Act (Official Gazette 130/11), the Plan for the protection of air, the ozone layer and mitigation of climate change in the Republic of Croatia for the period 2013–2017 is currently in the adoption procedure. One of the measures planned to contribute to the reduction of greenhouse gas emissions in the sector of Land Use, Land Use Changes and Forestry (LULUCF) is the drafting of cost and benefit analysis of afforestation on new areas and biological regeneration of forests. One of the activities for the implementation of these measures is the need to draft a study that would analyse the cost and benefit of afforestation and assess the need to introduce possible incentive measures, such as afforestation with fast growth species and biological forest regeneration, equivalent to other measures that reduce greenhouse gas emissions. Furthermore, for the implementation of these measures, activities to establish the impacts of afforestation of uncovered productive forest lands on the biological and landscape diversity of the Republic of Croatia, with the aim of preventing negative impacts of afforestation on those.

d) Is energy use of certain already available primary material (such as animal manure) planned?

Various types of biodegradable organic waste, such as waste from livestock production (manure), agricultural and food industries and slaughterhouse waste are used as raw materials for the production of biogas using anaerobic degradation procedures in biogas plants. Plans are in place to use biodegradable municipal waste as a substrate for the production of biogas.

e) Is there any specific policy promoting the production and use of biogas? What type of uses are promoted (local, district heating, biogas grid, natural gas grid integration)?

The Energy Strategy of the Republic of Croatia has set the objective that agricultural production used in energy purposes in 2020 is equivalent to at least 20% of the total conditional cattle heads, thus producing about 2.6 PJ of energy from biogas or about 100 million m<sup>3</sup> of biogas. The Republic of Croatia promotes the production and use of biogas for the purpose of rational energy use (substitution of fossil fuels with RES), the handling of waste from agricultural and food production, reduction of greenhouse gas emissions and stimulating the development of agricultural holdings.

The produced biogas is most often used as a fuel in cogeneration plants for the production of electricity and thermal energy. In the system of eligible electricity producers, with which HROTE has concluded an agreement on electricity purchase, a total of nine biogas-fuelled plants have been connected to the electricity network, with a total installed capacity of 8.135 MW. HROTE has concluded electricity purchase agreements with four project leaders whose plants are yet to become operational, with a total installed capacity of 3.299 MW (status as at 30 September 2013). All produced electricity, reduced by own consumption, is delivered to the electricity distribution system, with the application of incentive prices in line with the Tariff system for the production of electricity from renewable energy sources and cogeneration (Official Gazette

63/12). A part of the produced heat is used through own consumption for maintaining technological processes of anaerobic degradation, while the remainder may be sold (e.g. for heating greenhouses for the growing of vegetables, heating/cooling of rooms or other useful purposes). Producers have not yet achieved the right to the incentive price for the production of thermal energy using biogas as a fuel.

With the applied technology of anaerobic decomposition, biodegradable organic waste is used as a raw material for the production of electricity and thermal energy, and high quality organic fertiliser. Plans are in place to implement technology that would purify biogas to the quality of natural gas (biomethane) and its compression into the distribution network of natural gas, and the use of compressed biomethane in transport.

- f) What measures are planned to improve forest management techniques in order to maximise the extraction of biomass from the forest in a sustainable way? How will forest management be improved in order to increase future growth? What measures are planned to maximise the extraction of existing biomass that can already be put into practice?

In October 2002, the entire area of state forests (about 2 million hectares) in the Republic of Croatia under management by the company Croatian Forests (Hrvatske šume d.o.o. Zagreb) was certified according to the Forest Stewardship Council (FSC) scheme.

This certificate was awarded for a five-year period, and following this, has been extended twice. With the application of this standard, the Republic of Croatia has proven that it implements the ecologically responsible, socially beneficial and economically sustainable management of its forest resources. The majority of private forests in the Republic of Croatia are certified according to the Pan European Forest Certification (PEFC) Scheme. Also, the certification process is becoming increasingly present in the wood processing industry from year to year, considering that holdings have recognised that having this certificate is important for increasing exports in the wood processing industry.

The commitment to sustainable forest management is an integral part of the forestry tradition of the Republic of Croatia. For that reason, each of the more significant changes in forest management, including those for the production of biomass in this sector for the purpose of RES, must pass through the forestry institutions for expert verification.

Pursuant to the provisions of the Forests Act, it is strictly prohibited to remove timber parts (small branches, humus, peat) from forests, and during the clearing and sorting of wood from forests, timber whose diameter at its thinnest end is greater than 7 cm is extracted, while all smaller diameter mass is left in the forest and comprises forest remnants (e.g. waste from clearing and cutting). These remnants vary in terms of the species, type of stand and other factors, and for coniferous and deciduous species together account for about 15% of the total cut volume. Some research has confirmed that the use of a certain percentage of remnants from clearing and sorting for the use of production of energy would not have a negative impact on the sustainable management of forests. Furthermore, research has been conducted that confirms that the use of certain remnants during clearing of stands of the first age class, like the use of wood from its macchia and thicket groves, could significantly increase the biomass reserves available for energy production. In order to apply this, more research is necessary, in

addition to amendments of the existing regulations from the forestry sector, which is not envisaged in the forthcoming period.

With the aim of the efficient use of forest biomass and the creation of commercial benefit, the company Croatian Forests (Hrvatske šume d.o.o.), which manages private forests and the forest lands under the ownership of the Republic of Croatia, established the company Forest Biomass (Šumska biomasa d.o.o.) in 2007. Its core activity is the organisation of the wood chip market, and the organisation of collection of forest biomass and the sale of wood chips.

#### **Impact on other sectors**

- a) How will the impact of energy use of biomass on other sectors based on agriculture and forestry be monitored? What are these impacts? (If possible, please provide information also on quantitative effects.) Is the monitoring of these impacts planned in the future?

Currently, no methods have been developed to monitoring the impacts of the use of energy produced from biomass on other sectors that are based on agriculture and forestry.

- b) What kind of development is expected in other sectors based on agriculture and forest that could have an impact on the energy use? (E.g. could improved efficiency/productivity increase or decrease the amount of by-products available for energy use?)

In the case of a decision on more intensive forest management, the wood industry sector would have more wood biomass available to it, and as a result it could increase the percentage of the wood remnants in this sector that could be used for energy production.

#### **4.7. PLANNED STATISTICAL TRANSFERS BETWEEN MEMBER STATES AND PLANNED PARTICIPATION IN JOINT PROJECTS WITH OTHER MEMBER STATES AND THIRD COUNTRIES**

The Republic of Croatia is planning to achieve its overall targets with domestic sources in the period to 2020. For that reason, the questions in this section are not relevant.

PROVISIONAL TRANSLATION

## 5. ASSESSMENTS

### 5.1. TOTAL CONTRIBUTION EXPECTED FROM EACH INDIVIDUAL TECHNOLOGY FOR OBTAINING RENEWABLE ENERGY THAT MEETS THE COMPULSORY TARGETS SET TO 2020 AND INDICATIVE TRAJECTORIES FOR SHARE OF RENEWABLE ENERGY SOURCES FOR THE PRODUCTION OF ELECTRICITY, FOR HEATING AND COOLING AND IN TRANSPORT

#### Electricity sector

In the production of electricity, the main RES will be large hydropower plants, wind plants, biogas fuelled power plants, biomass, small hydropower plants, geothermal plants and solar plants.

In the Republic of Croatia, there are 458 RES power plants with a total installed capacity of 294.19 MW in the incentives system (status as at 30 September 2013). In terms of installed capacity, wind plants are in first place with a total of 254.25 MW, followed by biomass power plants (solid biomass and biogas) with a total of 14.825 MW and cogeneration plants with a total of 11.49 MW. There are 423 solar plants, with a total installed capacity of 9.78 MW.

In the next one to two years, 740 projects with a total capacity of 247 MW are planned to be implemented. Namely, HROTE has concluded contracts on the purchase of electricity from RES with 740 production plants that are not yet connected to the electricity network (status as at 30 September 2013). In terms of these planned capacities, wind plants predominate, with a total of 150 MW, followed by biomass plants (solid biomass and biogas) with a total of 54.96 MW and solar plants with 37.42 MW. Of these 740 projects, 720 are solar plants with a total of 37.42 MW. These are primarily small plants with up to 30 kW, with several larger plants, though there are no plants with a capacity exceeding 300 kW.

In 2020, the following breakdown of RES is expected in electricity production: 79.6% from large and small hydropower plants, 10.5% from wind plants, 9.3% from biomass plants, 0.9% from geothermal plants and 0.7% from solar plants.

It is expected that new capacities tied to hydropower plants will achieved a capacity of 400 MW by 2020 (300 MW from large hydropower plants and 100 MW from small hydropower plants), marking an increase of 16.3%. Wind will serve as the most important renewable sources, with a capacity of 400 MW by 2020. About 125 MW of new capacities will be contained in biomass plants (solid biomass and biogas). A total of 52 MW capacity will be in solar plants. There are no technical barriers for connection to the grid for these new capacities. The new capacities will include plants for which incentives have been secured, and plants that are cofinanced through EPEEF, and EU funds.

The number of work hours expected by technology for the simultaneous work of all plants in the calculation of GWh in Tables 10a and 10b (does not pertain to the work of individual plants) is as follows:

- |                |            |
|----------------|------------|
| - wind plants  | 2200 hours |
| - solar plants | 1150 hours |

- large hydropower plants	2800 hours
- small hydropower plants	3200 hours
- biogas plants	6500 hours
- geothermal plants	7200 hours

### Heating and cooling

The total amount of renewable energy for heating and cooling in 2020 will be about 605 kt<sub>oe</sub>.

Solid biomass, with a share of 64.5% in 2020 will play the main role in total energy from RES in the production of thermal energy for heating and cooling. Solid biomass includes wood biomass and biomass from agriculture. Of the total consumption of biomass for heating and cooling, 50.7% is planned for consumption in general consumption (households, services, agriculture, construction).

Solar energy will have a 16.1% share in total RES in heating and cooling. The Republic of Croatia has set the goal for installation of 0.225 m<sup>2</sup> of heat collectors per capita in 2020 for the preparation of hot water.

In the heating and cooling system, heat pumps will have a share of 15.8%, of which air-based heat pumps will account for 12.6%, and water-based heat pumps for 3.2%.

The share of geothermal energy in total RES in heating and cooling will be 2.6% to 2020.

### Transport

The total amount of renewable energy in transport to 2020 will be about 162 kt<sub>oe</sub>.

Renewable energy consumed for transport in 2020 will primarily consist of energy from biofuels (8.85%), while the remainder to the 10% share will be electricity (1.15%), which will be used in all types of transport.

It is envisaged that the majority of biofuels used will be biodiesel and bioethanol, and biomethane from 2016. Also, in 2016, the introduction of second generation biodiesel and bioethanol produced from lignocellulose biomass is envisaged.

The share of 1.9% electricity in road transport is expected in 2016, and a further growth to 9.6% in 2020, as the result of financial incentive measures for the purpose of hybrid and electric vehicles.

Table 10a: Assessment of the total contribution (installed capacity, gross production of electricity) expected from each technology for the production of renewable energy in the Republic of Croatia, to meet the compulsory targets to 2020, and indicative trajectories for shares of renewable energy in the production of electricity for the period 2010–2014.

	2005		2010		2011		2012		2013		2014	
	MW	GWh	MW	GWh	MW	GWh	MW	GWh	MW	GWh	MW	GWh
Hydro power:	2082.7	6546.9	2139.2	6026.8	2139.2	5969.8	2140.3	5962.8	2149.2	6181.0	2158.2	6378.1
< 1 MW		0.0		0.0		0.0		0.0		0.0	0.0	0.0
1MW – 10 MW	26.7	108.3	31.1	124.1	31.1	67.1	32.1	102.2	41.1	130.7	50.0	159.1
> 10 MW	2056.0	6438.6	2108.1	5902.7	2108.1	5902.7	2108.1	5860.6	2108.1	6050.3	2108.1	6219.0
Of which from reversible pump power plants		16.3		16.3		16.3		16.3		16.3		16.3
Geothermal		0.0	0.0	0.0								
Solar:	0.0	0.1	0.1	0.1	6.0	12.1	6.4	7.3	9.6	19.3	15.6	31.2
Photovoltaic systems	0.0	0.1	0.1	0.1	6.0	12.1	6.4	7.3	9.6	19.3	15.6	31.2
Concentrated solar energy												
Tides, waves, ocean												
Wind:	6.0	9.5	77.3	139.1	124.9	287.3	158.0	347.6	215.6	495.8	280.0	644.0
On-shore	6.0	9.5	77.3	139.1	124.9	287.3	158.0	347.6	215.6	495.8	280.0	644.0
Off-shore plants				0.0								
Biomass:	2.0	10.9	5.0	33.0	5.0	33.0	10.8	52.9	10.1	54.2	10.1	54.2
Solid	2.0	10.9	2.7	0.2	2.7	0.2	2.7	0.2	2.7	0.2	2.7	0.2
Biogas			2.2	32.8	2.2	32.8	8.1	52.7	8.1	52.7	8.1	52.7
Bioliquids <sup>1</sup>												
<b>Total</b>	<b>2090.7</b>	<b>6567.4</b>	<b>2221.5</b>	<b>6199.1</b>	<b>2275.1</b>	<b>6302.2</b>	<b>2315.5</b>	<b>6370.5</b>	<b>2384.5</b>	<b>6750.2</b>	<b>2463.9</b>	<b>7107.4</b>
Of which combined production of electricity and heat			2.7	0.1	2.7	0.1	2.7	0.1	2.7	0.1	2.7	0.1

<sup>1</sup> Considers only those compliant with the sustainability criteria, particularly with Article 5, paragraph 1 of Directive 2009/28/EC, final subparagraph.



Table 10b: Assessment of total contribution (installed capacity, gross production of electricity) expected from each technology for the production of renewable energy in the Republic of Croatia, for the fulfilment of the compulsory targets and indicative trajectories to 2020 for shares of energy from renewable sources in the production of electricity for the period 2015–2020.

	2015		2016		2017		2018		2019		2020	
	MW	GWh	MW	GWh	MW	GWh	MW	GWh	MW	GWh	MW	GWh
Hydro power:	2167.1	6090.3	2224.9	6233.6	2282.7	6353.9	2340.4	6449.6	2398.2	6565.3	2456.0	6679.1
< 1 MW												
1MW – 10 MW	59.0	187.6	67.2	213.7	75.4	239.7	83.6	265.8	91.8	291.9	100.0	317.9
> 10 MW	2108.1	5902.7	2157.7	6020.0	2207.3	6114.1	2256.8	6183.8	2306.4	6273.5	2356.0	6361.2
Of which from reversible pump power plants		16.3		16.3		16.3		16.3		16.3		16.3
Geothermal	5.0	36.0	6.0	43.2	7.0	50.4	8.0	57.6	9.0	64.8	10.0	72.0
Solar:	52.0*	59.8	52.0	59.8	52.0	59.8	52.0	59.8	52.0	59.8	52.0	59.8
Photovoltaic systems	52.0	59.8	52.0	59.8	52.0	59.8	52.0	59.8	52.0	59.8	52.0	59.8
Concentrated solar energy												
Tides, waves, ocean												
Wind:	400.0*	880.0	400.0	880.0	400.0	880.0	400.0	880.0	400.0	880.0	400.0	880.0
On-shore	400.0	880.0	400.0	880.0	400.0	880.0	400.0	880.0	400.0	880.0	400.0	880.0
Off-shore plants												
Biomass:	57.7	332.8	73.5	405.7	86.4	478.7	99.3	551.6	112.1	624.6	125.0	697.5
Solid	42.5	233.8	53.3	274.5	61.3	315.3	69.2	356.0	77.1	396.8	85.0	437.5
Biogas	15.2	99.0	20.2	131.2	25.1	163.4	30.1	195.6	35.0	227.8	40.0	260.0
Bioliquids <sup>1</sup>												
<b>Total</b>	<b>2681.8</b>	<b>7398.9</b>	<b>2756.4</b>	<b>7622.4</b>	<b>2828.1</b>	<b>7822.7</b>	<b>2899.7</b>	<b>7998.6</b>	<b>2971.4</b>	<b>8194.5</b>	<b>3043.0</b>	<b>8388.4</b>
Of which combined production of electricity and heat	42.5	233.8	51.0	274.5	59.5	315.3	68.0	356.0	76.5	396.8	85.0	437.5

<sup>1</sup> Considers only those compliant with the sustainability criteria, particularly with Article 5, paragraph 1 of Directive 2009/28/EC, final subparagraph.

\* Further development of new capacities will depend on market conditions, according to competitiveness of technology.

Table 11: Assessment of total contribution (direct energy consumption) expected from each technology for the production of renewable energy in the Republic of Croatia for the meeting of the compulsory targets and indicative trajectories to 2020 for shares of renewable energy in the production of energy for heating and cooling for the period 2010–2020 (kt<sub>oe</sub>)

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Geothermal (excluding low temperature geothermal heat used in heat pumps)	0.0	4.9	6.2	7.4	8.7	9.9	11.2	12.1	13.0	13.9	14.8	15.7
Solar	0.0	3.9	6.7	9.6	12.4	15.3	18.1	34.0	49.8	65.6	81.5	97.3
Biomass:	351.8	325.2	337.3	349.5	361.6	373.8	385.9	388.1	390.3	392.5	394.6	396.8
<i>Solid</i>	351.8	324.9	336.6	348.4	360.2	371.9	383.7	385.1	386.5	387.9	389.4	390.8
<i>Biogas</i>	0.0	0.3	0.7	1.1	1.5	1.9	2.3	3.0	3.8	4.5	5.3	6.0
<i>Bioliquids</i> <sup>1</sup>												0.0
Renewable energy from heat pumps:		16.5	21.4	26.4	31.3	36.3	41.2	52.1	63.0	73.8	84.7	95.6
- of which heat pumps using air		15.6	20.0	24.3	28.3	32.3	36.0	44.8	53.2	61.3	69.0	76.5
- of which geothermal												
- of which heat pumps using water		0.8	1.4	2.1	3.0	4.0	5.1	7.3	9.8	12.6	15.7	19.1
<b>Total</b>	<b>351.8</b>	<b>350.4</b>	<b>371.6</b>	<b>392.8</b>	<b>414.0</b>	<b>435.2</b>	<b>456.5</b>	<b>486.2</b>	<b>516.0</b>	<b>545.8</b>	<b>575.6</b>	<b>605.4</b>
Of which in district systems <sup>2</sup>	0.0	25.2	28.4	31.7	35.0	38.3	41.6	47.3	53.0	58.8	64.5	70.3
Of which biomass in general consumption <sup>3,4</sup>	298.7	298.2	306.0	313.8	321.5	329.3	337.1	331.1	325.1	319.0	313.0	307.0

<sup>1</sup> Considers only those compliant with the sustainability criteria, particularly with Article 5, paragraph 1 of Directive 2009/28/EC, final subparagraph.

<sup>2</sup> District systems for heating and/or cooling whose consumption is met from fully renewable sources.

<sup>3</sup> Of the total consumption of renewable heat for heating and cooling.

<sup>4</sup> Households, services, agriculture, construction.

Table 12: Assessment of the total contribution expected from each technology of renewable energy in the Republic of Croatia for meeting the compulsory targets and indicative trajectories to 2020 for shares of renewable energy in the transport sector for the period 2010–2020 (kt<sub>oe</sub>).

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Bioethanol/bio-ETBE	0.0	0.0	0.0	0.0	3.2	6.5	16.2	16.2	16.3	23.2	16.3	16.3
<i>Of which biofuel<sup>1</sup> Article 21(2)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	1.0	1.4	1.7
<i>Of which imported<sup>2</sup></i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Biodiesel	0.0	2.6	17.4	32.1	42.4	52.6	55.6	68.8	82.0	95.2	108.4	121.6
<i>Of which biofuel<sup>1</sup> Article 21(2)</i>	0.0	0.0	0.0	0.0	0.0	0.0	2.5	4.9	7.4	9.9	12.4	43.5
<i>Of which imported<sup>3</sup></i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydrogen from renewable sources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Renewable electricity <sup>4)</sup>	8.4	8.9	9.5	10.0	10.6	11.1	11.7	13.0	14.4	15.8	17.2	18.5
<i>Of which road transport</i>		0.0	0.0	0.0	0.0	0.0	0.0	1.9	3.8	5.7	7.6	9.6
<i>Of which non-road transport</i>	8.4	8.9	9.5	10.0	10.6	11.1	11.7	13.0	14.4	15.8	17.2	9.0
Other (such as biogas, vegetable oil, etc) – define	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.1	3.1	4.1	5.1
<i>Of which biofuel<sup>1</sup> Article 21(2)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.1	3.1	4.1	5.1
<b>Total</b>	<b>8.7</b>	<b>11.6</b>	<b>26.9</b>	<b>42.2</b>	<b>56.2</b>	<b>70.2</b>	<b>86.0</b>	<b>101.1</b>	<b>116.2</b>	<b>137.3</b>	<b>146.5</b>	<b>161.6</b>

<sup>1</sup> Biofuels encompassed by Article 21(2) of Directive 2009/28/EC

<sup>2</sup> Of the total quantity of bioethanol/bio-ETBE

<sup>3</sup> Of the total quantity of biodiesel

<sup>4</sup> Assumption here is that 35% of electricity will be from renewable sources, and this will be constant in the period from 2011–2020

Notes:

Biodiesel produced from waste edible oil, biodiesel II generation, bioethanol II generation and biogas from waste are counted twice, thereby the stated (administrative) energy value of the share should be divided by two so as to obtain the actual value of biofuels placed on the domestic market

## 5.2. TOTAL CONTRIBUTION EXPECTED FROM ENERGY EFFICIENCY MEASURES AND SAVINGS IN MEETING THE COMPULSORY TARGETS TO 2020 AND INDICATIVE GUIDELINES FOR SHARES IN ENERGY FROM RENEWABLE SOURCES IN THE SUPPLY OF ELECTRICITY, FOR HEATING/COOLING AND IN TRANSPORT

The objectives of improving energy efficiency in the Republic of Croatia were defined in the National Energy Efficiency Programme. The programme covers the period from 2008 to 2016, during which time energy savings of about 20 PJ should be achieved.

The Energy Efficiency Programme is the foundation for the drafting of three-year national energy efficiency plans for the period to 2016. Each action plan analyses the effects and, if necessary, revises the current measures and establishes new sectoral measures so as to ensure the targets are met in 2016. The second National Action Plan was adopted for the period to end 2013.

The objective of energy savings can be achieved through the implementation of energy efficiency measures in the household, services, transport and industry sectors.

### Households

Households are the greatest individual energy consumers in the Republic of Croatia, accounting for about 30% of the total final energy consumption, and the greatest consumers of electricity, with more than 40% of the total final electricity consumption. The energy efficiency policy in the household sector is based on a package of instruments that will cover various aspects of energy consumption in households. This package of instruments aims to increase awareness of citizens on energy consumption and possible energy savings, to offer incentives to stimulate citizens to apply measures in their own homes, and to regulate the energy characteristics of buildings at the time of construction and reconstruction. Energy saving measures include:

- info campaigns, additional education/training activities and a network of EE info-centres;
- energy labelling of household devices and adopting energy standards;
- individual energy measurements;
- programme of financial support to natural persons for investments in solar heat systems and the implementation of energy efficiency measures;
- programme for the use of UNP and solar energy on the islands;
- Plan for the energy refurbishment of residential buildings.

The expected energy savings to 2016 in the household sector are 9.58 PJ.

### Services

The services sector includes commercial and public services. The share of the services sector in total energy consumption is about 10%. The package of energy efficiency measures in the services sector includes:

- Project "Systematic energy management in cities and counties";
- Programme "House in Order";

- Introduction of “green” public procurement;
- Programme “Energy efficiency of public lighting”;
- Programme of energy efficiency of public sector buildings;
- Programme of energy efficiency of residential buildings;
- Programme of energy efficiency of commercial non-residential buildings;
- Systematic energy management and energy audits in the commercial services sector;
- Programme of incentives for the use of solar energy in camps;
- Programme to stimulate investments in solar heat systems and to implement energy efficiency measures in hotels;
- Increases in efficiency of cooling systems in hotels and other tourism facilities;
- National plan to increase the number of near-zero energy buildings.

Expected energy savings in 2016 in the services sector is 3.85 PJ.

### Industry

A share of the industry sector in the total final energy consumption is about 20%. Industry is a sector that has been recording long-term decreases in energy consumption, which is both the result of technological advances (increased energy efficiency) and reduced scope of production due to the economic crisis. The package of energy efficiency measures for the energy sector includes:

- Establishment of a functional industrial energy efficiency network (IEEN);
- Establishment of an energy audit scheme for industry;
- Stimulating cogeneration in industry;
- Levies for CO<sub>2</sub> emissions for large polluters, except those polluters included in the ETS;
- Introduction of more efficiency in electricity-run plants.

Expected energy savings in 2016 in the industry sector are 1.99 PJ.

### Transport

The transport sector represents about 30% of the total final energy consumption, with a very high rate of growth (about 5% annually in the past five years). Road transport accounts for the highest share of energy consumption, more than 90%, in this sector. The package of energy efficiency measures aimed at reducing energy consumption in transport include:

- Prescribing stricter standards for new vehicles;
- Implementation of information campaigns on energy efficient conduct in transport;
- Planning and establishment of more efficient transport systems;
- Promoting cleaner transport projects and the purchase of more energy efficient vehicles.

Various measures will be employed to stimulate the use of vehicles with emissions less than 130 g CO<sub>2</sub>/km, hybrid vehicles and vehicles using alternative fuels – for natural and legal persons via subsidies on investments and securing free parking spots, the right to use yellow traffic lanes, etc.

Expected energy savings in 2016 in the transport sector are 3.22 PJ.

### 5.3. ASSESSMENT OF IMPACTS

#### Expected costs of measures to promote the use of RES in the production of electricity

The assessed costs of measures to promote the use of renewable sources in the production of electricity by technology are shown in Table 13.

*Table 13: Assessment of costs of measures to promote the use of RES in the production of electricity (HRK)*

Technology	2013	2014	2015	2016	2017	2018	2019	2020
Wind plants	338,664,480	448,620,480	653,704,128	666,778,211	680,113,775	693,716,050	707,590,371	721.742.179
Biomass plants	25,777,440	26,292,989	422,148,542	540,012,415	633,486,234	729,428,913	828,955,904	932.172.204
Biogas plants	69,276,870	70,662,407	135,253,082	183,339,112	232,368,710	284,230,444	337,110,526	392.974.556
Solar plants	19,143,360	31,730,119	107,882,405	110,040,053	112,240,854	114,485,672	116,775,385	119.110.893
Hydropower plants	134,150,400	166,464,000	200,356,070	232,766,212	266,392,616	301,270,970	337,437,902	374.931.002
Geothermal	-	-	50,937,984	62,348,092	74,194,230	86,489,274	99,246,442	112.479.301
<b>TOTAL:</b>	<b>587,012,550</b>	<b>743,769,995</b>	<b>1,570,282,212</b>	<b>1,795,284,095</b>	<b>1,998,796,420</b>	<b>2,209,621,323</b>	<b>2,427,116,530</b>	<b>2.653.410.134</b>
<b>TOTAL FROM 2013–2020:</b>								<b>13,985,293,259</b>

The costs show refer to the assessed amounts of total paid incentives to 2020 according to the projected development of projects and approximated incentive prices paid for contracted and future projects to 2020, with the applied forecast index of consumer prices of 2%. The projections of installed capacities of RES by technology to 2020 are shown in Tables 10a and 10b.

As shown in Table 13, if the incentive scheme via the tariff system is continued as is currently the case, the total costs in the period from 2013 to 2020 would be HRK **13,985,293,259**.

The average price of electricity produced from renewable energy sources in the incentives system in Croatia would increase by more than double in the period to 2020, as shown below:

Year	Average price (HRK/kWh)	Average price (EUR/MWh)
2007	0.91	121.67
2008	1.04	138.56
2009	1.21	161.13
2010	1.27	169.40
2011	1.24	165.59
2012	1.35	180.32
2013	1.37	182.76
2014	1.46	194.60
2015	1.51	201.75
2016	1.58	210.14
2017	1.63	217.43
2018	1.69	224.80
2019	1.73	230.42
2020	1.77	235.69

Considering that this will not be able to be financed from the levies for the promotion of electricity production from RESC, cofinancing of RES projects will have to be secured through EPEEF and EU funds. It should further be stressed that, considering that the Agreement on the purchase of electricity is concluded for a period of 14 years, the amounts of incentives shown in Table 13 pertain only to a part of the period of validity of the agreement (to 2020).

In the Republic of Croatia, 458 RES power plants that supply electricity to the network are in the incentives system, with a total installed capacity of 294.19 MW (status as at 30 September 2013):

Eligible producers	Number of power plants	Installed capacity (kW)	Total resources required per year for payments to eligible producers (HRK)
Wind plants	14	254,250.00	511,705,920.20
Biomass plants	3	6690.00	61,905,391.00
Biogas plants	9	8135.00	92,668,641.87
Solar plants	423	9781.69	35,755,230.99
Hydropower plants	4	1340.00	8,067,595.01
Cogeneration plants	4	11,493.00	5,266,610.60
Power plants on landfill gas	1	2500.00	51,271.00
<b>TOTAL</b>	<b>458</b>	<b>294,189.69</b>	<b>715,420,660.68</b>

There are 740 projects in the pipeline, i.e. where agreements have been concluded with HROTE but facilities have not yet been hooked up to the network, with a planned capacity of 247 MW (status as at 30 September 2013):

Project	Number of power plants	Planned capacity (kW)	Total resources required per year for payments to eligible producers (HRK)
Wind plants	4	150,000.00	265,379,880.00
Biomass plants	9	51,659.00	497,673,120.00
Biogas plants	4	3299.00	36,999,436.50
Solar plants	720	37,420.86	81,188,692.29
Hydropower plants	2	142.00	900,000.00
Geothermal plants	1	4,710.00	60,188,713.20
<b>TOTAL</b>	<b>740</b>	<b>247,230.86</b>	<b>942,329,841.99</b>

The total capacities in plants and those plants yet to be connected to the network but that have concluded an agreement with HROTE (status as at 30 September 2013):

Project	Number of power plants	Planned capacity (kW)	Total resources required per year for payments to eligible producers (HRK)
Wind plants	18	404.25	777,085,800.20
Biomass plants	12	58.35	604,352,813.40
Biogas plants	13	11.43	185,396,484.87
Solar plants	1143	47.20	98,109,881.25
Hydropower plants	6	1.48	7,367,595.01
Cogeneration plants	4	11.49	5,266,610.60
Geothermal plants	1	4.71	60,188,713.20
Power plants on landfill gas	1	2.5	51,271.00
<b>TOTAL</b>	<b>1198</b>	<b>541.42</b>	<b>1,657,750,502.66</b>



This overview of the status determines that beginning from 2015, a minimum of HRK 1,657,750,502.66 will be paid to eligible electricity producers that are in the incentives system, and a gradual reduction in these expenditures is expected in 2023 with the end of the duration of electricity purchase agreements with individual eligible producers. These producers will continue to have the obligation to maintain the production plant for 25 years, after which they are required to properly deal with the production plant.

The realisation of all the above products is expected within the next year to two years. There are no technical barriers for the capacities shown in the sense of connection to the electricity grid.

The required capacities will be built to 2020 so as to achieve the RES targets as considered within the framework of the revised Action Plan, in line with the projections of installed RES capacities in Tables 10a and 10b, including plants for which incentives have been secured through the tariff system and plants that will be cofinanced through EPEEF or EU funds.

The further development of new capacities, if secure grid function can be ensured and the same level of security of supply retained, will depend on the market conditions and on the competitiveness of the technology.

#### Contributions to reducing greenhouse gases

The contributions to reductions of greenhouse gas emissions is determined based on the projections of electricity production from RES, use of RES in transport and use of RES for heating and cooling in 2020.

In order to determine the contribution of renewable energy sources to the reduction of greenhouse gas emissions, an assessment was conducted of the avoided CO<sub>2</sub> emissions due to the application of renewable energy sources instead of fossil fuels. Namely, avoided emissions are determined in a manner that the quantity of electricity from RES, energy from RES for heating and cooling, and energy from RES in transport determined by this Action Plan replace fossil fuels and the CO<sub>2</sub> emissions for these are determined.

In terms of sectors, in the production of electricity from RES, a comparison was made with power plants using fossil fuels. For the calculation, the specific emissions from the HEP thermoelectric plants were used. CO<sub>2</sub> emissions totalled 6,585 kt, and a replacement of large hydropower plants with fossil fuels resulted in 4,994 kt CO<sub>2</sub>. The avoided CO<sub>2</sub> emissions from transport were determined through the consumption of petrol and diesel fuel, and total 249 kt. The CO<sub>2</sub> from the emissions of heating and cooling represent the use of heating oil instead of renewable energy sources and totalled 1,303 kt.

The expected reduction of greenhouse gas emissions, with the previously stated assumptions would be 8,137 kt in 2020, which is about 25% of the total emissions of greenhouse gases in the Republic of Croatia.

#### Expected job creation

Concrete analyses have not been conducted. However, all RES projects in the tariff system have been investments by the private sector. However, no significant steps forward have been recorded in the use of own technology and the creation of new jobs. Though there is domestic production of wind turbines, these have been installed in wind parks in which the investor is also the producer of the turbines. Biomass and biogas projects, including landfill gas projects significant contribute to the creation of new jobs and mobilise the forestry and agriculture sectors, wood processing industry and waste management, and these directly serve in the development of heating systems and contribute to cohesion policies at the local level. A wider use of this potential to 2020 is expected to create a larger number of jobs, both directly and indirectly. The use of water potential, given the tradition of the domestic industry, would also enable sustainable development of the sector. With regard to the use of solar energy, heat pumps, and micro-cogeneration, particularly in the sense of increasing energy efficiency in buildings, this is considered the most propulsive sector. Through the use of smart grids, locating production at the consumption site through target installations and investments in both the public and private sector, this will contribute to the creation of a large number of jobs in the production of equipment, and its installation and maintenance.

PROVISIONAL TRANSLATION

#### **5.4. DRAFTING THE NATIONAL RENEWABLE ENERGY ACTION PLAN AND MONITORING ITS IMPLEMENTATION**

- a) How were regional and/or local authorities and/or cities involved in the preparation of this Action Plan? Were other stakeholders involved?

The local and regional communities and other interested stakeholders participated in the drafting of legislation through consultations. Also, interest groups had the opportunity to comment on policies and measures of the Energy Strategy, which served as the foundation for the drafting of this Action Plan.

The RES Community is an operational unit within the Croatian Chamber of Economy. It plays an active role in the phase of drafting all acts relating to the implementation of renewable energy production plans. The objective of the Community is to promote the use of RES in the Republic of Croatia, which would create the conditions for faster and stronger participation of all interested parties in these activities, and would also allow for the development of accompanying industries and other activities, and create the conditions for development and application of new technologies and new job creation.

- b) Are there plans to develop regional/local renewable energy strategies? If so, could you please explain? In case relevant competences are delegated to regional/local levels, what mechanism will ensure national target compliance?

The Energy Act (Official Gazette 120/12) lays down the obligation for local and regional self-government units to draft development documents to plan for the energy needs and means of supply, and the alignment of those documents with the Energy Strategy and the Programme for the implementation of the Energy Strategy.

The Regional Development Act (Official Gazette 153/09) lays down the obligation for regional self-government units to draft County Development Strategies, or the Development Strategy for the City of Zagreb, which will outline the development objectives and priorities for the regional self-government unit. The development strategy is a planning document of regional development policy, which defines the development priorities and strategic goals within the County, which are of interest for its sustainable socioeconomic development, in line with the national strategy on regional development.

Furthermore, the counties draft strategies for sustainable energy use, which give a detailed analysis of the current energy situation in the county concerning the use of renewable energy and energy efficiency, and conceives the future of the county energy sector based on the principles of sustainability, environmental production, energy efficiency and the use of RES.

- c) Please explain the public consultation carried out for the preparation of this Action Plan.

Public consultations included consultations with the interested public. Namely, the Sector for Energy within MINGO opened consultations on its website for the interested public concerning

the Proposal of the National Renewable Energy Action Plan. The consultations were open for a period of 14 days, and during that period, all interested persons were invited to submit their opinions and comments to the Proposal of the Action Plan.

- d) Please indicate your national contact point/the national authority or body responsible for the follow-up of the Renewable Energy Action Plan?

The Sector for Energy of MINGO is responsible for the administrative and expert tasks concerning energy of the Republic of Croatia, and for the drafting of proposals of acts and regulations in the field of energy, the planning and proposal of the Energy Strategy, and monitoring of its implementation.

- e) Do you have a monitoring system, including indicators for individual measures and instruments, to follow-up the implementation of the Renewable Energy Action Plan? If so, could you please give more details on it?

Impacts are currently measured through several mechanisms:

- Analysis of policies and measures and their impacts in the reduction of greenhouse gases for the purpose of the National Report of the Republic of Croatia to the UNFCCC;
- Energy in Croatia – an annual report produced by MINGO with a comprehensive overview of the use of RES and the energy balance, using the IEA and EUROSTAT methods;
- Reporting on the needs for the drafting of an energy balance and statistics, and reporting to the European Commission, and to international and national institutions – the drafting of the Ordinance on the form and content and manner of collection of data for the development of the balance is currently underway, so as to improve the system of data collection, particularly regarding RES;
- MINGO and HROTE keep records on production, technical and financial issues relating to eligible producers of electricity from RES.