REPUBLIKA HRVATSKA
MINISTARSTVO GOSPODARSTVA

Report

on the progress towards the national energy efficiency targets as required by Article 24(1), in accordance with Part 1 of Annex XIV to Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC

(Text with EEA relevance)

Zagreb, April 2016

Content

Introduction

By acceding to full membership of the European Union on 1 July 2013, the Republic of Croatia, along with other Member States, assumed an obligation under Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, to increase energy efficiency in the EU in order to achieve the Union's 20 % primary energy consumption savings target by 2020 against projections (with regard to a 'business as usual' or baseline energy consumption scenario).

The Conclusions of the European Council of 17 June 2010 confirmed the energy efficiency target as one of the headline targets of the Union's new strategy for jobs and smart, sustainable and inclusive growth ('Europe 2020 Strategy'). Under this process and in order to implement that objective at national level, Member States are required to set national targets in close dialogue with the Commission and indicate, in their National Reform Programmes, how they intend to achieve them.

To achieve this fundamental objective, each Member State is required to draw up National Energy Efficiency Action Plans, determining national energy savings targets according to the methodology laid down, as well as sector-specific measures and objectives. Each Action Plan analyses the effects and revises current measures where necessary, while also setting out new sector-specific measures to ensure that the target is achieved in 2020.

The significance of energy efficiency in Croatia has been confirmed by its legislative and strategic framework. The Energy Act outlines energy efficiency as a matter of national interest and the Energy Efficiency Act, adopted in October 2014, promotes energy efficiency and development of the energy services market.

The National Energy Efficiency Programme for 2008-2016 has been drawn up and adopted In compliance with the European Directive 2006/32/EC on energy end-use efficiency and energy services (ESD). In addition, the Croatian Government has adopted the Third National Energy Efficiency Action Plan of the Republic of Croatia for 2014-2016. The Action Plans have been submitted to the European Commission (EC), which reviews the action plans of all Member States and analyses the achievement of the target at EU level.

A. Estimate of indicators for the year before last (2014)

I. PRIMARY ENERGY CONSUMPTION

The structure of energy forms in total consumption over the period between 2009 and 2014 is shown in Table 1. Figure 1 shows the development of total energy consumption over the period beginning in 2009. Croatia's total energy consumption decreased 3.1 % in 2014 against the total delivered consumption a year earlier. Other renewable resources accounted for the highest increase in consumption by 36.4 %. Hydro power consumption increased 4.8 % due to very favourable hydrological conditions, while electricity imports increased 2.2 %. The consumption of other energy forms decreased. The decline in natural gas consumption was 11.4 %, that in fuel wood and biomass 11.3 % and the decline in liquid fuel consumption 2 %. The consumption of thermal energy from heat pumps decreased 15.9 %, and that from coal and coke by 1.8 %.

In the period between 2009 and 2014, total energy consumption decreased at an average annual rate of 2 %. The consumption of most energy forms was on a declining trend during that period and only the consumption of other renewables, as well as coal and coke, bucked that trend. The consumption of renewables rose at a very high rate of as much as 50.2 %, while coal and coke consumption increased at an average annual rate of 5.1 %. The consumption of liquid fuels decreased at average annual rate of 6.7 %, while the average annual rate of decrease in the consumption of imported electricity was 4.6 %, that of natural gas 3.7 %, and fuel wood and biomass 1.3 %. The declining trend was slowest in the consumption of thermal energy from heat pumps, at an average annual rate of 0.5 %.

Table 1: Total Primary Energy Supply

	2009	2010	2011	2012	2013	2014	2014/13	2009-14
	PJ						%	
Coal and coke	24.66	30.92	31.66	28.37	32.18	31.59	-1.8	5.1
Biomass	48.93	52.29	51.50	52.10	51.67	45.82	-11.3	-1.3
Liquid fuels	178.04	152.54	149.30	134.17	128.37	125.80	-2.0	-6.7
Natural gas	102.15	111.37	108.60	101.78	95.54	84.62	-11.4	-3.7
Hydro power	72.32	87.24	47.58	47.32	84.92	88.99	4.8	4.2
Electricity	18.01	14.28	25.76	26.75	13.93	14.23	2.2	-4.6
Heat	0.54	0.63	0.61	0.62	0.63	0.53	-15.9	-0.5
Renewables	1.39	2.24	2.83	5.72	7.80	10.64	36.4	50.2
TOTAL	446.05	451.50	417.84	396.84	415.04	402.22	-3.1	-2.0

Source: Energy in Croatia, 2014

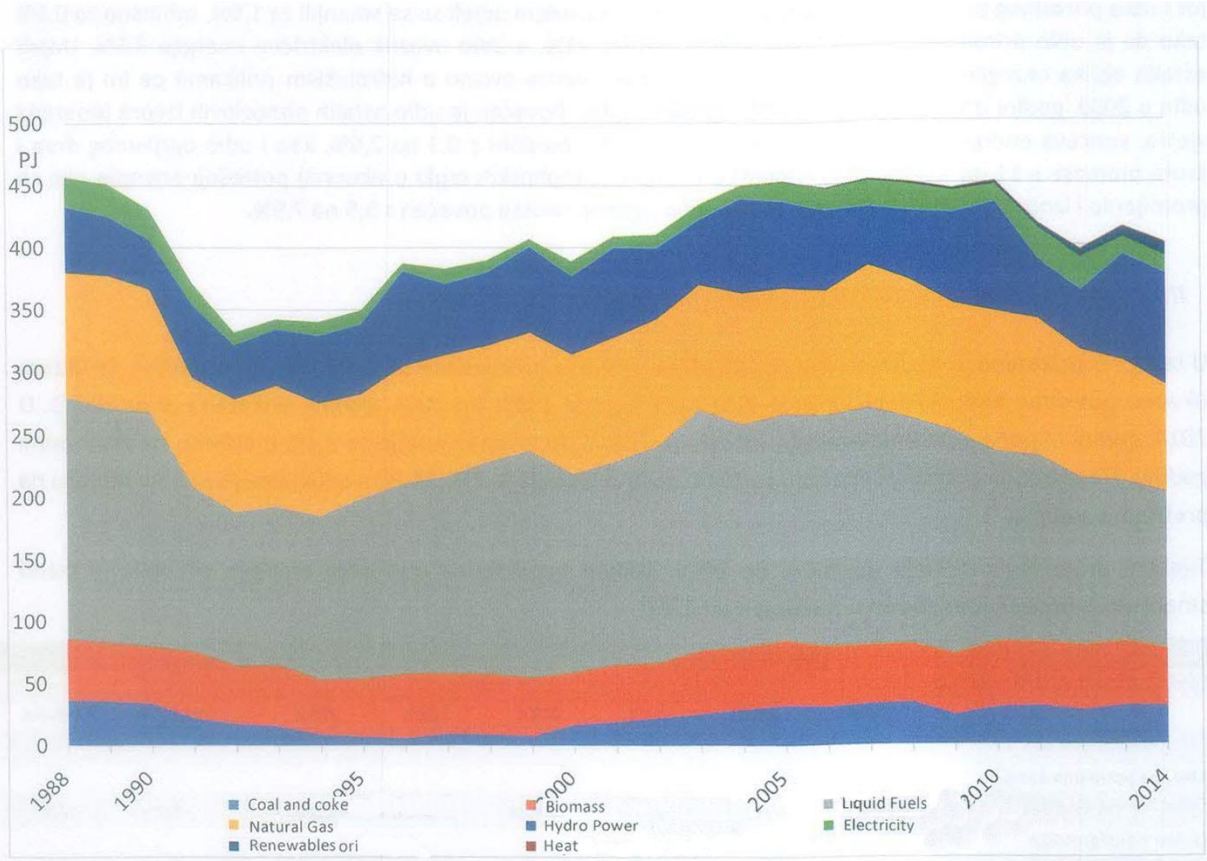


Figure 1: Total primary energy supply in Croatia (Source: Energy in Croatia, 2014)

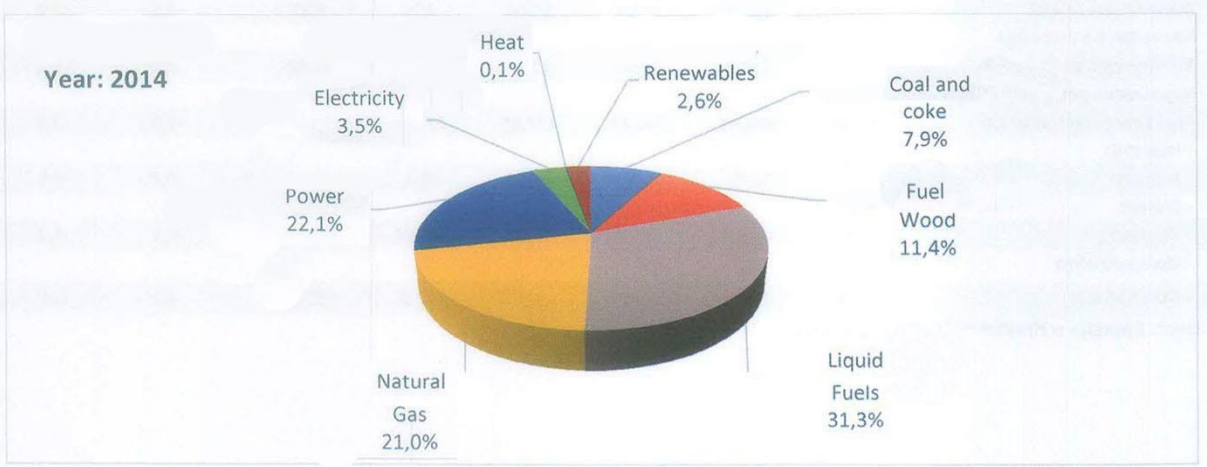


Figure 2: Structure of total primary energy supply (Source: Energy in Croatia, 2014)

Figure 2 shows the actual shares of individual fuels in the 2014 total primary energy supply. Liquid fuels had the largest share in the total primary energy consumption in Croatia. That share stood at 39.9 % in 2009, but fell to 31.3 by 2014. In addition to the share of liquid fuels, the shares of natural gas and imported electricity also decreased in 2014. They were down by 1.9 % and 0.5 %, respectively, so the share of natural gas was 21 % and the share of imported electricity 3.5 % in 2014. The shares of other energy forms increased. Since the share of hydro power varies according to weather conditions, it stood at 16.2 % in 2009 and at 22.1 % in 2014. The share of other renewable resources (wind energy, solar energy, geothermal energy, biodiesel and biogas) grew from 0.3 % to

2.6 %, and so did the share of fuel wood and crude biomass, increasing from 11 % to 11.4 %. The share of thermal energy from heat pumps in total primary energy consumption remained unchanged at just 0.1 %, while the share of coal and coke increased from 5.5 % to 7.9 %.

II. TOTAL FINAL (END-USE) ENERGY CONSUMPTION

Table 2 shows the structure of total primary energy supply consumed in Croatia between 2009 and 2014. The structure of total energy requirements over the period between 1988 and 2014 is shown in Figure 3. In 2014, the total primary energy supply was 402.22 PJ, having fallen by 3.1 % compared to the previous year. The 2014 end-use energy consumption was 260.54 PJ, down 5 % year-on-year.

Between 2009 and 2014, the end-use energy consumption was on a declining trend at an average rate of 2.7 % a year.

Table 2: Total Primary Energy Supply by Sector

	2009	***2010***	***2011***	***2012***	***2013***	***2014***	***2014/13***	***2009-14***
	PJ						**%**	
Total Primary Energy Supply	**446.05**	**451.50**	**417.84**	**396.84**	**415.04**	**402.22**	**-3.1**	**-2.0**
Conversion Losses	79.95	84.50	60.39	60.30	84.07	83.49	-0.7	0.9
Energy Sector Own Use	31.59	30.24	32.03	26.57	24.33	26.72	9.8	-3.3
Transmission Losses	10.29	10.88	10.14	10.00	9.76	8.87	-9.1	-2.9
Non Energy Use	25.19	24.97	24.94	22.31	22.52	22.60	0.4	-2.1
Final Energy Consumption	299.04	300.90	290.34	277.66	274.36	260.54	-5.0	-2.7
- Industry	51.14	50.30	46.96	41.56	40.92	40.63	-0.7	-4.5
- Transport	89.84	86.80	85.39	84.02	85.49	84.53	-1.1	-1.2
- Other Sectors	158.05	163.81	157.99	152.08	147.95	135.38	-8.5	-3.0

Source: Energy in Croatia, 2014

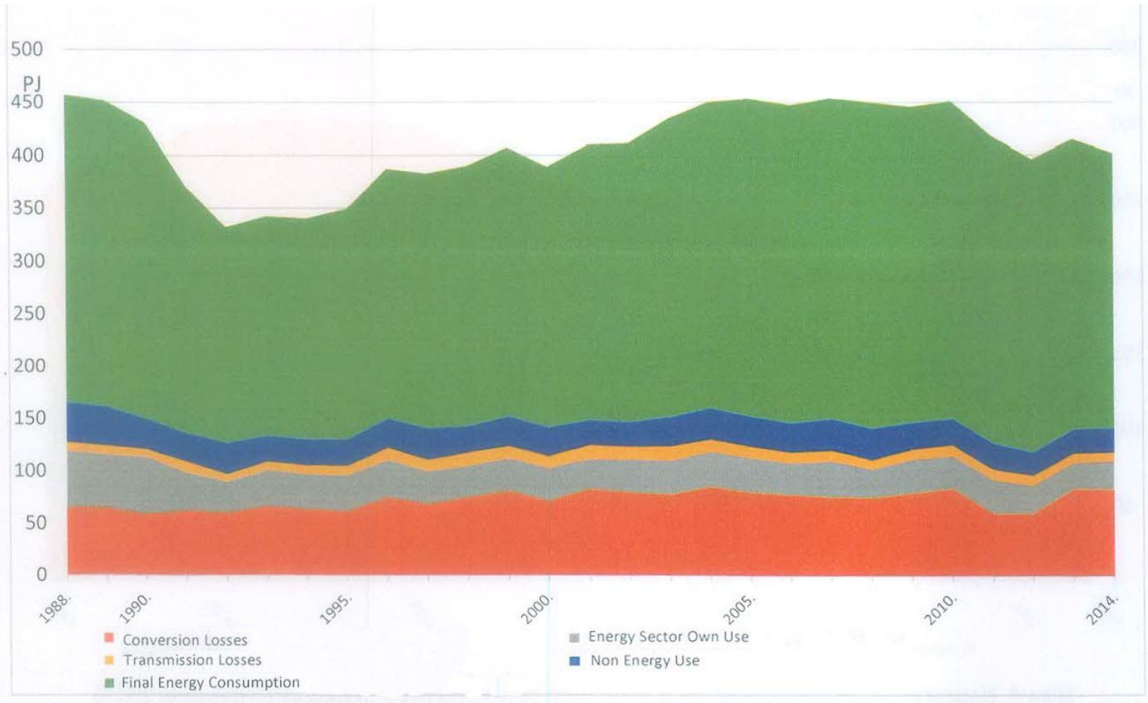


Figure 3: Structure of total primary energy supply by sectors (Source: Energy in Croatia, 2014)

In 2014, end-use consumption had the largest share in the total primary energy supply with a share of 64.8 %. Between 2009 and 2014, the portion of end-use energy consumption decreased by 2.2 %. In that period, the share of the energy sector's own use also decreased from 7.1 % to 6.6 %, while the share of transport and distribution losses decreased negligibly by 0.1 % to stand at 2.2 % in 2014. The share of non-energy consumption remained unchanged at 5.6 %. The share of energy transformations losses increased by 2.9 % to stand at 20.8 % in 2014.

III. FINAL ENERGY CONSUMPTION BY SECTOR: INDUSTRY, TRANSPORT, GENERAL CONSUMPTION (HOUSEHOLDS, SERVICES, AGRICULTURE AND CONSTRUCTION)

In addition, Table 2 shows the structure of energy consumption in three typical sectors of end users: industry, transport and other sectors. Energy consumption in other sectors includes the household, services sector, agriculture, and construction industry consumption. Similarly, Figure 4 also shows the development of energy consumption in the three sectors mentioned above since 1988. Compared to 2013, the industrial energy consumption decreased by 0.7 % in 2014. Other sectors reduced their energy consumption by 8.5 %, while consumption decrease in the transport was 1.1 %. Between 2009 and 2014, the industry recorded a declining energy consumption trend at an average annual rate of 4.5 %. Transport energy consumption decreased at an average annual rate of 1.2 %, and other sectors at an average annual rate of 3 %.

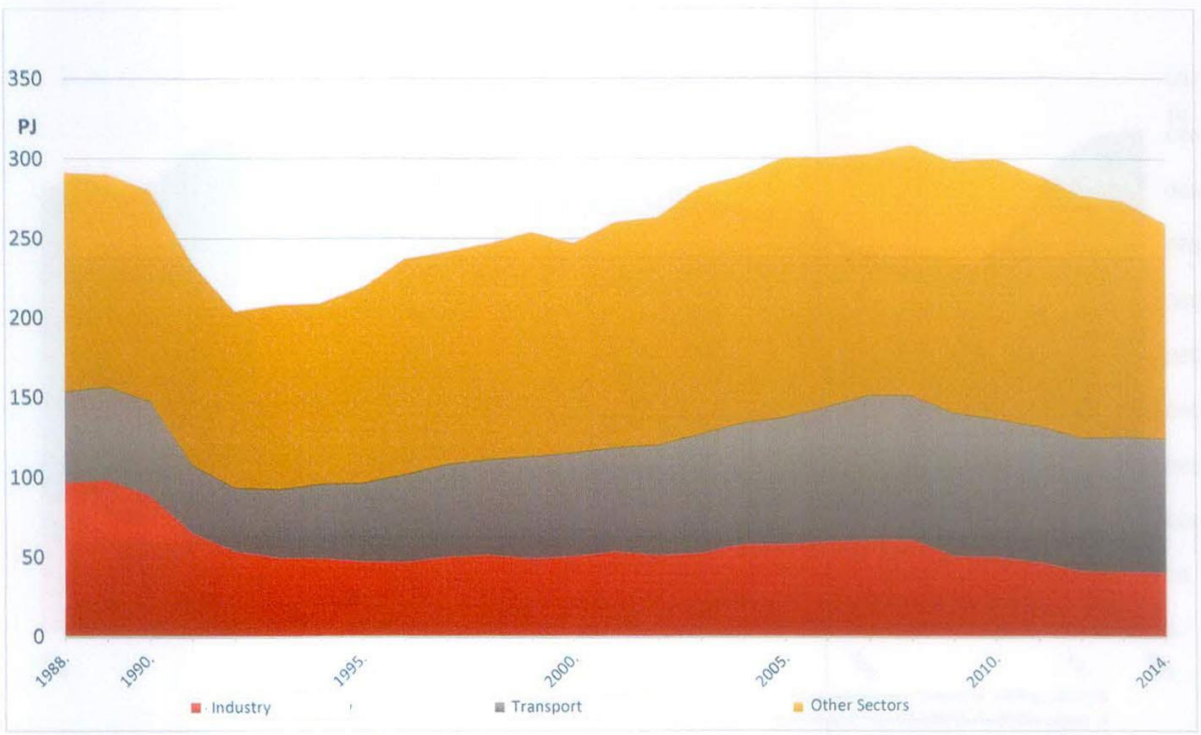


Figure 4: End-use energy consumption by sector (source: Energy in Croatia, 2014)

Figure 5 shows the shares of particular sectors in end-use energy consumption in 2014. Other sectors had the largest share in end-use energy consumption at 52 %, followed by transport at 32.4 % and industry at 15.6 %.

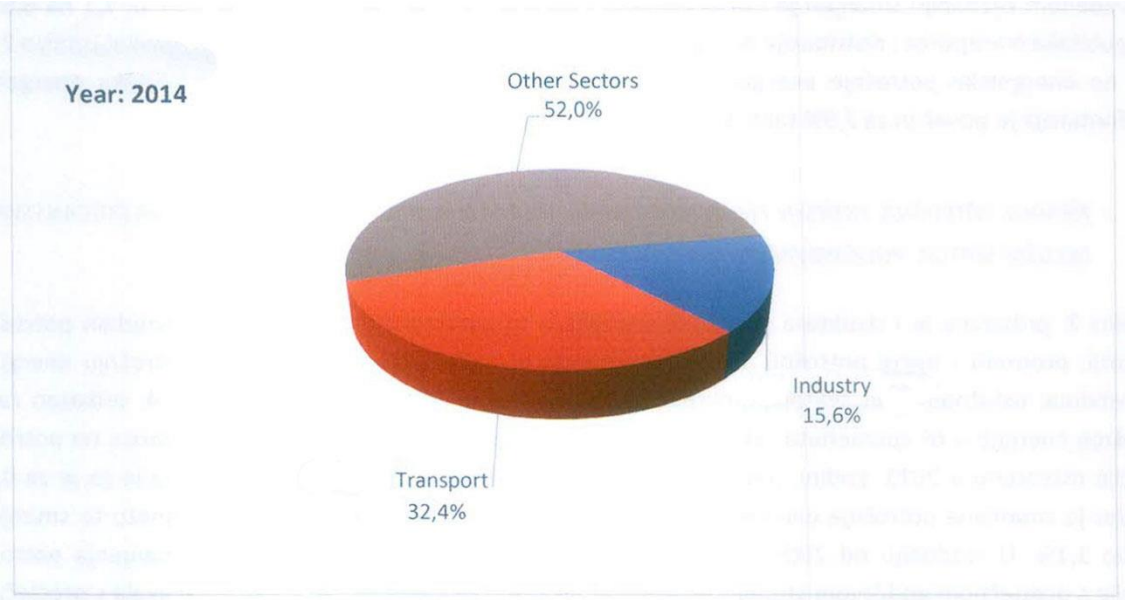


Figure 5: Structure of end-use energy consumption by sector (Source: Energy in Croatia, 2014)

INDUSTRY

The structure of different energy consumption forms in the industry in the period under observation, 2009-2014, is shown in Table 3. The industrial energy consumption continued to decline, recording a 0.7 % decrease in 2014 year-on-year. Such decline was helped by reduced consumption of most forms of energy in use, except electricity, which saw a consumption increase by 4.8 %. The largest consumption decrease in percentage terms was that in liquid fuels at a rate of 5.3 %. The rate of decrease in the consumption of fuel wood and biomass, and that of steam and hot water stood at 3.6 and 3.5 %, respectively. Coal and coke, as well as natural gas recorded somewhat lower consumption decrease, amounting to 2.2 % and 1.3 %, respectively.

Between 2009 and 2014, the industry was on an energy consumption decline at an average rate of 4.5 % a year. In that period, the consumption of most energy forms, except fuel wood and other biomass which increased at an annual rate of 2.1 %, saw a declining trend. The consumption of liquid fuels and natural gas decreased fastest at average annual rates of 11 % and 10.8 %, respectively. The consumption of steam and hot water, and coal and coke decreased at average annual rates of 4.3 % and 1 %, respectively. The electricity consumption decrease was somewhat slower, at an average annual rate of 0.4 %.

Table 3: Final Energy Consumption in Industry by Fuel

	2009	***2010***	***2011***	***2012***	***2013***	***2014***	***2014/13***	***2009-14***
	PJ						***%***	
Coal and coke	9.00	9.28	8.19	7.63	8.74	8.54	-2.2	-1.0
Fuel wood and biomass	0.83	0.86	0.63	1.18	0.96	0.92	-3.6	2.1
Liquid fuels	4.29	3.32	3.13	2.76	2.53	2.40	-5.3	-11.0
Gaseous fuels	12.78	12.42	11.33	8.14	7.31	7.21	-1.3	-10.8
Electricity	11.82	12.18	11.76	10.65	11.05	11.59	4.8	-0.4
Steam and hot water	12.43	12.22	11.93	11.20	10.34	9.98	-3.5	-4.3
TOTAL	51.14	50.30	46.96	41.56	40.92	40.63	-0.7	-4.5

Source: Energy in Croatia, 2014

TRANSPORT

Table 4 shows the structure of energy consumed in transport between 2009 and 2014. In 2014, the energy consumption in transport shrank 1.1 % compared to that in 2013. The consumption of diesel fuel, jet fuel, LPG and natural gas increased, while the consumption of other fuels decreased. Motor spirit (petrol) consumption declined 7.7 %, electricity 1.8 % and liquid biofuels 6.3 %. There was also a decrease in the consumption of fuel oils used in transport in very small amounts. The increase in the consumption of diesel fuel was 1.7 %, jet fuel 0.2 % and LPG 7.3 %. A very high increase was recorded in the consumption of natural gas, which continues to have a very small share in the overall transport energy consumption. Between 2009 and 2014, the energy consumption in transport decreased at an average annual rate of 1.2 %.

Table 4: Final Energy Consumption in Transport by Fuel

	2009	2010	2011	2012	2013	2014	2014/13	2009-14
	PJ						%	
Liquid biofuels	0.30	0.11	0.14	1.51	1.33	1.25	-6.3	33.5
LPG	3.26	2.75	2.62	2.57	2.64	2.83	7.3	-2.8
Natural gas	0.05	0.09	0.03	0.03	0.06	0.13	108.9	23.2
Motor spirit	30.17	28.41	27.76	25.80	25.20	23.26	-7.7	-5.1
Jet fuel	4.26	4.54	4.81	4.98	5.44	5.46	0.2	5.1
Diesel fuel	50.67	49.68	48.87	48.00	49.72	50.59	1.7	0.0
Fuel oils	0.02	0.08	0.07	0.08	0.08	0.02	-80.0	
Electricity	1.12	1.12	1.09	1.04	1.01	0.99	-1.8	-2.5
TOTAL	**89.84**	**86.80**	**85.39**	**84.02**	**85.49**	**84.53**	**-1.1**	**-1.2**

Source: Energy in Croatia, 2014

The energy consumption by particular means of transport between 2009 and 2014 is shown in Table 5. In 2014, energy consumption decreased in rail transport, road transport, public city transport and other types of transport. Other types of transport recorded increased energy consumption.

Table 5: Final Energy Consumption by Means of Transport

	2009	2010	2011	2012	2013	2014	2014/13	2009-14
	PJ						%	
Rail transport	1.84	1.84	1.75	1.65	1.54	1.43	-7.2	-4.9
Road transport	80.03	77.13	75.59	74.30	75.17	74.17	-1.3	-1.5
Air transport	4.38	4.65	4.92	5.07	5.55	5.56	0.2	4.9
Sea and river transport	2.07	1.65	1.65	1.58	1.79	1.93	7.8	-1.3
Public city transport	1.43	1.45	1.41	1.35	1.36	1.35	-0.6	-1.1
Not specified	0.09	0.08	0.07	0.07	0.09	0.09	-0.4	-0.7
TOTAL TRANSPORT	**89.84**	**86.80**	**85.39**	**84.02**	**85.49**	**84.53**	**-1.1**	**-1.2**

Source: Energy in Croatia, 2014

OTHER SECTORS (HOUSEHOLDS, SERVICES, AGRICULTURE, AND CONSTRUCTION INDUSTRY)

Energy consumption in other sectors includes the household, services sector, agriculture, and construction industry consumption. The development of the shares of various energy forms in the consumption of other sectors between 2009 and 2014 is shown in Table 6. The energy consumption

in other sectors shrank 8.5 % in 2014 year-on-year. The consumption of other renewables (solar energy, geothermal energy and biofuels) increased by 32.5 %, while the consumption of other forms of energy decreased.

Table 6: Final Energy Consumption in Other Sectors by Fuel

	2009	2010	2011	2012	2013	2014	2014/13	2009-14
	PJ						%	
Coal	0.18	0.26	0.23	0.22	0.18	0.11	-36.4	-8.6
Fuel wood and biomass	46.36	49.82	48.64	48.57	48.27	42.57	-11.8	-1.7
Liquid fuels	29.93	28.06	26.62	23.36	21.66	19.80	-8.6	-7.9
Gaseous fuels	30.16	32.29	29.55	27.73	26.87	24.45	-9.0	-4.1
Electricity	42.82	43.74	43.73	43.50	42.11	40.76	-3.2	-1.0
Heat	8.29	9.13	8.68	8.10	8.23	6.86	-16.6	-3.7
Renewables	0.32	0.51	0.55	0.59	0.63	0.83	32.5	20.7
TOTAL	**158.05**	**163.81**	**157.99**	**152.08**	**147.95**	**135.38**	**-8.5**	**-3.0**

Source: Energy in Croatia, 2014

The consumption of energy by particular other sectors in the period between 2009 and 2014, and in the period between 1988 and 2014 is shown in Table 7 and Figure 6, respectively. The share of total energy consumption by other sectors decreased 8.5 % in 2014 thanks to reduced energy consumption by households and the construction industry, while consumption in the two remaining sectors increased. The consumption increase in the services sector was negligible, while in agriculture energy consumption increased 2.4 %. The year-on-year decrease in household energy consumption was 11.8 %, while amounting to 9.6 % in the construction industry.

Table 7: Final Energy Consumption in Other Sectors by Sub-sector

	2009	2010	2011	2012	2013	2014	2014/13	2009-14
	PJ						%	
Households	110.80	115.97	110.67	107.24	104.35	91.99	-11.8	-3.7
Services	30.63	32.18	31.66	30.44	29.52	29.52	0.01	-0.7
Agriculture	10.47	10.27	10.49	9.61	9.47	9.70	2.4	-1.5
Construction industry	6.15	5.39	5.16	4.79	4.60	4.16	-9.6	-7.5
TOTAL OTHER SECTORS	**158.05**	**163.81**	**157.99**	**152.08**	**147.95**	**135.38**	**-8.5**	**-3.0**

Source: Energy in Croatia, 2014

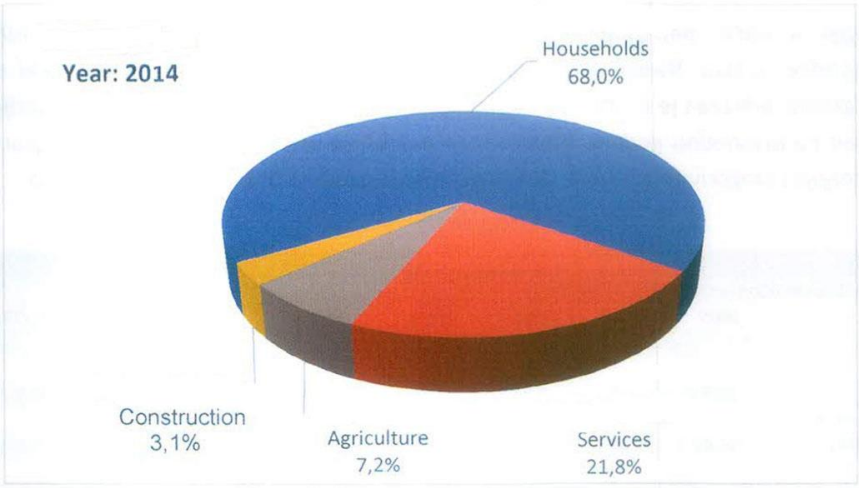


Figure 6: Structure of final energy consumption in other sectors by sub-sector (Source: Energy in Croatia, 2014)

IV. GROSS VALUE ADDED BY SECTOR

Table 8: Gross Value Added (GVA)			
GVA (in HRK thousand)	**2011**	**2012**	**2013**
Industry	41 111 335	40 574 316	39 239 510
Services*	204 687 303	202 017 046	203 274 527

Source: Croatian Bureau of Statistics, Statistical Yearbook for 2014

GVA1 – Gross value added for *agriculture, forestry and fisheries*
GVA2 – Gross value added for *mining and quarrying*
GVA3 – Gross value added for the *processing industry*
GVA4 - Gross value added for the *construction industry*
* **services GVA** = total **GVA** – (**GVA1** + **GVA2** + **GVA3** + **GVA4**)

The 2014 **GVA** data are not available in the Statistical Yearbook for 2015.

V. DISPOSABLE HOUSEHOLD INCOME

Table 9: Disposable Household Income		
	2010	**2011**
Disposable household income for the year	HRK 86 975	HRK 81 215

Source: Croatian Bureau of Statistics, Statistical Yearbook for 2011 and 2012

There is no available data on the disposable household income for 2012 and 2013. It is not provided in the Statistical Yearbooks for the years 2015, 2014, 2013 or 2012.

According to the Statistical Yearbook for 2015, the average monthly net wage paid in 2014 was **HRK 5 533,** while the 2014 average monthly gross wage was **HRK 7 953** that same year**.**

Statistical Yearbook for 2013 – In 2011, the average annual consumption expenditure per household totalled HRK 74 941, of which 15.7 % was accounted for by housing and fuel consumption expenditures.

VI. GROSS DOMESTIC PRODUCT

Table 10: Gross Domestic Product (GDP)	
	2013
Gross domestic product (GDP)	HRK 328 431 mil.
	€ 10 162/per capita

Source: Croatian Bureau of Statistics, Statistical Yearbook for 2015

VII. ELECTRICITY GENERATION FROM THERMAL POWER GENERATION

Table 11: Electricity generation from thermal power generation			
GWh	**2013**	**2014**	**2014/2013 %**
Output			
– thermal power plants	2 501.2	2 374.3	-0.5

Source: Energy in Croatia, 2014

VIII. ELECTRICITY GENERATION FROM COMBINED HEAT AND POWER PLANTS, INCLUDING INDUSTRIAL WASTE HEAT

Table 12: Electricity generation from combined heat and power plants, including industrial waste heat			
GWh	**2013**	**2014**	**2013/14 %**
Output			
– public cogeneration plants	1 968.8	951.8	-51.6
– industrial cogeneration plants	326.6	338.2	-3.6
Total	**2 295.4**	**1 290**	

Source: Energy in Croatia, 2014

IX. HEAT GENERATION FROM THERMAL POWER GENERATION

Croatia has no heat generation from thermal power generation in an isolated form, but rather heat is generated by using combined electricity and thermal energy generating processes.

Therefore, heat generated in such processes is calculated in 'Chapter X. Heat generation from combined heat and power plants, including industrial waste heat'.

Thus, heat generation from thermal power plants calculated under this point [sic – chapter is probably meant] of the Report amounts to zero.

X. HEAT GENERATION FROM COMBINED HEAT AND POWER PLANTS, INCLUDING INDUSTRIAL WASTE HEAT

Table 13: Heat generation from combined heat and power plants, including industrial waste heat			
PJ	**2012**	**2013**	**2013/14 %**
– public cogeneration plants	9 117	8 014	-7.8

Source: Energy in Croatia, 2014

XI. FUEL INPUT FOR THERMAL POWER GENERATION

Table 14 shows fuel input in all forms of energy transformations by raw material.

Table 14: Fuel input for thermal power generation			
	Coal 1000 toe	**Petroleum products 1000 toe**	**Gas 1000 toe**
Public Electricity Plants	**540.7**	**2.6.1**	**0.5**
Public CHP Plants		**25.7**	**291**

Source: Energy in Croatia, 2014

XII. PASSENGER KILOMETRES (PKM)

Transport sector is among the biggest energy consumers in Croatia, and its future consumption growth is also expected to outpace that in other sectors. Between 1991 and 2014, the share of the transport sector consumption in the final consumption grew from 21 to 33 %, indicating major potential for the implementation of energy efficiency measures.

The potential to improve efficiency lies mostly in optimising the structure of various means transport, maximising capacity utilisation (loading factor increases) and introducing more efficient engines and vehicles, as well as appropriate driving regimes.

Table 15: Passenger kilometres						
		2010	**2011**	**2012**	**2013**	**2014**
Cars – petrol	[10^9 pkm]	15.919	15.608	14.669	14.347	13.322
Cars – diesel	[10^9 pkm]	18.197	18.240	17.873	18.474	18.710
Cars – electric	[10^9 pkm]	0.000	0.000	0.002	0.003	0.004
Cars – CNG	[10^9 pkm]	0.002	0.002	0.003	0.002	0.003
Cars – LPG	[10^9 pkm]	1.692	1.622	1.596	1.647	1.730
Aircraft	[10^9 pkm]	0.140	0.161	0.158	0.150	0.154
Motorcycles	[10^9 pkm]	0.279	0.270	0.234	0.232	0.220
Buses (diesel)	[10^9 pkm]	7.163	6.607	6.389	6.899	6.607
Buses – CNG	[10^9 pkm]	0.088	0.026	0.032	0.068	0.122
Trains	[10^9 pkm]	1.742	1.486	1.104	0.858	0.927
Trams – electric	[10^9 pkm]	1.189	1.176	1.128	1.094	0.059
Total:		**46.410**	**45.200**	**43.187**	**43.775**	**41.857**

Source: Energy Institute Hrvoje Požar

The data collected are official statistics (Croatian Bureau of Statistics), but they include public transport data only, i.e. data for passenger cars which hold the largest share by far have not been taken into account. Such data have been obtained by modelling certain results from previous periods by the Energy Institute Hrvoje Požar. The table above shows total 2010-2014 pkm figures, as the modelling result, providing a realistic view of ratios for particular means of transport.

As expected, road transport by car has a predominant share in the passenger kilometre structure (estimate for car road transport in Croatia based on the number of registered cars, the average annual distance travelled and the average car occupancy).

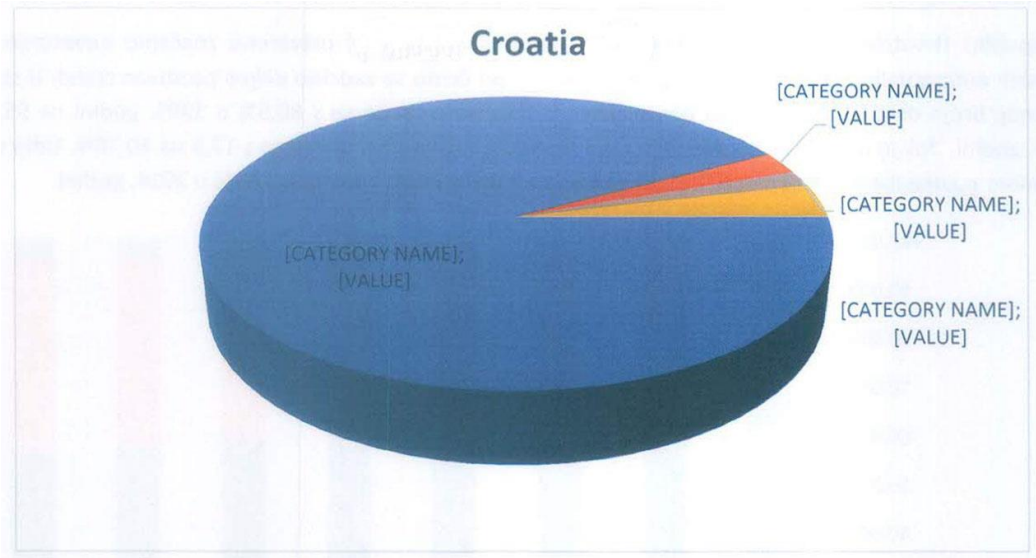
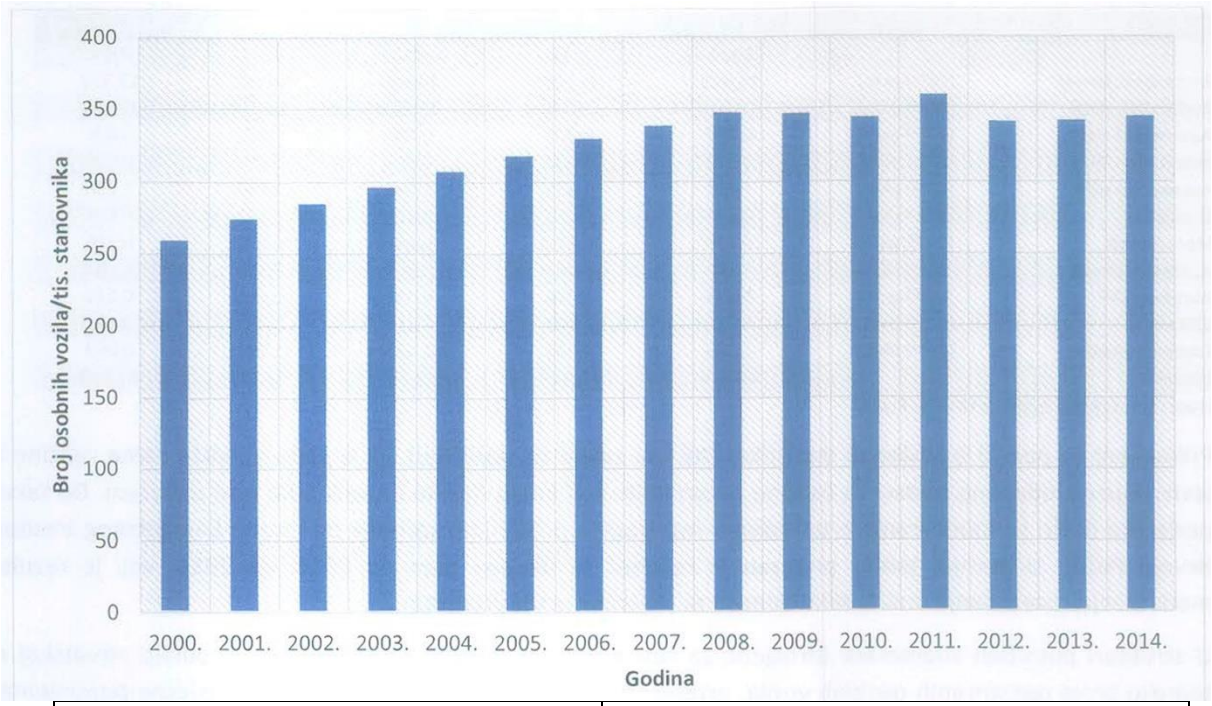


Figure 7: Structure of passenger kilometres in passenger transport in Croatia, 2014 (Source: Energy in Croatia, 2014)

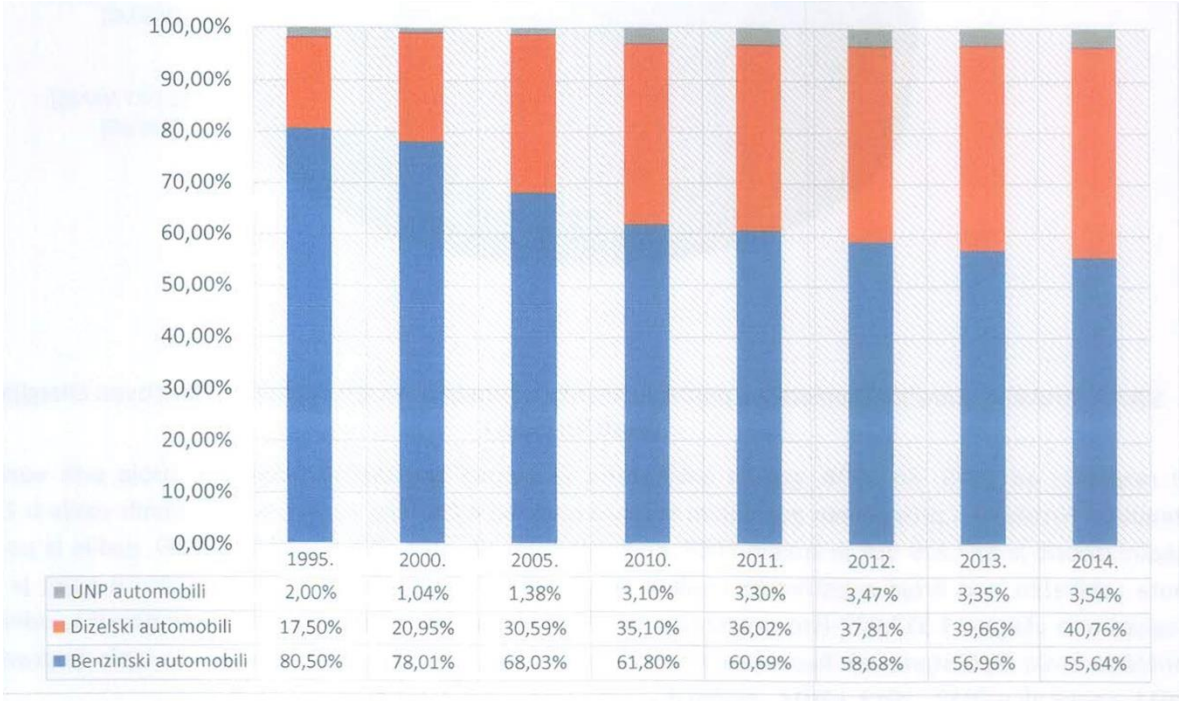
Between 1995 and 2008, Croatia recorded an almost uninterrupted increase in the number of all vehicles at an average annual growth rate of 4.8 %. The number of registered cars stood at 817 229 in 1995 only to reach 1 537 876 by the end of 2008. A first drop in the number of registered cars was recorded in 2009; it continued to fall in 2010, which saw a 1 517 079 cars registered in total (or approximately 346 cars per 1 000 inhabitants, which means that almost every third inhabitant of Croatia owned a car). The situation improved slightly in 2011, but the number of cars began to stagnate in 2012, 2013 and 2014.



Broj osobnih vozila/tis. stanovnika	Number of cars per 1 000 inhabitants in Croatia
Godina	Year

Figure 8: Number of cars per 1 000 inhabitants in Croatia (Source: Energy in Croatia, 2014)

In the period under observation (1995-2014), the share of diesel cars in the total number of cars in Croatia grew considerably, with a positive trend being maintained further. The share of petrol cars in the structure of total cars dropped from 80.5 % in 1995 to 55.64 % in 2014, while that of diesel cars from 17.5 % to 40.76 % over the same period. The share of LPG-powered cars increased from 2.0 % in 1995 to 3.54 % in 2014.



	1995.	2000.	2005.	2010.	2011.	2012.	2013.	2014.
UNP automobili	2,00%	1,04%	1,38%	3,10%	3,30%	3,47%	3,35%	3,54%
Dizelski automobili	17,50%	20,95%	30,59%	35,10%	36,02%	37,81%	39,66%	40,76%
Benzinski automobili	80,50%	78,01%	68,03%	61,80%	60,69%	58,68%	56,96%	55,64%

UNP automobili	LPG cars
Dizelski automobili	Diesel cars
Benzinski automobili	Petrol cars

Figure 9: Structure of cars by fuel type (1995-2014) (Source: Energy in Croatia, 2014)

The above structure is indicative of evident changes in customer habits with regard to the need for increasingly bigger and more powerful vehicles; meanwhile, the criteria of more energy efficient car purchases are being complied with relatively well through a growing share of diesel cars. A mechanism of positive structural change is based exclusively on market principles, namely, through a more favourable price of diesel fuel in the period under observation, without any special incentives.

XIII. TONNE KILOMETRES (TKM)

The main indicator of energy efficiency in transport is definitely the structure of individual forms of transport; for example, a major share of freight rail transport is indicative of a higher degree of energy efficiency in freight transport.

The structure of tonne kilometres in freight transport shows that road transport is the primary form of freight transport in Croatia.

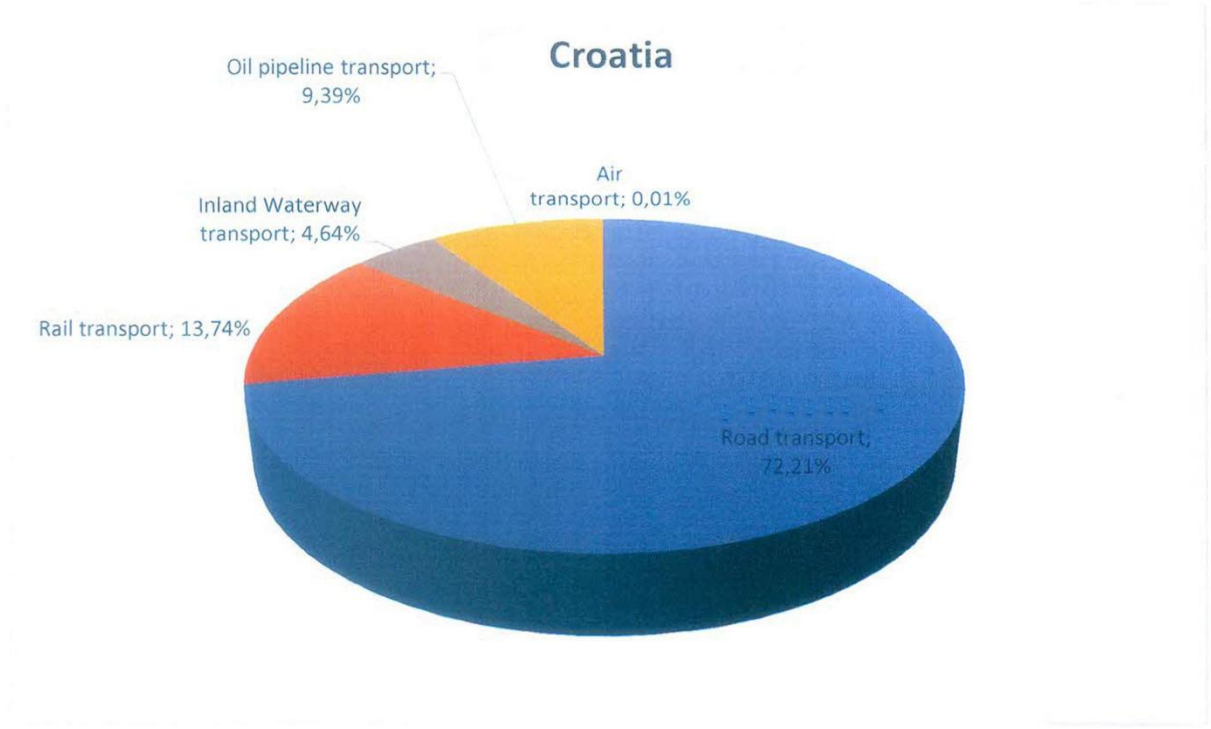


Figure 10: Structure of tonne kilometres in freight transport in Croatia, 2014 (source: Energy in Croatia, 2014)

It should be noted that the overall assessment does not take into account the sea and coastal water transport, which distorts the picture to a certain extent as large distances travelled in international ship transport result in a large share of tonne kilometres in EU 28.

Data for 2013 and 2014 show a major decline in the number of tonne kilometres of sea and coastal water transport (tonne kilometres of sea and coastal water transport amounted to 127 283 mil. km in 2013, and 107 709 mil. km in 2014, according to the Croatian Bureau of Statistics' Statistical Yearbook, 2015). Table 16 shows the structure of tonne kilometres.

Table 16: Tonne kilometres		
Tonne kilometres (tkm)	2013	2014
Road transport	9 133 mil.	9 381 mil.
Rail transport	2 086 mil.	2 119 mil.
Pipeline transport	1 485 mil.	1 447 mil.
Air transport	2 mil.	2 mil.
Inland waterway transport	771 mil.	716 mil.
TOTAL	**13 477 mil.**	**13 665 mil.**

Source: Croatian Bureau of Statistics, Statistical Yearbook for 2015

XIV. COMBINED TRANSPORT KILOMETRES – IN CASE (XII) / (XIII) data are not available

The preceding chapters provide separate data for passenger and tonne kilometres.

XV. POPULATION

No of inhabitants: 4 284 889 (Source: Croatian Bureau of Statistics, Statistical Yearbook for 2015; the latest census was conducted in 2011)

Number of households: 1 519 038 (avg. no of members per household 2.80)

(Source: Croatian Bureau of Statistics, Statistical Yearbook for 2015)

Population density per km^2: 75.7

Capital: Zagreb (779 145 inhabitants)

Language: Croatian

Script: Latin

Currency: Kuna (HRK or Kn)

B. Updates on major legislative and non-legislative measures implemented in the previous year which contribute towards the overall national energy efficiency targets for 2020

MAJOR REGULATORY AND NON-REGULATORY MEASURES IN 2015

Rules governing the energy savings monitoring, measuring and verification system

On 9 June 2015, the Ministry of the Economy adopted the Rules governing the energy savings monitoring, measuring and verification system (*Narodne Novine* (NN; Official Gazette of the Republic of Croatia) No 71/15). These Rules lays down the methodology of energy savings monitoring, measuring and verification, in accordance with the Energy Efficiency Act (NN No 127/14) and Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (OJ L 315, 14.11.2012).

The purpose of these Rules is to establish a system to monitor and assess the effectiveness of the energy efficiency policy implementation towards the targets as defined under Croatia's Energy Development Strategy and National Action Plan; methodologies for the monitoring and calculation of energy consumption indicators at national and sectoral levels; a method for the calculation of energy savings resulting from the implementation of energy efficiency measures and energy savings resulting from the application of energy services; a process of energy savings verification, as well as the methodology for the preparation of an Action Plan or Annual Plan.

Decree on contracting and implementation of the public sector energy service

The Croatian Government adopted the Decree on contracting and implementation of the public sector energy service (NN No 11/15) at its meeting on 29 January 2015. This Decree lays down the method of energy service contracting for the public sector, the obligations of energy service providers and clients, the content of an energy performance contract, and budgetary monitoring of the energy service for public sector energy service clients.

Rules on energy efficiency requirements of energy-related products in public procurement procedures

On 18 June 2015, the Ministry of the Economy adopted the Rules on energy efficiency requirements of energy-related products in public procurement procedures (NN No 70/15). These Rules lay down the energy efficiency requirements relating to products and services, which the central government is required to apply in public procurement procedures, insofar as consistent with cost-effectiveness, economic feasibility, wider sustainability, technical suitability and sufficient level of competition.

These Rules transpose Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (OJ L 315, 14.11.2012 (hereinafter: Directive)) into the Croatian legislation.

Rules on energy audits of large enterprises

On 4 November 2015, the Ministry of the Economy adopted the Rules on energy audits of large enterprises (NN No 123/15). These Rules lay down the method of conducting energy audits of large enterprises, the terms of issuing and repealing authorisations for energy audits of large enterprises, the content and method of keeping a register, the content of reports on energy audits of large enterprises, and other obligations related to energy audits of large enterprises.

Rules of systematic public sector energy management

On 9 February 2015, the Ministry of Construction and Physical Planning adopted the Rules of systematic public sector energy management (NN No 18/15), laying down the obligation of energy and water consumption management, the consumption analysis, the method of energy and water consumption reporting, and the methodology of systematic energy management. These Rules designate the Agency for Transactions and Mediation in Immovable Properties as the implementing body for systematic public sector energy management, and for the administration, development and use of the national Energy Management Information System (EMIS). Following (the adoption of) the Rules and Methodology, major strides have been made towards connecting metering points databases with the billing databases of energy and water suppliers and providers so that public sector data can be entered in the EMIS. Thus, the exact number of public sector buildings and their energy and water consumption will be known for the first time. In terms of EMIS development, new modules of public lighting, energy renovation and reporting have been put in place, including 98 % of all public administration buildings to date.

In addition to the existing course in the use of the national EMIS system – *ISGEonica,* as part of technical and expert assistance in the implementation of systematic public sector energy management, the (Agency's) Systematic Energy Management Department is developing training at two levels:

1. The course for energy consultants and energy users (Cr. abbreviation TESS), intended for designated persons in the public sector so that they can comply with the obligations provided for in the Rules. The goal of the course is to set up a functional structure of persons responsible for consumption monitoring and planning of energy efficiency measures in the public sector.

2. Green Office is an educational and motivational workshop intended for all public administration employees. Its goal is to make the concept of energy efficiency familiar to them through examples from everyday life and motivate them to cooperate with energy consultants and co-workers, and through individual action in their own homes. They are also encouraged to join the existing activities of the Ministry of Construction and Physical Planning (MoCPP), Environmental Protection and Energy Efficiency Fund (EPEEF) and local and regional self-government units.

C. Total building floor area of the buildings with a total useful floor area over 500 m^2 and as of 9 July 2015 over 250 m^2 owned and occupied by the Member States' central government that, on 1 January of the year in which the report is due, did not meet the energy performance requirements referred to in Article 5(1)

Not applicable in the case of Croatia, which opted for an alternative approach to the calculation of energy savings in eligible buildings owned and used by the central government.

D. Total building floor area of heated and/or cooled buildings owned and occupied by the Member States' central government that was renovated in the previous year referred to in Article 5(1) or the amount of energy savings in eligible buildings owned and occupied by their central government as referred to in Article 5(6)

Directive 2012/27/EU introduced the obligation of achieving energy savings in public buildings owned or used by central government institutions to ensure that at least 3 % of the total floor area of such buildings is renovated each year to the minimum level of investment in the public and private residential and non-residential building renovation, which must include a review of the national building stock, cost-effective approaches to renovation according to the building type and climate zones, policies and measures to encourage in-depth renovation, including a phase building renovation, a review of future market developments for the purpose of investment by private individuals, construction industry and financial institutions, as well as an assessment of expected energy savings and benefits to society at large. A uniform register of central government buildings with clearly stated energy performance of buildings is not yet fully functional. Data of the 'Put the house in order' project, which established an active energy consumption database for non-residential central government and local self-government buildings, have been used instead.

The EMIS database is used for collecting data on the measured energy and water consumption which are kept in a monthly basis, according to billing data of distributors in buildings. Out of a total of 3 700 buildings included in the EMIS project, 774 are public buildings owned by the central government.

To provide for the monitoring of savings through the energy supplied, the energy renovation of public buildings will be carried out at the national level to include 17 buildings per year (14 in continental Croatia and three in coastal Croatia), corresponding to a total heated area of 33 267 m^2 for a standard set of buildings, or else, in a range of 10 941 m^2 to 51 309 m^2 per year according to the specific saving, which differs considerably between office buildings and hospitals. This is to achieve a saving equivalent to 0.00489 PJ annually through the energy renovation of 3 % buildings per year.

The national target achieved for 2015 is 0.06136 PJ, which is more than double the planned 3 % building renovation target. A major portion of the target achieved refers to the integral renovation of the Split University Hospital Centre and student dormitories in Zagreb.

Table 18: 3 % Central government building renovation

	Planned target	Saving achieved
3 % central government building renovation	**0.00489 PJ**	**0.06136 PJ**

Source: National Energy Efficiency Coordinating Authority, EIC

E. Energy savings achieved through the national energy efficiency obligation schemes referred to in Article 7(1) or the alternative measures adopted in application of Article 7(9)

Table 19: Energy savings achieved through alternative measures					
Measure	Number of projects*	Saving [PJ]	Saving [tCO2]	Total investment amount [HRK]	Total funding paid from the Fund [HRK]
RESIDENTIAL BUILDINGS					
Programme of energy renovation of family houses, 2014-2016 – Total	4 215	0.26943	14 280.63	297 743 374.04	183 428 273.77
Programme of energy renovation of apartment buildings	136	0.07053	5 867.93	67 678 383.13	27 429 914.56
Introduction of individual thermal energy consumption metering	236	0.16486	12 511	60 241 581.94	24 079 495.42
PUBLIC SECTOR BUILDINGS					
Programme of Energy Renovation of Public Buildings (2014-2015)	1	0.03580	2 683.77	78 060 108.19	27 572 529.77
Programme of Energy Renovation of Public Buildings (2016-2020)					
COMMERCIAL NON-RESIDENTIAL BUILDINGS					
Programme of energy renovation of commercial non-residential buildings	49	0.02716	2 024.78	31 492 371.77	12 156 286.77
PUBLIC LIGHTING					
'Energy Efficient Public Lighting' programme	38	0.01985	1 819.2253	39 621 955.26	20 957 680.13
TRANSPORT					
Financial incentives for energy-efficient vehicles	5	0.01214	831.88	67 298 231.92	16 133 781.91
Promoting environmentally-friendly driving	13	0.017513	1 298.88	1 225 949.35	420 988.24
Introduction of a special motor vehicle tax based on CO2 emissions					
TOTAL	**4 693**	**0.617**	**41 318.09**	**635 889 421.9**	**308 603 902.7**

* The number of projects refers to a single beneficiary: city/county/individual. Each project may include one or several energy efficiency measures.

Source: Energy savings monitoring, measuring and verification system, EIC

Table 19 shows the alternative policy measures implemented using the Environmental Protection and Energy Efficiency Fund tenders. The data collected on all measures which have been implemented are available in the Energy Savings Monitoring, Measuring and Verification System, which includes a record of the savings calculated according to the bottom-up method.