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Assessment of climate change policies in the context of the European Semester

Country Report: Croatia



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The report provides an overview of current emission trends and progress towards targets as well as policy developments that took place over the period May 2012 to January 2013.

The content of the report represents the state of knowledge in February 2013, specific updates were made adding the latest official greenhouse gas emission data by the European Environment Agency (EEA).

Please feel free to provide any comments or suggestions to the authors through the contacts listed above.

Short summary

- **Background:** Climate policies are not receiving great interest in the general public or in political debates; but Croatia has adopted several measures mainly due to their planned accession to the EU in July 2013.
- **GHG target:** Croatia's progress toward the 2020 target cannot be directly evaluated yet, but national projections of total emissions indicate that the country is heading for a possibly significant overshooting of its goal.
- **Policy development:** Due to the financial crisis, policies related to climate change are not receiving the attention they need.

I Background on climate and energy policies

In Croatia, climate change policies receive little attention in public and political debates. There are some debates on climate change policies taking place in the society at large and in the media; however, they do not attract broad interest. Despite these facts, Croatia has adopted several climate change policies mainly due to their planned accession to the EU in July 2013. New policies are primarily focused on the usage of technologies such as nuclear power and CCS but also include the promotion of renewable energy and increases in energy efficiency. In addition, new governmental institutions such as the Fund for Environmental Protection and the Environmental Information System have been introduced over the past 10 years.

The Ministry of Agriculture, in cooperation with the Ministry for Environment and Natural Protection, is currently working on a Strategy for a Low Carbon Development of Croatia. In various sectors (waste, agriculture, transport, tourism, energy and industry, forestry), workgroups have been established that are debating new objectives and measures to be undertaken in order to achieve the 2020 goals as well as drafting projections for the year 2050. The workgroups are currently brainstorming and discussing main ideas as to what to include in the strategy.

With regard to energy policies, the latest Energy Development Strategy of Croatia (Government of the Republic of Croatia 2009) was adopted in 2009. The strategy looks ahead until 2020 and states Croatia's aim to continuously align its legislative and regulatory framework with the *acquis communautaire* in order to achieve the EU 2020 goals. The strategy outlines the following primary objectives:

- an increased security of supply of energy services;
- the security of competitiveness of the economy and the availability and affordability of energy services, and
- the promotion of environmental sustainability and the combating of climate change.

In addition, a green book on energy, a document prepared specifically for the aforementioned Strategy, foresaw projections until the year 2030 with various scenarios (the white, blue, and green scenario—each of them projecting either investments into nuclear energy, coal energy, natural gas, or a mix of these technologies (UNDP 2008).

2 GHG projections

Background information

In 2011, Croatia emitted 28.3 Mt CO₂eq (UNFCCC inventory 2011). Energy supply, energy use, and transport accounted, with approximately 20% each, for the biggest share of emissions. The sharpest drop of emissions between 1990 and 2010 was observed in energy supply due to the substitution of coal-fired production with hydropower. However, emission slightly increased again in 2011. Industrial emissions were reduced in the same period, owing mainly to decreased production of cement, lime, ammonia, and steel. Decreasing livestock populations and crop production and a declining use of mineral fertilizer has resulted in emissions reductions of 23% in the agricultural sector between 1990 and 2010. In contrast, emissions from transport increased from 1990 to 2011 by more than a third due to the growing number of vehicles and increased distances travelled (UNFCCC inventory 2011, EEA 2012c, UNFCCC 2012).

Progress on GHG target

There are two sets of targets to evaluate: 1) the Kyoto Protocol targets for the period 2008-12 (which has just ended) and 2) the 2020 targets for emissions not covered by the EU ETS.

Under the Kyoto-Protocol the emission reduction target for the period 2008-2012 has been set to minus 5 % based on 1990 levels. The latest available greenhouse gas data (for the year 2011) shows that Croatia's emissions have decreased on average by 9.8% from the Kyoto base year to 2011 (EEA 2013). Croatia is thus expected to meet its commitment by a comfortable margin through direct domestic emission reductions.

By 2020, Croatia can increase its emissions not covered by the EU ETS by 11% compared to 2005 according to Annex III of Croatia's Accession Treaty, which stipulates that the Effort Sharing Decision (ESD) ⁽¹⁾ shall be amended including this target ⁽²⁾. The methodology used to determine this figure is in principle the same as applied for the calculation of the respective targets of other Member States. According to the Annual Emission Allocations (COM 2013) Croatia can increase its non-ETS emission by 5% from 2005- 2013 and by 11% from 2005- 2020.

However, in terms of assessing progress towards these targets national projections produced by Croatia do not make a distinction between ETS and non-ETS emission so far. These projections do, therefore, not allow a straightforward evaluation of the likelihood of the ESD targets being achieved under the projections. They do, however, give an insight into projected emission pathways for the country as a whole. Impacts of a scenario "with existing measures (WEM) show that total emissions are projected to rise by more than 30% over 2005 levels by 2020 (Republic of Croatia 2010). This is mainly due to increasing emissions in energy supply and agriculture. In a scenario "with additional measures" the projected 2020 levels are almost the same, if slightly lower.

¹ Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.

² See page 55 of Annex III, available at <http://register.consilium.europa.eu/pdf/en/11/st14/st14409.en11.pdf>

These significant increases in total annual emissions, even if not differentiated between ETS and non-ETS sectors, do not seem in line with the 11% increase over 2005 levels allowed under the ESD. It is thus possibly to argue that there is a distinct likelihood that, on the basis of the measures in the scenarios, Croatia is going to overshoot its 2020 target.

Table I: GHG emission developments, ESD-targets and projections (in Mt CO₂eq)

	1990	2005	2010	2011	ESD target*		2020 Projections**	
					2013	2020	WEM	WAM
Total	31.6	30.5	28.6	28.3			41.2	40.8
Non-ETS emissions (% from 2005)		19.6	20.0	<i>n.a.</i> <i>n.a.</i>	20.6 5%	21.8 11%	<i>n.a.</i> <i>n.a.</i>	<i>n.a.</i> <i>n.a.</i>
Energy supply (% share of total)	7.1 23%	6.8 22%	5.9 21%	6.3 22%				
Energy use (w/o transport) (% share of total)	9.7 31%	8.1 27%	7.0 24%	6.5 23%				
Transport (% share of total)	4.1 13%	5.7 19%	6.0 21%	5.9 21%				
Industrial processes (% share of total)	3.8 12%	3.3 11%	3.2 11%	3.0 11%				
Agriculture (% share of total)	4.4 14%	3.5 11%	3.2 11%	3.3 12%				

Source: UNFCCC inventories; Republic of Croatia (2010); COM (2013), Calculations provided by the EEA and own calculations.

* The ESD target for 2013 and for 2020 refer to different scopes of the ETS: The 2013 target is compared with 2011 data and is therefore consistent with the scope of the ETS from 2008-2012; the 2020 target is compared to 2020 projections and is therefore consistent with the scope of the ETS from 2013-2020. Non-ETS emissions in 2005 for the scope of the ETS from 2013-2020 amounted to 19.6 Mt CO₂eq.

** 2011 projections with existing measures (WEM) or with additional measures (WAM).

Legend for colour coding: green = target is being (over)achieved; orange = not on track to meet the target

Total greenhouse gas emissions (GHG) and shares of GHG do not include emissions and removals from LULUCF (carbon sinks) and emissions from international aviation and international maritime transport.

National projections of GHG emissions up to 2020, summarised by the EEA, need to be prepared by the Member States in accordance with the EU Monitoring Mechanism ⁽³⁾ every two years, and the latest submission was in 2013. However, Croatia will only become a member of the EU in July and has not handed in 2013 projections so far.

The projections need to be prepared reflecting a scenario that estimates emissions reductions in line with policies and measures that have already been implemented (with existing measures, WEM), and an additional scenario that reflects developments with measures and policies that are in the planning phase (with additional measures, WAM) may also be submitted.

In the following two tables, these measures—as outlined by Croatia as basis for the projections as of April 2011—have been summarised with a focus on national measures

³ Decision No 280/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol.

and those EU instruments expected to reduce emissions the most ⁽⁴⁾. An update on the status of the policies and measures is included in order to assess the validity of the scenarios. Below the tables, a summary assessment can be found.

Table 2: Existing and additional measures as stated in the 2011 GHG projections

Existing Measures (only important national measures; w/o EU legislation)		Status of policy in January 2013
Energy	Regulation of Financial Incentives to Encourage Electricity Generation by Renewable Energy Sources and Cogeneration (OG 33/07, 133/07, 155/08): Feed-in tariffs for electricity generated from renewable energy sources and Cogeneration	System for getting the revenues for the feed-in tariff still in place
	Ordinance on Utilization of Renewable Energy Sources and Cogeneration (OG 67/07). The regulation sets out which renewables are promoted in Croatia.	The Regulation was updated in the second half of 2012.
	Loan programme for the preparation of RES projects through the Croatian Bank for Reconstruction and Development (HBOR)	No new changes in this field. There is no volume cap. The HBOR bank is working together with other commercial banks, and they decide how much credit they will give out.
	Promoting the use of renewable energy sources through the Environmental Protection and Energy Efficiency Fund (OG 107/03, 144/12).	Minor technical changes to the legal Act in 2012.
	CO ₂ emission charges for all stationary sources emitting more than 30 t CO ₂ /yr (Regulation on Unit Charges, Corrective Coefficients and Detailed Criteria and Benchmarks for Determination of the Charge for Carbon Dioxide Emissions into Environment (OG 73/07, 48/09))	The latest change was in 2009, changing some of the CO ₂ charge coefficients needed to calculate the exact charge.
Energy Efficiency	Promoting the use of energy efficiency through the Environmental Protection and Energy Efficiency Fund (OG 107/03).	Minor technical changes to the legal Act in 2012.
	Promoting energy efficiency through implementation of the project "Promoting energy efficiency in Croatia" in the household and service sector	These projects are renewed and evaluated on a yearly basis. The last public calls are from December 2012.
	HEP ESCO Energy Efficiency Programme (HEP ESCO is an executive agency for the Energy Efficiency Project): Development, execution and financing of energy efficiency projects, incl. modernisation, reconstruction, and refurbishment of existing plants and facilities for the public and private sectors	Implemented in the year 2010 and not updated since then
	Physical Planning and Building Act (OG 76/07, 38/09, 55/11, 90/11, 50/12, 55/12) and regulations transposing the EU Directive 2002/91/EZ on Energy Performance of Buildings	The act was implemented and in the sequence updated several times in the years 2011 and 2012.
Transport	Raising attractiveness of rail transport: development of suburban passenger rail transport, terminals at city entrances, truck transport terminals, railways electrification	This policy is being discussed in the workgroup (Transportation) for the Strategy for low carbon development of the Republic of Croatia.

⁴ The implementation of the EU-ETS has not been included. Other EU Directives have only been considered if they have been outlined in the projections as one of the main instruments to reduce GHG emissions.

	Act on Biofuels for Transport (OG 65/09, 145/10, 26/11, 144/12): Production, trade, use and storage of biofuels; Decision on the percentage of biofuels in total share of fuel (OG 52/08) setting up a percentage of biofuels in total fuel energy consumption.	The Energy Action Plan has set the following goals per year (revised if needed by the minister responsible for energy): 2012: 1.58 % share of biofuels 2013: 1.83 % share of biofuels 2014: 2.48 % share of biofuels 2015: 3.72 % share of biofuels 2016: 5.16 % share of biofuels 2017: 6.53 % share of biofuels 2018: 7.78 % share of biofuels 2019: 9.01 % share of biofuels 2020: 10.05 % share of biofuels
	Programme of decreasing the negative traffic impact on the environment: The Programme covers number of measures with aim to reduce the harmful gases emission from traffic sector and, amongst other, grant funds for replacement of non-ecological vehicles for passenger and goods with new vehicles with EURO 4 and EURO 5 standard.	The Programme received financial resources from the government equal to 50 mil HRK in 2010 (app. 6.5 mio. EUR) (See EIHP).
	Utilisation of biodegradable municipal wastes in district heating plants or landfill biogas (in accordance with the Waste Management Plan of the Republic of Croatia (OG 85/07): Collected gas which could not be used for energy generation must be burnt at the flare. Landfills need to be equipped with the systems for collection and treatment of landfill gas.	The Waste management plan is scheduled to run up to 2015. The majority of local municipalities have adopted their waste management plans depending on their local circumstances.
Other non-ETS sectors	Efficient management of organic manure: Implementation and encouraging sustainable agricultural practices (in accordance with the Nitrate Directive), and adopting best procedures in agricultural production. Co-financing for investments in constructions and equipment for storage and distribution of fertilizers and promotion of agri-environmental measures.	Upon implementation of the Nitrate Directive following Acts were changed as well: Regulation to protect agricultural land from contamination with harmful substances Regulation on Environmental Impact Assessment Plant Protection Act Law on Agricultural Land An investment fund for lowering nitrate pollution has also been implemented.

Source: Republic of Croatia (2010).

Additional Measures: Still to be implemented (only important national measures; w/o EU legislation)		Status of policy in January 2013
Energy	Construction of a 1,000 MW nuclear power plant in 2024; Decision in 2012	No final decision yet, the current plans have a status more akin to a political aspiration than a formal plan.
	Construction of Carbon Capture and Storage system on new coal-fired power plants (commercially available, in assumptions, in 2020).	No final decisions yet. Just discussions about the potential Croatia has for using CCS
	Implementation of technology for enhanced oil recovery (EOR) by CO ₂ injection (if oil price will be high enough)	No information other than pure speculation available.
Other non-ETS sectors	Thermal treatment of municipal waste in power plant in Zagreb	No information other than pure speculation available

Source: Republic of Croatia (2010).

According to the current state of implementation, some of the existing measures may not have been (or are no longer) realised to the full extent assumed under the scenario.

However, a detailed quantitative evaluation is not available at this point. The progress on additional measures is small, as they include the usage of large scale technological approaches. In sum, the assessment of the WEM/WAM scenarios indicates a risk that emissions may be higher than anticipated.

3 Evaluation of National Reform Programme 2012 (NRP)

In April of each year, Member States are required to prepare their National Reform Programmes (NRPs), which outline the country's progress regarding the targets of the EU 2020 Strategy. The NRPs describe the country's national targets under the Strategy and contain a description of how the country intends to meet these targets. For climate change and energy, three headline targets exist: 1) the reduction of GHG emissions, 2) the increase of renewable energy generation, and 3) an increase in energy efficiency ⁽⁵⁾.

The Republic of Croatia did not submit a National Reform Programme as the country is not yet a member of the EU.

4 Policy development

This section covers significant developments made in key policy areas between May 2012 and January 2013. It does not attempt to describe every instrument in the given thematic area. The time-frame was chosen based upon the release of the National Reform Programmes (in the section above) in April 2012, which contain the status quo for policy on most topics.

Horizontal Issues

Based on the 2020 projections that foresee investments in energy-efficient buildings, greater biomass utilisation, the installation of solar thermal systems, and wind energy, approximately 14,500 new jobs should be created in addition to 65,000 indirect or induced jobs. These investments are estimated at about 8-10 billion € (UNDP 2010). This is very important, as Croatia is facing a serious unemployment problem at the moment, with unemployment rate at a record high of 21.1% and as many as 370,000 people jobless (HZZ 2012).

Environmental Taxation

Croatia has instituted comprehensive excise taxes and charges in a variety of environmental areas, including on energy products, water use and wastewater treatment, transport, pollutant emissions, and waste management (OECD 2013). A functioning Payment for Ecosystem Services scheme for the forestry sector was implemented in 1991 (Vuletic et al. 2010). Energy taxes, however, are fairly low in comparison with the

⁽⁵⁾ There are specific targets for all MS by 2020 for non-ETS GHG emission reductions (see section 2) as well as for the renewable energy share in the energy mix by 2020 (see section 4, renewable energies). Specific energy efficiency targets will be defined (or revised) by the MS until the end of April 2013 in line with the methodology laid out in Article 3 (3) of the Energy Efficiency Directive (Directive 2012/27/EU).

EU average. In 2009, energy taxes had only a 3% effect on electricity prices, far below the EU average of 16.8%. Meanwhile, Croatia assessed no taxes on natural gas (Spassova and Garello 2010).

The Croatian Government reformed the Excess Duty Tax at the beginning of January 2013 with the consent of Parliament. This amendment foresees a “special” duty tax on cars for their CO₂ emissions. The tax will apply after July 2013. Details have not been made public, since the law is still awaiting the signature of the President ⁽⁶⁾.

Energy Efficiency

The energy intensity of the Croatian economy declined at a rate of 7.3% between 2005 and 2010, consistent with the EU average of 7.7%. However, it is still the eleventh-most energy intensive economy in the EU. The decline took place while overall energy consumption increased: end use was 7.2% higher in 2010 than the 2001-2005 average. Industrial energy consumption declined due to the global economic crisis, but increases in the transport and service sectors counterbalanced the reductions (Eurostat 2013).

The main support schemes in terms of promoting energy efficiency are financial incentives for investments into energy-efficient products. Financial support is provided through the Fund for Environment Protection and Energy Efficiency, which has been in operation for quite some time and has contributed to national energy efficiency gains in the past. The fund is mainly financed through diverse environmental taxes, including pollution fees, environmental user fees, etc. The fund publishes new public calls on a yearly basis depending on the amount of allocated funds. Currently, public calls for the energy sector are open, whilst the ones for environment protection are still being prepared. All citizens and entrepreneurs, as well as municipalities and civil movements, are eligible for support under the given terms. Some public calls are sector-specific (only for touristic buildings).

Renewable Energy

The share of renewable energy in total energy consumption increased in Croatia between 2005 and 2010, albeit slowly, from 14.1 to 14.6%. Croatia thus finds itself in a good position to meet its 2020 goal of 20%, but the pace of improvement must pick up. The electricity sector shows promise: the percentage of electricity consumption covered by renewable sources increased from 36.2% to 45.1% between 2005 and 2010 (Eurostat 2013).

Renewable energies are mainly promoted through a support scheme (feed-in tariffs for renewable electricity generation) and loans or non-reimbursement incentives allocated to renewable energy projects under the Fund for Environment Protection and Energy Efficiency. These incentives have been in place for quite some time and are renewed on an annual basis, building on the experiences and the realised figures of the previous year (updated in December of every year).

In 2012, the government wanted to reduce the feed-in tariff for PV installations due to rising PV installation figures and the resultant problems this created for staying within the

⁶ The Act needs to be signed by the president and is not yet published by the legislator. The media however did report some of it. See 24 SATA (2013).

planned budget. For 2013, the renewable energy levy for final consumers that finance the feed-in tariff has not been increased, while the cap for PV installations has been raised to 15 MW for integrated PV and 10 MW for non-integrated PV (from 10 and 5, respectively). Certain limitations apply also to wind power plants (such as the need to get a list and wait for approval before connecting to the grid) and are hindering a greater deployment of renewable generation capacity.

Energy Networks

In the Energy Development Strategy of Croatia, smart grids are mentioned as being one of the tools for the development of a more localised, sustainable grid. Emphasis is also put on building more local heating distribution grid.

Transport

As can be seen in Table 1, GHG emissions from the Croatian transport sector increased from 2005 to 2010 which also resulted in an increase of the share of transport emissions in total emissions to 21%. From 2010 to 2011 transport emissions decreased slightly with still having a share of 21% on total emissions. Vehicle taxation is so far carried out on the basis of engine size, and fuel charges currently make up more than 50% of the cost of fuel (GFEI 2010).

The transport sector is most challenging due to rising individual mobility in Croatia and associated GHG emissions. Today, emissions are mainly caused by the high volume of transit that goes through Croatia (geographic positioning). In the past 20 years, highways have been given priority over other means of transportation; this has left railroads and maritime transport fairly neglected. The government has on numerous occasions stated that the investment into railroads, as well as the “forgotten” river transportation would increase. Most of the investment projects rely on EU funds ⁽⁷⁾.

To address rising GHG emissions, the government has already implemented a biofuel mixing obligation as well as a programme to reduce negative traffic impacts on the environment, which includes grant funds for exchanging dirty vehicles for new ones. In addition, a “special” duty tax on cars based on their CO₂ emissions will be implemented this year (see also section about taxation). As of July 2013, the CO₂ tax will be calculated on top of the car price (in addition to the VAT). This planned legislative change has led to some rather heavy debate in the past weeks ⁽⁸⁾.

Agriculture

GHG emissions from agriculture are an important source of non-ETS GHG emissions. They amounted to approx. 3.3 t CO₂eq, which represents about 11% of total emissions, in 2010. From 1990 to 2010, GHG emissions dropped in the agricultural sector mainly as a result of the broader Balkan conflict and due to optimisation of production processes and techniques. However, GHG emissions are projected to increase up to 2020 due to an

⁷ See for more information: www.hznet.hr/konferencija-o-ulaganjima-u-zeljeznicu; <http://klima.mzoiip.hr/default.aspx?id=333>; www.vecernji.hr/vijesti/velika-ulaganja-zeljeznicu-luke-clanak-459163

⁸ The Act needs to be signed by the president and is not yet published by the legislator. The media however did report some of it. See 24 SATA, 2013.

expected increase of agricultural land and associated mineral fertilizer outputs as well as increased animal breeding.

Some measures are in place to reduce GHG emissions from agriculture, such as a prohibition on agricultural burning and the co-financing of agri-environmental measures. In addition, the Croatian state is promoting the objectives of its agricultural climate policies through the Croatian Bank for Reconstruction and Development (HBOR), which supports measures that aim to protect the environment (Ministry of Environmental and Nature Protection 2012). However, there have been no major developments in the recent past to address the expected GHG emission increases.

Waste

In the waste sector, the government has implemented certain measures to avoid waste generation and reduce its hazardous properties. These objectives are defined by the Waste Management Strategy and Waste Management Plan in the Republic of Croatia (Government of the Republic of Croatia 2007). A focus is on landfill management and the reduction of GHG emissions through landfill gas capture and use.

LULUCF

The Croatian government has adopted an ambitious plan to achieve 100% sustainable forest management of state-owned forests. The protection, use, and management of forests and forest land is managed by the Forest Act and the Forest Management Area Plan (FMAP) for the Republic of Croatia. According to the Forest Management Area Plan (for the period 2006 - 2015), forests and forest land cover 47.5% of the country's total surface area. Approximately 95% of the forests in Croatia were formed by natural growth, and 5% of the forests were planted artificially. As of today, the Management Plan foresees the goal of "business as usual", but this may be affected by energy strategies (for example, if biomass were to become a more central element of the strategy) (UNFCCC 2011).

5 Policy progress on past CSRs

As part of the European Semester, Country Specific Recommendations (CSRs) for each MS are provided by the EU Commission in June of each year for consideration and endorsement by the European Council. The recommendations are designed to address the major challenges facing each country in relation to the targets outlined in the EU 2020 Strategy.

The Republic of Croatia has received no country specific recommendations in 2012, since not yet member of the EU.

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