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

## Country Report: Greece



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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:** *The former government promoted a green growth strategy in 2011. However, the economic crisis has displaced climate change concerns downwards on the political agenda.*
- **GHG target:** *The 2011 non-ETS emissions were below of the 2013 emission allocation but according to the latest national projections Greece is expected to miss its 2020 target with existing and additional measures.*
- **Policy development:** *Policy development was slower, less efficient, and in cases unfavourable for specific sectors, in comparison to previous years.*

## I Background on climate and energy policies

Climate change policy is receiving gradually less attention in Greece. A National Climate Change Programme has been in force since 2003 and was last revised in 2007. It defines necessary measures to achieve Greece's Kyoto target for 2008-2012. However, a follow-up programme has not yet been developed. Greece showed large emission reductions from 2005 to 2011 (-15%) (see Table 1). However, this is mainly due to a drastic decrease of emissions in almost every sector resulting from the economic crisis, and not the effect of ambitious climate policies.

The former socialist government that was in office until November 2011 <sup>(1)</sup> pursued a green economy agenda as one main pillar of its economic growth strategy, which targeted sustainable natural resource management, waste management, the shift to renewable energy, and energy efficiency. The strategy further envisaged a 65% reduction of greenhouse gas emissions by 2050 (Friedrich Ebert Stiftung 2012). Furthermore, one of the government's first actions was to rename the Ministry of Environment, Planning, and Public Works into Ministry of Environment, Energy, and Climate Change.

However, the heavy economic crisis has hampered action on climate mitigation. The second economic adjustment programme that currently dictates policy measures in Greece integrates green growth only to a limited extent into the requested overall economic and financial policies. Several civil society organisations have cautioned that environmental and climate policy have fallen prey to the economic downturn (Ekathimerini 2012). It also has to be taken into account that the framework for climate policy is changing very quickly while Greece is implementing the adjustment programme. This is especially relevant for renewable energy, since Greece agreed to a substantial reform of the RES support scheme by 2013 as part of the December 2012 Memorandum of Understanding, signed by the Greek government as a review to the second economic

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<sup>1</sup> In November 2011, a coalition government was formed and Lukas Papademos, former President of the Bank of Greece, was appointed as an interim Prime Minister. Election took place in May and June 2012 and a coalition between the centre-right wing party, Nea Dimokratia, which won the election but did not ensure the necessary majority in the Parliament, the centre-left wing Party PASOK, and the party of Democratic Left was formed.

adjustment programme. Other important reform targets are, for instance, electricity pricing and the implementation of smart meters (European Commission 2012).

Generally, climate policy in Greece focuses on the promotion of renewable energies and energy efficiency measures. Greece is still heavily reliant on imported fossil fuels for its electricity production (ΥΠΕΚΑ 2012c). However, the government envisages deriving 20% of final energy consumption from RES by 2020; this is even higher than the 18% target set at EU level.

The government regards investment in green energy, a “national priority”, and renewable energy production is growing quickly, especially regarding wind energy and photovoltaic (Bloomberg 2012). In April 2012, the ministry for energy and climate change proposed a Renewable Energy Roadmap for 2050 (ΥΠΕΚΑ 2012c). The different scenarios outlined in the draft suggest that more ambitious policies are necessary to reduce emissions by 80% in 2050, as agreed on at the EU level.

## 2 GHG projections

### Background information

In 2011, Greece emitted 115.0 Mt CO<sub>2</sub>eq (UNFCCC inventory 2011), 10% more than in 1990. Almost half stems from energy supply. Emissions in the sector increased by 20% between 1990 and 2010, reflecting the high share of oil and coal in the energy supply mix. Similarly, emissions from transport increased by over 50% in that period as a result of increased road transportation and a growing vehicle fleet. In contrast, emissions from energy use and industrial processes were reduced, especially within the last five years as a result of the economic crisis. Reduced fertilizer use and introduction of wet manure management with livestock resulted in decreased emissions from agriculture (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 Greece for the period 2008-2012 has been set to plus 25 % based on 1990 for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O and on 1995 for F-gases. An evaluation of the latest complete set of greenhouse gas data (for the year 2011) shows that Greece’s emissions have increased by 7.5% since from the Kyoto base year to 2011 (EEA 2013a). Greece is therefore going to meet its Kyoto target through domestic emissions reductions directly.

By 2020, Greece needs to reduce its emissions not covered by the EU ETS by 4% compared to 2005, according to the Effort Sharing Decision (ESD) <sup>(2)</sup>. The latest data suggest that Greece is almost on track at present with emissions being 5% lower in 2011

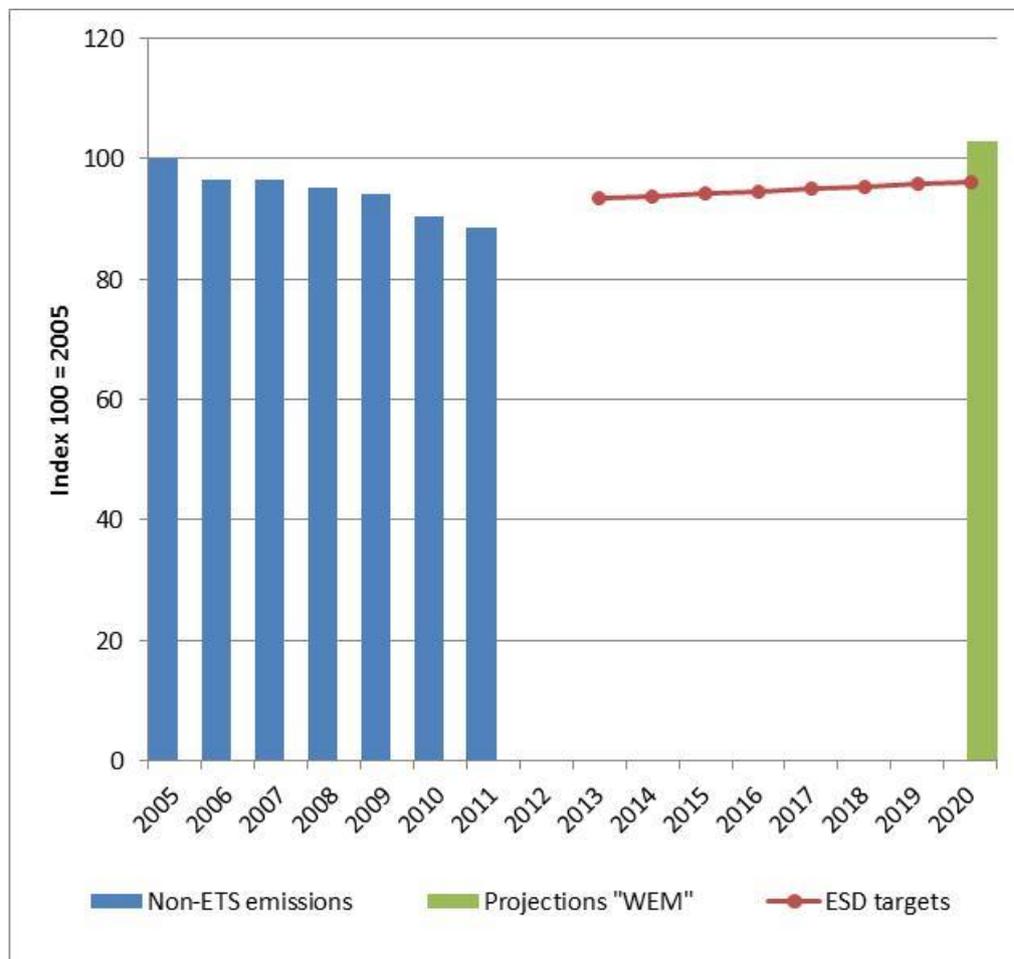
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<sup>2</sup> Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community’s greenhouse gas emission reduction commitments up to 2020.

than the Annual Emissions Allocation (COM 2013) for the year 2013. However, up to 2020 national projections show that Greece is expected to fail to meet its target under both scenarios with existing and additional measures <sup>(3)</sup> (EEA 2012c, 2013b).

Figure 1 shows non-ETS emissions until 2011, its targets under the ESD for the period 2013-2020 and projections with existing measures for 2020.

**Figure 1: Non-ETS emission trends and projections compared to the ESD targets**



Source: EEA. Projections are based on 15/04/2013 draft GHG inventory submissions under the UNFCCC and MS projections submitted

<sup>3</sup> Calculations are based on domestic emissions only, without accounting for possible use of flexibility options. The 2020 targets and 2005 non-ETS emissions are all consistent with 2013-2020 ETS scope, i.e. they take into account the extension of the ETS scope in 2013 and the unilateral inclusion of installation in 2008-2012.

**Table I: GHG emission developments, ESD-targets and projections (in Mt CO<sub>2</sub>eq)**

	1990	2005	2010	2011	ESD target*		2020 Projections**	
					2013	2020	WEM	WAM
Total	104.6	134.9	117.3	115.0				
Non-ETS emissions (% from 2005)		63.0	56.9	55.9 -11%	58.9 -7%	58.9 -4%	62.9 3%	60.9 -1%
Energy supply (% share of total)	43.2 41%	58.2 43%	52.2 45%	54.0 47%				
Energy use (w/o transport) (% share of total)	18.2 17%	24.8 18%	16.6 14%	16.4 14%				
Transport (% share of total)	14.5 14%	21.7 16%	22.1 19%	20.3 18%				
Industrial processes (% share of total)	10.1 10%	13.9 10%	10.5 9%	8.9 8%				
Agriculture (% share of total)	11.5 11%	9.5 7%	9.3 8%	9.0 8%				

Source: UNFCCC inventories; EEA (2012c, 2013b); 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 61.3 Mt CO<sub>2</sub>eq.

\*\* 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 <sup>(4)</sup> every two years, and the latest submission was in 2013. However, Greece has not handed in new projections so far since 2011.

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 the Member States as basis for their projections as of April 2011 - have been summarised with a focus on national measures and those EU instruments expected to reduce emissions the most <sup>(5)</sup>. An update on the status of the policies and measures is included in order to assess the validity of the scenarios. Below the tables you will find a summary assessment.

<sup>4</sup> 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.

<sup>5</sup> 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.

**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	Gradual decommissioning of old, inefficient thermal power units and commissioning of new ones – increase of natural gas share in electricity production	No further development
	Increase natural gas consumption in all sectors	No further development
	Promotion of RES for electricity generation	L3851/2010 has been amended and has been revised 3 times during 2012 (FiT revisions/ reductions- in aggregate 50% approximately and solidarity levy- 25%-30% of the yearly turnover for PV installations and 10% for RES operating plants)
Energy Efficiency	Partial implementation National Energy Efficiency Action Plan for industry and residential sector	Programmes such as "Exoikonomo II", Green Pilot Urban Neighbourhood or "Bioclimatic Renewal of Urban Spaces", Building the Future are Programmes included in the National Energy Efficiency Action Plan and are realized
Transport	Biofuel use in transportation	No further development
Infrastructure	Interconnection of islands to mainland's electrical grid	Call planned to reopen in March

Source: Reporting of MS in accordance with Decision No 280/2004/EC about their GHG emission projections up to 2020, April 2011

Additional Measures (only important national measures; w/o EU legislation)		Status of policy in January 2013
Energy	Wider use of RES for electricity generation	L3851/2010 has been amended and has been revised 3 times during 2012 (FiT revisions/ reductions- in aggregate 50% approximately and solidarity levy- 25%-30% of the yearly turnover for PV installations and 10% for RES operating plants)
	Wider use of CHP	No further development
	Wider use of natural gas in all sectors	No further development
Energy Efficiency	Full implementation: National Energy Efficiency Action Plan	Programmes such as "Exoikonomo II", Green Pilot Urban Neighborhood or "Bioclimatic Renewal of Urban Spaces", Building the Future are Programmes included in the National Energy Efficiency Action Plan and are realized

Source: Reporting of MS in accordance with Decision No 280/2004/EC about their GHG emission projections up to 2020, April 2011

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. For example, this applies to the RES support scheme. However, a detailed quantitative evaluation is not available at this point. Some progress has been made to advance additional policies. However, only a small number of additional measures were

considered, and overall, these measures were not expected to significantly alter the emissions trajectory assumed for the WEM scenario.

Measures listed under both the WEM and WAM scenario are very generic, making it difficult to determine the status of implementation. In sum, the assessment of the WEM/WAM scenarios indicates a possible risk that not all emission limitation or reduction effects may be realised.

### 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 <sup>(6)</sup>.

In the following table, the main policies and measures as outlined in the NRP of April 2012 <sup>(7)</sup> have been summarised, and their current status (implemented, amended, abolished, or expired) is given, with specifics on latest developments.

**Table 3: Main policies and measures as outlined in the NRP, April 2012**

<b>L3851/2010 (Law No.3851/2010, ("Accelerating the development of Renewable Energy Sources to deal with climate change and other regulations addressing issues under the authority of the Ministry of Environment, Energy and Climate Change"))</b>	
Status as stated in the NRP	implemented
Status as per Jan 2013	L3851/2010 has been amended and has been revised three times during 2012 (FiT revisions/ reductions- in aggregate 50% approximately and solidarity levy- 25%-30% of the yearly turnover for PV installations and 10% for RES operating plants)
Description of policy or measure	L3851/2010 streamlined the licensing procedure for RES installations. Especially small RES plants were exempted e.g. from being issued an installation license. A retroactive reduction of the FiT for PV took place in 2012 and a solidarity levy was imposed on all RES plants in November 2012

<sup>6</sup> 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).

<sup>7</sup> All NRPs are available at: [http://ec.europa.eu/europe2020/documents/related-document-type/index\\_en.htm](http://ec.europa.eu/europe2020/documents/related-document-type/index_en.htm)

<b>L3855/2010 (Energy efficiency law)</b>	
Status as stated in the NRP	implemented
Status as per Jan 2013	The regulations are being implemented
Description of policy or measure	Stipulates establishment of an energy audit system in the residential and tertiary sectors and the rules for the founding and operation of energy services providers
<b>“Energy Efficiency at Household Buildings” Programme</b>	
Status as stated in the NRP	Implemented
Status as per Jan 2013	The regulations are being implemented
Description of policy or measure	The Programme aims at improving the energy performance and efficiency of residential buildings through the provision of interest-free loans and subsidies for the installation of RES and energy-saving measures.
<b>“Energy Efficiency at Household Buildings” Programme</b>	
Status as stated in the NRP	implemented
Status as per Jan 2013	The call ended at the end of June 2012. Municipalities and public authorities willing to participate have submitted their proposals
Description of policy or measure	The Programme aims at supporting public authorities to introduce a sustainable development plan towards the reduction in energy consumption
<b>“Building the Future – Large Scale Interventions”</b>	
Status as stated in the NRP	implemented
Status as per Jan 2013	The Programme is at the first stage of its implementation, where large scale interventions (energy efficiency technologies) in buildings are foreseen
Description of policy or measure	Programme which aims at energy interventions in buildings and envisions the installation of solar panels
<b>“Green Pilot Urban Neighbourhood”</b>	
Status as stated in the NRP	implemented
Status as per Jan 2013	A pilot neighbourhood in Aghia Barbara, a suburb in Athens with four 4-storey buildings with a total surface of 2,500 m <sup>2</sup> , has been selected and necessary interventions (e.g. installation of thermal insulation, of geothermal heat pumps, of green roofs, of PV and solar thermal units) have been realised.
Description of policy or measure	Programme provides for the replacement of systems for heating and cooling with geothermal heat pumps and the installation of other RES applications Aim of that Pilot Programme is to make a neighbourhood with zero carbon balance.

**“Bioclimatic Renewal of Urban Spaces”**

Status as stated in the NRP	implemented
Status as per Jan 2013	52 locations in urban areas were selected in December 2012, the budget has been allocated
Description of policy or measure	Supports the development of certain architectural and climatic tools that can be directly used for the bioclimatic upgrading of urban spaces.

**“Green agricultural and island communities – New development model”**

Status as stated in the NRP	implemented
Status as per Jan 2013	call ended in September 2012 and the list of successful applicants is expected
Description of policy or measure	Programme comprises the deployment of RES applications, such as electricity generation plants, RES in buildings, desalination units that use RES, etc., in islands and remote villages. Complementary to "Building the Future" Programme

**“Pilot bioclimatic school buildings” and “Pilot RES and EE projects on existing public school buildings”**

Status as stated in the NRP	implemented
Status as per Jan 2013	197 energy upgrade interventions (installation of thermal insulation, of RES as well as public awareness campaigns) in 300 public schools have been financed (March 2012) and realized
Description of policy or measure	Funds interventions in school buildings

## 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.

### Environmental Taxation

The Greek economy exhibited high energy intensity and was just slightly below the EU average in 2010. This is combined with an implicit tax rate on energy of 105.4 €/tonne oil equivalent in 2009, and this value was also below the EU average. This combination results in low revenues from energy taxes as a percentage of GDP. With 1.6%, they were among the lowest in the EU in 2010 (20<sup>th</sup> highest). Revenues from environmental taxes, in terms of GDP, are higher (2.4% and 15<sup>th</sup> highest among the MS) (Eurostat 2012).

Within the framework of the economic adjustment programme, major reforms of the taxation structure will be implemented. These reforms reflect a limited shift of taxation from labour to environment and energy consumption. For instance, an excise duty was

introduced on electricity in January 2011 and on natural gas in September 2011, and a uniform tax on diesel and heating oil <sup>(8)</sup> was imposed (€330/1,000lt) in 2012 (Υπουργείο Οικονομικών 2012). The tax on heating oil was raised by around 450% in autumn 2012 to equalize taxes on heating oil and diesel. This has led to a 70% decrease in sales. There are also reports that people are turning to firewood instead of heating oil, which has caused a rise in air pollution (New York Times 2013).

Additionally, Greece committed to ensure that electricity prices reflect costs, e.g. by phasing out regulated prices for all but vulnerable customers by June 2013 (European Commission 2012). As a consequence, as of January 2013, electricity prices were raised by around 8% for private households and by around 15% for commercial, agricultural, and industrial users (Reuters 2013a). This is a drastic increase, when considering that 700,000 people were already unable to pay their electricity bills (Reuters 2013b). Further increases of electricity rates are expected for May and July (Ekathimerini 2013).

### **Energy Efficiency**

The energy intensity of the economy decreased at a moderate pace (-9.3%) from 2005 to 2010. Total energy consumption followed the same downward trend with a decrease of 5.2% compared with the 2001-2005 average. This is a result from a decrease in the residential and industrial sector that exceeded the increase in consumption in the transportation sector.

Next to the promotion of renewable energy, measures on energy efficiency are a priority in Greece's climate policy. However, as the economic adjustment programme does not feature any energy efficiency-related measures, implementation might not be a political priority at the moment.

"Building the Future" is a programme aiming at implementing modern energy-efficiency technologies to upgrade the energy performance of residential and factory buildings. Within this framework, policy instruments, such as white certificates, voluntary agreements between the industrial and the commercial sector, and contracts of guaranteed performance are planned to be introduced. The first stage of the programme includes 150,000 buildings, in which a number of energy technologies will be implemented. The budget of the Programme amounts to €50 million and the first stage of the Programme is about to be initiated.

Several small financial support programmes were launched in 2012. These include the "Green agricultural and island communities – New development model". The Programme has a total budget of €50 million and promotes the installation of RES and energy efficiency measures in remote and island areas of Greece with less than 1000 inhabitants (ΕΣΠΑ 2012b). The call for applications ended on the 23<sup>rd</sup> of September 2012 and the list with the approved applications is expected.

An "Energy Efficiency of Household Buildings" Programme (Εξοικονομώ κατ'οίκον) is aiming at improving the energy performance and efficiency of residential buildings through the provision of interest-free loans and subsidies for the installation of RES and energy-saving measures. The Programme foresees a budget of €396 million and is expected to last until 2017 (ΥΠΕΚΑ 2012b).

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<sup>8</sup> Previously the implicit tax on heating oil was lower.

The Renewable Energy Roadmap 2050 (see below) also foresees significant energy efficiency improvements. Proposed measures include energy certification and upgrade of buildings, the introduction of white certificates for energy service companies and the electrification of transport (ΥΠΕΚΑ 2012c).

### **Renewable Energy**

Greece's share of renewable energy in total energy consumption was among the lowest in the EU in 2010. At 9.2% of the total final gross energy consumption, Greece is only half way on reaching its goal of 18% by 2020. The share of electricity consumed that is generated from renewable sources was 16.68% in 2010 and increased substantially from 10.04% in 2005 (Eurostat 2013).

The production of renewable energy is increasing rapidly and plays an important role in the overall economic reform. Total capacity of RES installations increased by 44% to more than 2,500 MW from 2010 to 2011. Until recently, feed-in tariffs for renewable energy in Greece, as determined by Law L3851/2010 (amendment of the L3468/2006) were the most generous in the EU (MEEC 2010). Guaranteed tariffs especially supported the expansion of photovoltaic. The total installed PV capacity more than doubled from 624 MW in 2011 to 1,536 MW in 2012. Total installed capacity in 2008 was only 11 MW (HELAPCO 2013). However, the generous tariffs were insufficiently financed and have caused a significant deficit of around €280 million in the renewable energy special account, the main funding instrument for the promotion of renewable energy.<sup>9</sup> The government was just forced to take drastic measures, primarily targeting PV installations, in order to erase the financing gap by 2014 as agreed in the economic adjustment programme.

In January and August 2012, the Ministry for Environment and Energy decided to reduce guaranteed feed-in tariffs for new PV installations without retroactive effect by up to 46% (PV Magazine 2012). Furthermore, the Ministry declared that a €2 charge per MWh would be applied to electricity produced by lignite. 10 million tons of carbon credits would be sold to fill the special account, and parts of the television license fee would be transferred to the special account (Renewable Energy Magazine 2012). In August 2012, the licensing of PV installations was suspended because the national PV target of 1,500 MW for 2014 was already exceeded.<sup>10</sup> The RES levy, the fee financing feed-in-tariffs through the electricity bill, was also raised several times in 2012 and most recently in January 2013 from €7.50/MWh to €9.30/MWh (Ekathimerini 2013). Finally, in November 2012, a new law was introduced which imposes a solidarity contribution of up to 30% on revenues from PV installations and 10% on revenues from other operating RES plants. The law applies retroactively from 1 July 2012 creating a rather uncertain and unfavourable environment for investment. Some investors have announced to challenge the measure (PV Magazine 2012).

The Greek government also committed to substantially reform the support scheme for RES by June 2013. The Ministry for Environment and Energy has already published a report in May 2012 that was composed by various RES stakeholders and outlines several

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<sup>9</sup> The special account is created by art. 143 of Law 4001/2011.

<sup>10</sup> Decision nr. Y.A.P.E/F1/2300/oik.16932

options to reform the schemes. Apart from describing the current situation the report includes a comparative analysis of different RES support schemes. The continuation of the FiT regime in Greece was advocated but coupled with the introduction of a systematic, programmed, gradual degeneration mechanism. The report also considers a feed-in premium support scheme but only after the deficiencies of the electricity market are tackled and the RES market has been rendered "mature". A quota system was deemed as inappropriate (ΥΠΕΚΑ 2012e).

In April 2012, the Ministry published a proposal for a Renewable Energy Roadmap 2050 that outlines different scenarios for the achievement of GHG emissions and RES targets. The government envisages deriving 20% of final energy consumption from RES by 2020 (60-70% in 2050); this is even higher than the 18% target set at EU level. The share of RES in total electricity production is to be at 40% in 2020 (80%-100% in 2050), 10% in transport and 20% in heating (ΥΠΕΚΑ 2012c).

One of Greece's lighthouse projects is the project "Helios", which aims at installing up to 10 GW of PV by 2050 on an area of around 200 km<sup>2</sup>, mainly for export to other EU member states. The legal national framework for the Helios Project and the export of energy to other EU member states was finally adopted in March 2012 with law 4062/2012 (ΥΠΕΚΑ 2012d). The law foresees the establishment of a respective legal entity that is responsible for the licensing and construction of the PV project and for the development of required infrastructure the operation of the project. A special contract lasting 25 years is to be signed by the producer and the system operator to connect the project to the grid. With this law, the transposition of Directive 2009/28/EC was also realised (ΥΠΕΚΑ 2012). However, no further developments have been identified in the last 6 months although the first plant was planned for 2013. At this point of time it rather seems that the project has been "frozen" and is heading for cancellation due to increased investment costs for the reinforcement of the grid and the question who will purchase the generated electricity and at what price.

### **Energy Networks**

The capacity of the electricity grid is one of the key challenges with a view to the expansion of renewable electricity production. The network might need €1 billion investment to handle the RES supply (UK Trade and Investment 2013). Greece's proposed Renewable Energy Roadmap 2050 foresees, inter alia, substantial development of the electricity infrastructure and the expansion of smart grids.

As part of the economic adjustment programme, Greece took measures to unbundle the electricity network. In March 2012, a new distribution system operator was created; a new transmission system operator was created in February 2012 but its certification is still waiting approval from the European Commission. The economic adjustment programme also requires Greece to privatise Public Power Corporation in 2013 (European Commission 2012).

The tender for the interconnection of a group of Aegean Islands to the continental electricity grid, a project that is also co-financed by the European Union (ΕΣΠΑ 2012a) was cancelled in 2012. There were initially two bids by two joint ventures. Even though one bid was at first accepted, the tender was annulled since budgetary differences emerged, and the tender is expected to open again at the beginning of 2013 (Capital 2012).

## Transport

Total energy use and GHG emissions from the transport sector increased between 2005 and 2010 (Eurostat 2013 and see Table 1), even though the average emissions from newly registered Greek vehicles improved by 6% between 2005 and 2010. Transport taxation excluding fuels amounted to 7% of GDP in 2010 (9<sup>th</sup>-highest in the EU) (Eurostat 2012). From 2010 to 2011 emission could be reduced below 2005 levels and the emission efficiency of newly registered cars could further be improved. They emit on average 133.1 g CO<sub>2</sub>/km which is 4% above the EU average (EEA 2012e).

Greece's transport policy is currently concerned with the liberalization of the transport market rather than with reducing transport emissions. The economic adjustment programme primarily encourages the reduction of transport prices and the growth of the tourism sector, including maritime transport and aviation (European Commission 2012). No major measures have been taken in the last months to address CO<sub>2</sub> emissions from transport.

Since 2011, the circulation tax for private cars is based on CO<sub>2</sub> emissions (and engine capacity), while commercial vehicles are taxed based on the weight of the vehicle (Υπουργείο Οικονομικών 2011). As of 2013, a luxury tax applies which also covers cars exceeding 1,929 cc engine capacity cars (Ernst & Young 2013). There is no support for the purchase of electric vehicles.

## 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. In the following table, those CSRs that are relevant for climate change and energy that were adopted in 2012 are listed, and their progress towards their implementation is assessed.

No CSRs related to climate change and energy were issued for Greece in 2012.

## 6 References

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