

DRAFT

THE LOW-CARBON DEVELOPMENT STRATEGY OF CYPRUS



The Republic of Cyprus
Ministry of Agriculture, Natural Resources and Environment
Department of Environment

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THE LOW-CARBON DEVELOPMENT STRATEGY OF CYPRUS TO 2050

I. INTRODUCTION

Climate change is currently considered as one of the greatest challenges to mankind in the 21st century. Climate change is a global issue, and measures designed to reduce it cannot be successful unless the nations of the world act together in a coordinated and harmonious manner. The countries of the world have joined forces under the auspices of the UN Framework Convention on Climate Change (UNFCCC), which was agreed in 1992 and entered into force in 1994, and the Kyoto Protocol to that Convention, which was agreed in 1997 and took effect in 2005. These nations (196 parties to the UNFCCC and 192 parties to the Kyoto Protocol) work within the boundaries of the Framework Convention in order to coordinate measures for mitigation and adaptation to climate change. Cyprus is a party to the UNFCCC and the Kyoto Protocol.

This Strategy is the first long term low-carbon development strategy that the government of the Republic of Cyprus has ever adopted. It is conceived as a framework for action and government involvement in low-carbon development. The Strategy will be kept under review in view of new scientific knowledge, developments in international co-operation to combat climate change, and governmental emphases. Any updates to this strategy shall be communicated to the European Commission according to the requirements of Regulation 525/2013, Article 13(1)b and the relevant provisions in the implementing Regulation no. 749/2014.

IMPORTANT MILESTONES

1992 Adoption of the United Nations Convention on Climate Change (UNFCCC)

1994 UNFCCC entered into force

1997 Cyprus ratified the UNFCCC as a non-Annex I Party

1998 Adoption of the Kyoto Protocol

2003 Cyprus ratified the Kyoto Protocol

2008 Start of the Kyoto Protocol's First Commitment period

2009 EU's climate and energy package for 2020 agreed

2011 Cyprus change its UNFCCC status to Annex I party

2011 EU's 2050 roadmap agreed

2012 End of the Kyoto Protocol's First Commitment period

2012 Doha amendment to the Kyoto Protocol

2013-2020 Kyoto Protocol's Second Commitment period / implementation period of climate and energy package for 2020

2014 Political Decision for EU Climate & Energy Framework for 2021-2030

This Strategy sets a long-term vision for the reduction of net emissions of greenhouse gases by introducing appropriate additional policies and measures. This policy goal is based on the following:

- a) The majority of scientists are of the opinion that it is necessary to reduce greenhouse gas (GHG) emissions on a global level in the coming decades in order to prevent hazardous changes in climate on Earth;
- b) Developed nations such as Cyprus should be in the frontline in achieving that reduction.
- c) The European Council (June 2011) agreed the milestones for EU domestic emission reductions presented in the 2050 Low-carbon economy roadmap¹: 40% by 2030, 60% by 2040 and 80% by 2050 compared to the 1990 level as the basis for further work on the action needed to make the transition in a gradual, cost-effective way.

Emphasis is placed on reducing net emissions by the most economical means possible, including the introduction of new technology, economic measures and carbon sequestration in vegetation and soil. Many measures to combat climate change are accompanied by other societal benefits, and emphasis will be placed on these. In this way, it is hoped that Cyprus actions to contain climate change will not have a substantial negative effect on the quality of the average citizen's life; on the contrary, it is hoped that the implementation of low carbon development policies will have an overall positive economic effect as demand for climate friendly technology increases.

Objectives

The Strategy sets forth Cyprus four principal objectives with respect to climate change, which aim towards the realisation of the described long-term vision:

- a) Cyprus will fulfil its international obligations according to the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the legal framework of the European Union.
- b) Greenhouse gas emissions will be reduced, with a special emphasis on reducing the use of fossil fuels in favour of renewable energy sources, energy efficient and climate-friendly technologies.
- c) The government will attempt to increase carbon sequestration from the atmosphere through afforestation, re-vegetation, and changes in land use.
- d) The government will foster research and innovation in fields related to climate change affairs.

The Strategy contains provisions for measures that will be adopted in order to achieve these objectives. Many of the measures that aim towards the mitigation of climate change to such changes are related to governmental strategies or objectives in other areas, such as economic affairs, energy issues, industry, transport, fisheries, agriculture, development aid, environmental affairs, and other matters.

The measures have been prioritised according to effectiveness and economic efficiency. The Strategy contains statistical indicators that will be updated in the future. These indicators provide an assessment method to how successfully the Strategy is being enforced and how much progress is being made in reducing greenhouse gas emissions and increasing carbon sequestration.

¹ European Commission. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 8.3.2011. A Roadmap for moving to a competitive low carbon economy in 2050 (COM/2011/0112 final)

II. OBLIGATIONS AND LONG-TERM VISION

The ultimate objective of the United Nations Framework Convention on Climate Change (UNFCCC) is to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

European Union

The view of the European Union, as this has been expressed by the European Council in March 2007, is that in order to meet this objective, the overall global annual mean surface temperature increase should not exceed 2 °C above pre-industrial levels, which implies that global greenhouse gas emissions should be reduced to at least 50% below 1990 levels by 2050. Developed countries, including the EU Member States, should continue to take the lead by committing to collectively reducing their emissions of greenhouse gases in the order of 20% by 2020 compared to 1990. They should do so also with a view to collectively reduce their greenhouse gas emissions by 60 to 80% by 2050 compared to 1990. All sectors of the economy should contribute to achieving these emission reductions, including international maritime shipping and aviation.

The European Council of March 2007 emphasised that the Community is committed to transforming Europe into a highly energy-efficient and low greenhouse-gas-emitting economy and has decided that, until a global and comprehensive agreement for the period after 2012 is concluded, and without prejudice to its position in international negotiations, the Community makes a firm independent commitment to achieve at least a 20% reduction of greenhouse gas emissions by 2020 compared to 1990.

Through the EU legislation adopted through the climate and energy package in 2009, Cyprus is committed to qualitative targets concerning the reduction of emissions for the short and the long term.

Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community (OJ L 275, 25.10.2003, p. 32) establishes a scheme for greenhouse gas emission allowance trading within the Community, which covers certain sectors of the economy. The activities that fall under this Directive in Cyprus are electricity production for public use, production of cement and production of ceramics. The installations participating in the Emissions Trading System have been allocated with a target, through the allocation of allowances for the period 2013-2020.

However, all sectors of the economy should contribute to emission reductions in order to cost-effectively achieve the objective of a 20% reduction of greenhouse gas emissions by 2020 compared to 1990 levels. Member States should therefore implement additional policies and measures in an effort to further limit the greenhouse gas emissions from sources not covered under Directive 2003/87/EC.

Therefore, through the adoption of Decision 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, Cyprus has committed to reduce its emissions from Industrial processes (not included in the Emissions Trading System), Solvent and other product use, Agriculture, Waste and fuel consumption not included in the emissions trading scheme (including transport), by 5% compared to 2005 by 2020. To this end, annual maximum allowed greenhouse gas emissions have been allocated to Cyprus for the period 2013-2020 (Table 1).

Table 1. Member States Annual Emissions (AEAs) Allocation for the year 2013 to 2020 calculated applying global warming potential values from the second IPCC assessment report as this was published in Annex I of the Commission Decision of 26 March 2013 on determining Member States' annual emission allocations for the period from 2013 to 2020 pursuant to Decision No 406/2009/EC of the European Parliament and of the Council No. 2013/162/EU

Year	2013	2014	2015	2016	2017	2018	2019	2020
AEAs (t CO ₂ eq.)	5552863	5547275	5541687	5536100	5530512	5524924	5519336	5513749

2030 climate policy framework

The 2030 policy framework for climate and energy proposed by the European Commission in January 2014 aims to make the European Union's economy and energy system more competitive, secure and sustainable. While the EU is making good progress towards meeting its climate and energy targets for 2020, an integrated policy framework for the period up to 2030 is needed to ensure regulatory certainty for investors and a coordinated approach among Member States. The framework presented by the European Commission seeks to drive continued progress towards a low-carbon economy. It aims to build a competitive and secure energy system that ensures affordable energy for all consumers, increases the security of the EU's energy supplies, reduces our dependence on energy imports and creates new opportunities for growth and jobs.

EU leaders agreed during the European Council in October 2014 to the 2030 policy framework for climate and energy.

A centre piece of the framework is the target to reduce EU domestic greenhouse gas emissions by 40% below the 1990 level by 2030. This target will ensure that the EU is on the cost-effective track towards meeting its objective of cutting emissions by at least 80% by 2050. By setting its level of climate ambition for 2030, the EU will also be able to engage actively in the negotiations on a new international climate agreement that should take effect in 2020. To achieve the overall 40% target, the sectors covered by the EU emissions trading system (EU ETS) would have to reduce their emissions by 43% compared to 2005. Emissions from sectors outside the EU ETS would need to be cut by 30% below the 2005 level. This effort would be shared fairly between the Member States.

The non-ETS target that is expected to be allocated to Cyprus is 22%.

2050 roadmap

With its Roadmap for moving to a competitive low-carbon economy in 2050, the European Commission is looking beyond the short-term objectives in order to set out a cost-effective pathway for achieving much deeper emission cuts by the middle of the century. All major economies need to make deep emission reductions if global warming is to be held below 2°C compared to the temperature in pre-industrial times.

The Roadmap is one of the long-term policy plans put forward under the Resource Efficient Europe flagship initiative intended to put the EU on course to using resources in a sustainable way.

The Roadmap suggests that, by 2050, the EU should cut its emissions by 80% below 1990 levels through domestic reductions alone. It sets out milestones which form a cost-effective pathway to this goal - reductions of the order of 40% by 2030 and 60% by 2040. It also shows how the main sectors responsible for Europe's emissions - power generation, industry, road, air and sea transport, buildings and construction, as well as agriculture - can make the transition towards a low-carbon economy most cost-effectively.

According to the Roadmap, in 2050, notwithstanding a possible decline, fossil fuels will still play a significant role in all pathways. Natural gas in particular, will play a large and critical role through the transition. Cyprus' future energy mix will be determined by the discoveries of recoverable hydrocarbons quantities in its Exclusive Economic Zone and thus the electricity mix will change considerably and more investments in renewable energy sources will be necessary for Cyprus to achieve its associated targets.

The Kyoto Protocol

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change, which commits its Parties by setting internationally binding emission reduction targets.

In 1997 Parties to the UNFCCC took the next step by agreeing the Kyoto Protocol, the world's only legally binding instrument for cutting greenhouse gas emissions. Kyoto has established international emissions trading and other market-based mechanisms to help reduce the cost of reducing emissions.

Under Kyoto's first commitment period, industrialised nations agreed to cut their emissions of six greenhouse gases by an average of 5% below 1990 levels over the period 2008-2012. The 15 countries that were EU Member States at the time Kyoto was agreed committed to an 8% cut and are on track to achieve this by a comfortable margin.

Kyoto's impact is limited, however, because it requires emissions action only from developed countries. Moreover, it was never ratified by the United States, and Canada pulled out in 2012.

Cyprus ratified the Kyoto Protocol with Law no. 29(III)/2003 as a non-Annex I Party to the United Nations Framework Convention on Climate Change; i.e. Cyprus did not have any commitments during the commitment period 2008-2012.

Doha amendment to the Kyoto Protocol

To bridge the gap between the end of the first Kyoto period in 2012 and the start of the new global agreement in 2020, 38 developed country - Parties including the EU and its Member States have agreed to participate in a second Kyoto period running from 2013 to 2020. The necessary amendments to the Kyoto Protocol were adopted at the Doha climate change conference in December 2012, through the "Doha amendment to the Kyoto Protocol".

The commitments amount to a reduction in the Parties' emissions of at least 18% from 1990 levels, according to the UNFCCC. The EU and its Member States have committed to reduce their collective emissions in the second Kyoto period by 20% below their levels in 1990 or other chosen base years.

The measures needed for the EU and its Member States to deliver on the reduction commitment have already been put in place through the 'climate and energy package' of legislation adopted in 2009.

Long term vision

Cyprus is setting, through this strategy appropriate additional policies and measures.

This long-term target is set as an ambitious goal at which Cyprus should aim, but one which requires systematic measures over the next few decades in order to reduce net GHG emissions. This target is not set based on forecasts of possible developments in energy use, greenhouse gas emissions, or likely technological developments; rather, it is based on the need to reduce GHG emissions significantly on a global scale over

the next several decades, which has been clearly laid out by the assessments of the Intergovernmental Panel on Climate Change.

There are a large number of uncertainty factors regarding the likely developments in GHG emissions from Cyprus some four decades in the future, which makes it difficult to estimate how realistic this goal is. It is difficult to predict technological developments in, for example, automotive engines, ship engines, or industrial processes that far in the future. It must be considered likely, however, that climate-friendlier technology will make more decisive inroads in the future; for example, the use of hydrogen, other climate-friendly fuels, or electricity for ships and automobiles, etc. It is not inconceivable, actually, that progress in these areas will result in net levels of GHG emissions (emissions less sequestration) that approach zero or are even negative.

On the other hand, it should be pointed out that GHG emissions are closely related to nearly all types of economic activities. It is also extremely difficult to assess some causes of GHG emissions, such as emissions from livestock, through improved technology.

This long-term vision will hardly be realised unless the government of Cyprus works systematically towards reducing net emissions in the country and with international collaboration.

Finally, it is appropriate to re-evaluate the 2050 aspirational goal at a later time, based on IPCC assessments of the necessity to limit GHG emissions, an expert appraisal of the technological and economic possibility of reaching the goal, and a comparison of the vision with the long-term goals of other nations and the EU policy.

III. OBJECTIVES AND MEASURES

a) Cyprus will fulfil its international obligations according to the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the legal framework of the European Union.

It is important that measures adopted by Cyprus to combat climate change take into consideration the provisions of the UN Framework Convention on Climate Change and the Kyoto Protocol, and the legal framework of the European Union.

Cyprus will aim at ensuring that the country remains within the emission targets set in the Kyoto Protocol and the relevant European legislation. Cyprus will participate in the negotiation of further international climate agreements.

Measures:

- Cyprus will work towards improving the infrastructure to help the fulfilment of obligations under the Kyoto Protocol during the second commitment period (2013-2020) and the European legislation.
- The Cypriot government will participate in discussions taking place within the domain of the UNFCCC through the European Union, as well as participating in international collaboration pertaining to climate change issues in other fora, such as the Union for the Mediterranean.

b) Greenhouse gas emissions will be reduced, with a special emphasis on reducing the use of fossil fuels in favour of renewable energy sources and energy efficient and climate-friendly technologies.

The latest national inventory of GHG (Department of the Environment, 2014) show that emissions in 2012 were 9240 Gg CO₂ eq. including LULUCF and 9259 Gg CO₂ eq. excluding LULUCF. Between 1990 and 2012, the total national emissions excluding LULUCF increased by 52%. The emissions of 1990 and 2012 by sector (excluding LULUCF) are presented in Figure 2.

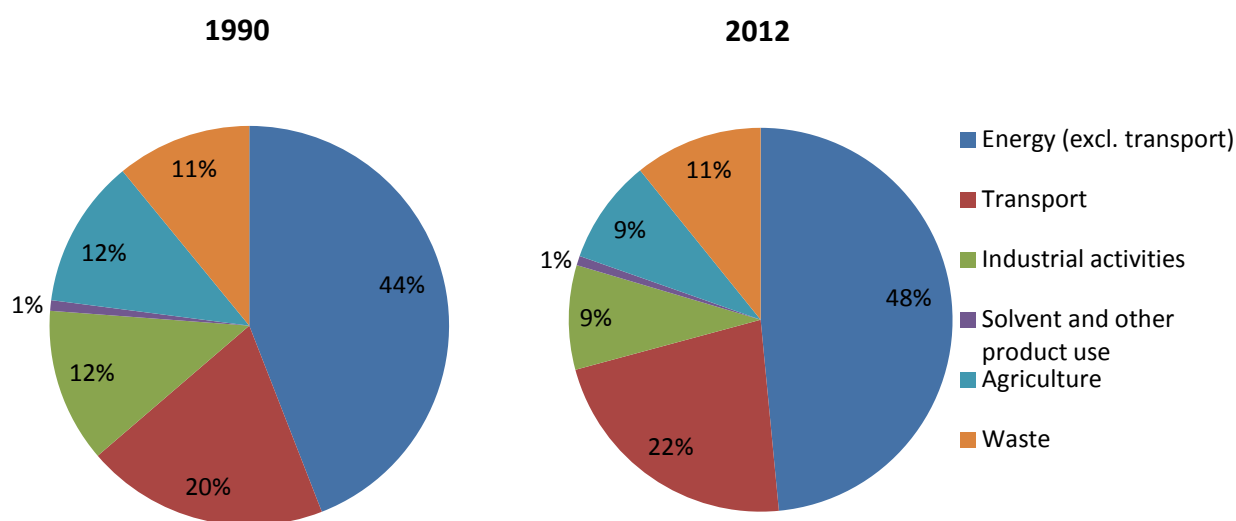


Figure 2. Comparison of emissions' distribution between 1990 and 2012²

Projections by the Department of Environment indicate that, during the period 2013-2020, Cyprus will achieve its emission commitment, of reducing its non-ETS emissions by 5% compared to 2005. The objective regarding GHG emissions is, however, not only to adhere to international and European obligations, but to seek all economically feasible means towards a cleaner economy. Such actions are useful in the campaign against climate change and should be a priority goal for Cyprus. Emphasis is placed on the efficiency and economy of the measures employed.

Measures aimed at reducing greenhouse gas emissions constitute the most important aspect of the government's climate change strategy. The largest emitter in Cyprus is energy, followed by transport. **This trend is expected to remain unchanged as long as there are no infrastructural changes.** This is also applicable to the sector of waste.

Measures:

- Expand domestic energy sources and exploit our natural gas, in particular to reduce dependence on oil imports. This approach shall make the energy system more efficient and less carbon intensive.
- Increase the penetration of renewable energy sources, to the extent that the power distribution system allows.
- Incentivise the implementation of energy efficiency measures for industry, businesses, households, transport and the public sector.
- Provide incentives to the public and businesses to utilize more energy-efficient technologies and practices.

² Kythreotou N. and T. Mesimeris. 2014. Cyprus National Greenhouse Gases Inventory Report 1990 – 2012. Ministry of Agriculture, Natural Resources and Environment

- Continue to encourage the purchase of climate-friendly motor vehicles and the use of climate-friendly fuels.
- Government agencies will purchase climate-friendly vehicles for their operations insofar as is possible, as this is required in the legal framework for green public procurements.
- The government is seeking further ways to increase the possibilities for alternative means of transport.
- The government is promoting public transport as a feasible option for most people
- The government is promoting the use of energy saving and climate friendly transport systems.
- The emissions reduction potentials from industries other than those included in the Emissions Trading System are to be examined the soonest, through a relevant study.
- The reduction in emissions should also be assessed during the examination of waste management scenarios.
- Explore new policy options so as to encourage the use of natural and artificial permeable surface that allow infiltration and reduce stormwater runoff, incorporate bioclimatic architecture in buildings and green infrastructure in land use planning and further support renewable technology by offering development incentives within the planning process.
- Encourage the use of new technologies for the treatment of waste and water desalination

c) The government will attempt to increase carbon sequestration from the atmosphere through afforestation, re-vegetation, and changes in land use.

The economic growth observed in the past decades has resulted to regional inequalities since the development has been concentrated in the urban and coastal regions. This has resulted in the rapid change of the land cover in Cyprus with urban areas near city centres sprawling massively and simultaneously facing degradation in certain areas, while the rapid tourist development in the coastal areas has led to environmental stresses and deterioration in the quality of life of the local population.

The LULUCF strategic planning for the year 2050, projects the halting of loss of agriculture land and increasing its percentage. These projections will be streamlined for reducing carbon footprint, increasing carbon sequestration percentage and at the same time protecting biodiversity.

Measures:

- Assessment of potential measures and/or motives that can be developed and implemented for the use of unexploited land to increase carbon sequestration from the atmosphere through afforestation and re-vegetation.
- An action plan and cost estimate pertaining to increase sequestration through afforestation, land reclamation, and changed land use will be prepared. An assessment will be made of the various benefits of such an action plan, in addition to the benefits from carbon sequestration. An assessment will be carried out of the various methods based on how quickly they result in increased carbon sequestration.
- Work will continue on the development of a collaboration network for the assessment of land use changes.
- Further reinforcement of the forest fires prevention measures and fire fighting capacity.

d) The government will foster research and innovation in fields related to climate change affairs

Climate change, among others, has been identified as a priority sector in the Smart Specialisation Strategy for Research and Innovation. The Strategy has as a basic principle the equal participation in environmental protection as those of economic and social activities. The Strategy highlights the need for evaluation of the environmental dimension in the whole range of man-productive activities and development processes. The development of a suitable natural and human environment has to adopt certain principles such as the principle of pollution prevention.

Measures:

- Development of New and/or Optimized Technologies for Renewable Energy Sources
- Innovative applications of Renewable Energy Sources
- Development of innovative technologies to improve soil fertility and prevent desertification due to climate change
- Development of Innovative and Cost Efficient Technologies for optimal energy use in new and existing buildings
- Development of innovative and efficient technologies for the optimal use of energy through the food chain from the field to the consumer
- Exploitation of Sustainable Construction Methods i.e. use of construction materials with high added value, reduce resource consumption, reduce environmental impact

IV. EDUCATION AND PUBLIC PARTICIPATION

This Strategy addresses primarily the measures that Cyprus will adopt in order to combat human-induced climate change and to fulfil its obligations. It is clear, however, that such measures will be of limited value if there is no general awareness of the subject and if the general public is not willing to participate in achieving the set targets. The government must work with industry and non-governmental organisations in order to mobilise the public so that the goals can be achieved.

Even though emissions from individuals and households are much less than those resulting from commercial activities, they should also be addressed in a sufficient manner.

Emissions generated by individuals in Cyprus are mostly a result of domestic energy use and transport. It is necessary to increase general public awareness of the possibility of reducing greenhouse gas emissions in daily life. Work will be done to prepare educational materials in co-operation with nongovernmental organisations and stakeholder organisations so as to inform the public of the greenhouse effect and the measures that can be adopted to reduce it.

Measures:

- Work will be done to prepare educational materials in co-operation with non-governmental organisations and stakeholder organisations so as to inform the public of the greenhouse effect and the measures that can be adopted to reduce it.

V. IMPLEMENTATION AND FOLLOW-UP

This Strategy provides a framework for the low-carbon development strategy of Cyprus, which should be reviewed regularly and revised if, need be or if conditions change in any way; for example, in relation to new international and/or EU commitments.

The discussion of climate change, both at international and national level, has become more serious in the light of new and better scientific knowledge. In this context, it is appropriate to emphasise four points:

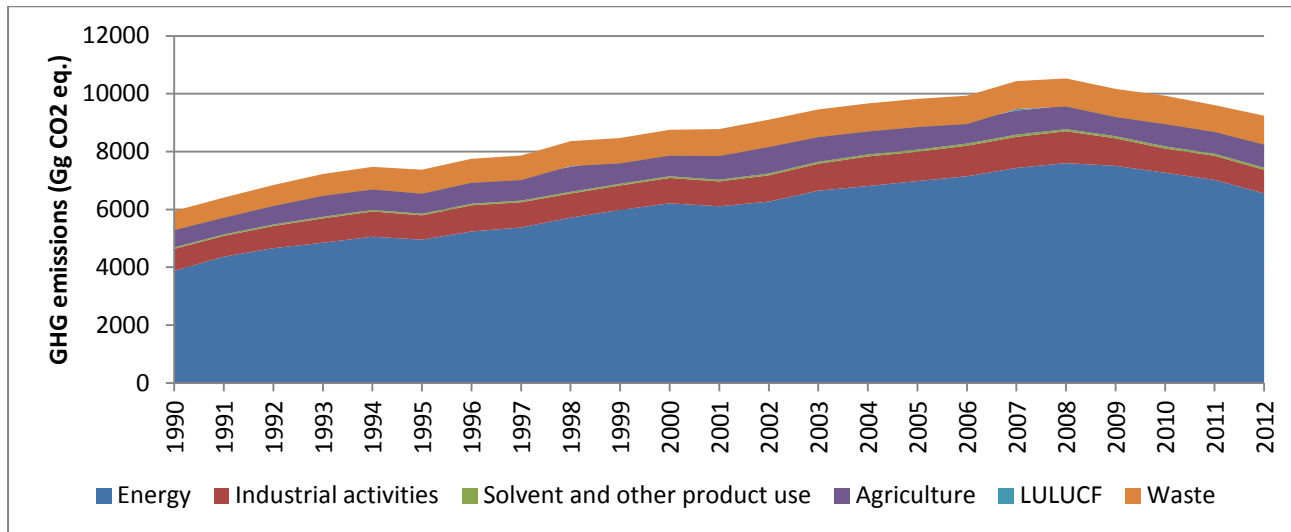
- The second commitment period under the Kyoto Protocol has taken effect in 2013, and it will require substantial work to maintain the registry system for Cyprus emissions allocations and to carry out the emissions and sequestration inventory and other reporting to the UNFCCC;
- New contractual international negotiations concerning the 2015 agreement calls for more active participation in international discussions and in examining ways to fulfil future commitments and achieve them in the most cost-effective manner;
- The 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), to be issued in late 2014, will include the best available scientific knowledge of the extent and rate of climate change and their expected consequences, which in turn calls both for responses by individual countries on ways to limit net greenhouse gas emissions and for an assessment of the consequences of climate changes in individual countries and geographical regions.

Through this Strategy the establishment of an Inter-Ministerial Technical Committee on Climate Change is proposed, that will work actively towards enforcing and reviewing the government's Strategy and will follow developments in international climate negotiations.

VI. INDICATORS

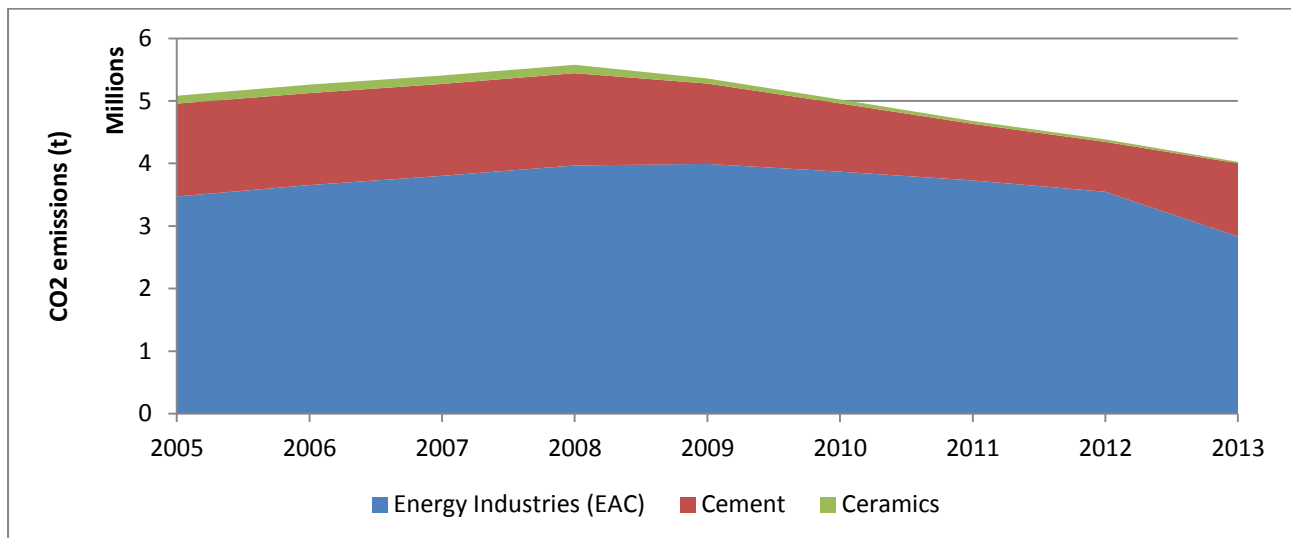
Total emissions of greenhouse gases 1990-2012, by sector

52% increase since 1990 (excluding LULUCF)



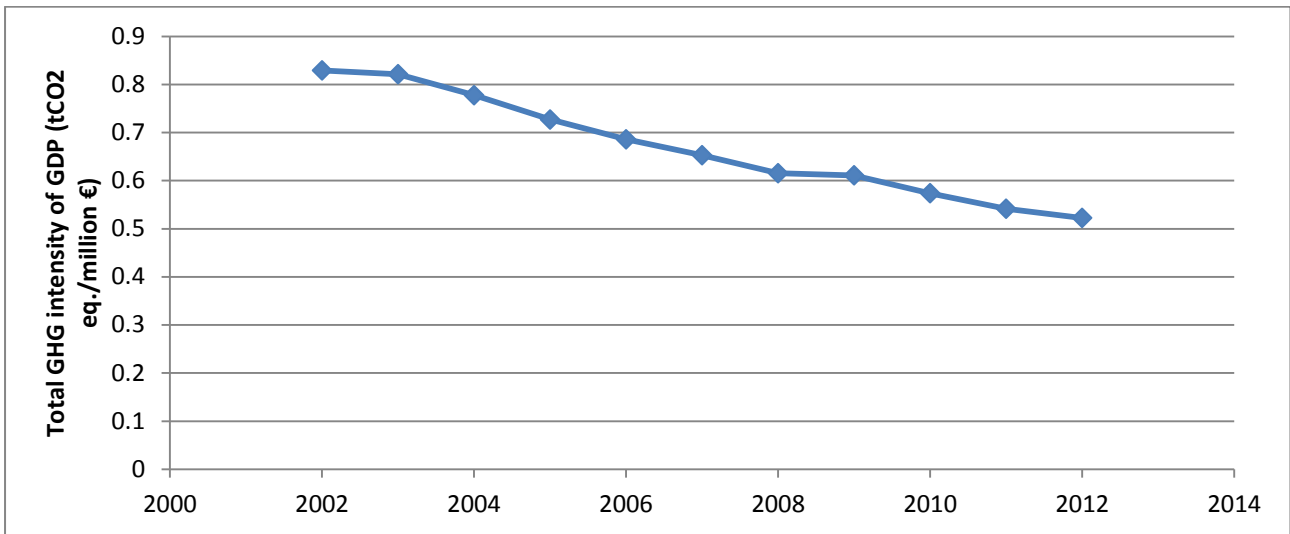
GHG emissions falling under EU ETS, 2005-2013

21% reduction in 2013 compared to 2005



Total GHG excluding LULUCF intensity of GDP (tCO₂ eq./million €)

37% reduction in 2012 compared to 2002



Total GHG emissions excluding LULUCF per capita (t CO₂/capita)

17% reduction in 2012 compared to 2002

