

**THE EU CLIMATE POLICY AFTER THE CLIMATE PACKAGE  
AND COPENHAGEN - PROMISES AND LIMITS**



EGMONT PAPER 38

**THE EU CLIMATE POLICY AFTER  
THE CLIMATE PACKAGE AND COPENHAGEN –  
PROMISES AND LIMITS**

Franklin DEHOUSSE  
Tania ZGAJEWSKI

with the collaboration of Karel VAN HECKE



September 2010



ACADEMIA PRESS

The Egmont Papers are published by Academia Press for Egmont – The Royal Institute for International Relations. Founded in 1947 by eminent Belgian political leaders, Egmont is an independent think-tank based in Brussels. Its interdisciplinary research is conducted in a spirit of total academic freedom. A platform of quality information, a forum for debate and analysis, a melting pot of ideas in the field of international politics, Egmont’s ambition – through its publications, seminars and recommendations – is to make a useful contribution to the decision-making process.

\* \* \*

President: Viscount Etienne DAVIGNON  
Director-General: Marc TRENTESEAU  
Series Editor: Prof. Dr. Sven BISCOP

\* \* \*

**Egmont - The Royal Institute for International Relations**

Address Naamsestraat / Rue de Namur 69, 1000 Brussels, Belgium  
Phone 00-32-(0)2.223.41.14  
Fax 00-32-(0)2.223.41.16  
E-mail [info@egmontinstitute.be](mailto:info@egmontinstitute.be)  
Website: [www.egmontinstitute.be](http://www.egmontinstitute.be)

© Academia Press

Eekhout 2  
9000 Gent

Tel. 09/233 80 88

Fax 09/233 14 09

[Info@academiapress.be](mailto:Info@academiapress.be)

[www.academiapress.be](http://www.academiapress.be)

J. Story-Scientia NV Wetenschappelijke Boekhandel

Sint-Kwintensberg 87

B-9000 Gent

Tel. 09/225 57 57

Fax 09/233 14 09

[Info@story.be](mailto:Info@story.be)

[www.story.be](http://www.story.be)

All authors write in a personal capacity.

Lay-out: [proccess.be](http://proccess.be)

ISBN 978 90 382 1685 0

D/2010/4804/234

U 1518

NURI 754

*All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the permission of the publishers.*

# Table of Contents

<b>Introduction</b> .....	5
<b>1. What are the Climate Threats for Europe?</b> .....	7
<b>2. The Climate and Energy Package Objective: 30% Reduction of the EU Greenhouse Gases Emissions by 2020... Maybe</b> .....	11
2.1. The March 2007 European Council .....	11
2.2. The EU climate and energy package .....	13
2.3. The debate about moving to a 30% emissions reduction...	14
<b>3. The EU Emission Trading Scheme (ETS)</b> .....	17
3.1. The regime of the EU ETS until the end of 2012 .....	17
3.1.1. The trading periods .....	17
3.1.2. The scope of application .....	18
3.1.3. The national allocation plans .....	18
3.1.4. The use of CDM and JI credits .....	19
3.1.5. Connecting the EU ETS with other GHG trading schemes .....	20
3.1.6. Registry, monitoring, reporting, verification requirements .....	21
3.1.7. The functioning of the ETS so far .....	22
3.2. The EU ETS post-2012 .....	25
3.2.1. The extension of the ETS scope of application .....	25
3.2.2. The creation of an EU wide cap .....	26
3.2.3. The auctioning becomes the basic rule for allocation of allowances .....	28
3.2.4. The slow death of free allocations post-2012 .....	29
3.2.5. The creation of a New Entrants' Reserve .....	31
3.2.6. A ceiling on the use of CERs and ERUs .....	32
3.2.7. Connecting the EU ETS with other GHG trading schemes .....	32
3.2.8. Registry, monitoring and reporting requirements ..	33
3.2.9. The link with an international climate agreement post-2012 .....	33
<b>4. The Obligations of the non ETS Sectors</b> .....	37
4.1. The general surveillance regime of Decision 280/2004/EC ..	37
4.2. The new obligations of Decision 406/2009/EC .....	39

4.3.	Flexibility mechanisms post-2012 . . . . .	41
4.4.	The impact of a new international climate agreement post-2012 . . . . .	41
<b>5.</b>	<b>Renewable Energies . . . . .</b>	<b>43</b>
5.1.	The development of a renewable energy policy in the EU . .	43
5.1.1.	The first step . . . . .	43
5.1.2.	The second step. . . . .	44
5.2.	The current legislative framework and its objectives for 2010	45
5.2.1.	Renewable energy in the electricity sector . . . . .	45
5.2.2.	The transport sector with regard to biofuels . . . . .	46
5.2.3.	Renewable energy in the heating and cooling sector	47
5.3.	Directive 2009/28/EC . . . . .	47
5.3.1.	The definition of energy from renewable sources . .	47
5.3.2.	The targeted sectors . . . . .	47
5.3.3.	The EU 20% objective by 2020. . . . .	48
5.3.4.	The Member States' individual target . . . . .	48
5.3.5.	The monitoring of the Member States' progress . . .	50
5.3.6.	Other energy from renewable sources to be taken into account in national targets. . . . .	51
5.3.7.	National support schemes . . . . .	52
5.3.8.	Measures aiming at fostering renewable energies in the electricity sector. . . . .	53
5.3.9.	The specific regime for biofuels. . . . .	55
5.3.10.	Link with the EEP and the SET-Plan. . . . .	57
5.3.11.	Impact. . . . .	58
<b>6.</b>	<b>The Promotion of Carbon Capture and Storage . . . . .</b>	<b>59</b>
6.1.	The role of Carbon Capture and Storage. . . . .	59
6.2.	The Commission's first initiatives . . . . .	61
6.3.	Directive 2009/31/EC . . . . .	62
6.4.	Financial support. . . . .	64
6.5.	Link with other regulatory topics . . . . .	66
6.5.1.	The revised ETS Directive . . . . .	66
6.5.2.	Regulation 736/96/EC. . . . .	66
6.5.3.	The SET-plan . . . . .	67
6.5.4.	No acknowledgment of CCS in the framework of CDM . . . . .	67
<b>7.</b>	<b>The Framework on Environmental Subsidies. . . . .</b>	<b>69</b>
7.1.	The previous guidelines on state aid for environmental protection . . . . .	69



7.1.1.	Investment aid . . . . .	70
7.1.2.	Operating aid . . . . .	70
7.2.	The new 2008 guidelines on state aid for environmental protection . . . . .	72
<b>8.</b>	<b>Energy Efficiency . . . . .</b>	<b>75</b>
8.1.	The 2006 plan . . . . .	75
8.2.	The EU energy security and solidarity action plan . . . . .	78
8.3.	Adopted energy efficiency measures . . . . .	79
8.4.	Link with ICT . . . . .	80
8.5.	Much remains to be done about energy efficiency . . . . .	82
<b>9.</b>	<b>Greenhouse Gases Emissions of Cars . . . . .</b>	<b>83</b>
9.1.	The development of the policy . . . . .	83
9.2.	Regulation 443/2009/EC for passenger cars . . . . .	85
9.2.1.	Scope of application . . . . .	85
9.2.2.	The 120 g/km target . . . . .	86
9.2.3.	Long-term target . . . . .	87
9.2.4.	Eco-innovation . . . . .	87
9.2.5.	Pooling . . . . .	87
9.2.6.	Monitoring and reporting . . . . .	87
9.3.	The legislative proposal for light commercial vehicles . . . . .	88
9.3.1.	Scope of application . . . . .	88
9.3.2.	The 175 g/km target . . . . .	88
9.3.3.	The long-term target . . . . .	89
9.3.4.	Super credits . . . . .	89
9.3.5.	Eco-innovations . . . . .	89
9.3.6.	Pooling . . . . .	90
<b>10.</b>	<b>Greenhouse Gases Emissions of Fuels . . . . .</b>	<b>91</b>
10.1.	Biofuels sustainability . . . . .	91
10.2.	The reduction of the life cycle greenhouse gas emissions from fuel . . . . .	92
<b>11.</b>	<b>The Set-Plan . . . . .</b>	<b>93</b>
11.1.	The SET-Plan objectives . . . . .	93
11.2.	The Strategy . . . . .	93
11.2.1.	A new joint strategic planning . . . . .	93
11.2.2.	A more effective management . . . . .	94
11.2.3.	The European Energy Research Alliance . . . . .	95
11.2.4.	A better allocation of means . . . . .	95
11.2.5.	A improved international cooperation . . . . .	96

<b>12. Adaptation: A Substitute for Mitigation? . . . . .</b>	<b>97</b>
<b>13. International Aspects: The EU and the Post-Kyoto Regime . . . . .</b>	<b>99</b>
13.1. The preparation of the Copenhagen conference. . . . .	99
13.2. The Copenhagen Accord . . . . .	100
13.3. The causes of an insufficient result . . . . .	101
13.3.1. The process . . . . .	101
13.3.2. The structure. . . . .	102
13.3.3. The heart of the matter: how to define a world efficient and fair system in a completely new area? .	102
13.3.4. The next steps . . . . .	104
<b>Conclusions . . . . .</b>	<b>105</b>
1. What has the EU achieved until now? . . . . .	105
2. What will be the costs? . . . . .	106
3. What will be the impact on the European Union? . . . . .	107
4. Is the EU action sufficient? . . . . .	108





# Introduction<sup>1</sup>

Climate warming is now considered as a clear and present danger<sup>2</sup>. Over the past 150 years, temperature has increased by almost 0.8 °C globally (and by about 1 °C in Europe). According to the general consensus, the global temperature rise must be held to not more than 2°C compared to pre-industrial levels, otherwise there will be most probably severe and irreversible consequences for all of us on this planet and costs of adaptation will escalate<sup>3</sup>.

Limiting temperature rise to not more than 2°C requires a reduction in global greenhouse gases (GHG) emissions (mainly due to human activities) of **at least 50%** of 1990 levels by 2050 (at best 80%-95% by 2050). It also requires developed countries (together) to have their GHG emissions to peak before 2020. Finally, scientific studies even require now a stabilization of atmospheric concentration of GHG at a significantly lower level than previously recommended, i.e. 350 ppmv CO<sub>2</sub> equivalent instead of 450 ppmv<sup>4</sup>.

In that general context, 2009 was a pivotal year for the EU climate policy. The bright sight: the EU adopted the climate package, which is widely considered as the most important legislative package of the 2004-2009 legislature<sup>5</sup>. The flip side: after much hype, the Copenhagen conference produced (without the participation of the EU to its elaboration) a very unsatisfactory agreement for the replacement of the Kyoto protocol after 2012. The pill was particularly bitter for the EU which had sought for many years to take the international leadership in the fight against global warming. It is thus now a good period to try to make a global assessment of the EU policy regarding climate warming.

Such a global assessment is however complicated to make. Indeed, the EU policy regarding climate warming goes beyond the climate package. Other instruments concern, without being exhaustive, energy efficiency; some aspects of transport; state aid; a SET-Plan whose aim consists of accelerating innovation of energy technologies to match the double challenge of climate change mitigation and adaptation. One could also take into consideration other things, like the third

---

1. Franklin Dehousse is professor at the University of Liège and judge at the General Court of the European Union. Tania Zgajewski is Director of HERA. This comment does not in any way represent a position of the institutions to which they belong. Developments have been covered until 1<sup>st</sup> June 2010.

2. See IPCC, *Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, 2007. See however R. CARTER et alii, *The Stern review: a dual critique*, 7 *World Economics*, 2006, pp. 165-232.

3. For a reminder concerning climate studies and the development of international cooperation about climate, see F. DEHOUSSE and T. ZGAJEWSKI, *Climate change: what are the implications for the international system and the European Union?*, *Studia Diplomatica*, 2008/1, pp. 3-114.

4. See the Copenhagen diagnosis ([www.copenhagendiagnosis.com](http://www.copenhagendiagnosis.com)) and the latest Tyndall perspectives ([http://assets.panda.org/downloads/plugin\\_tp\\_final\\_report.pdf](http://assets.panda.org/downloads/plugin_tp_final_report.pdf)).

5. OJ 2009, L 140.

energy internal market package (also called the “third energy package”) adopted in 2009, but the latter will not be dealt here.

Firstly, it is necessary to describe very briefly the threat of climate change for Europe (§ 1) as well as the birth and objective of the EU climate and energy package (§ 2). Then, a description of the different components of this package will be given: the EU emission trading scheme (ETS) (§ 3), the obligations of the non-ETS sectors (§ 4), the 20% renewable energy objective (§ 5), the promotion of carbon capture and storage (§ 6), the framework about environmental subsidies (§ 7). Thirdly, an examination of the other legislations that the EU climate policy encompasses will be conducted: energy efficiency (§ 8), the GHG emissions of cars (§ 9), and the GHG emissions of fuels (§ 10), and the SET-plan (§ 11) Finally, a word will be said about adaptation (§ 12), before examining the international aspects of the EU actions after Copenhagen (§ 13).

# 1. What are the Climate Threats for Europe?

A lot of studies have been made about the potential impact of climate change on Europe. Taken globally, they reflect that the climate science remains an uncertain one. There are some huge variations between anticipations. However, all of them point to the same direction, relying sometimes on recent evolutions<sup>6</sup>.

According to the assessment provided by the EEA in June 2010<sup>7</sup>, “the global (land and ocean) average temperature increase between 1850 and 2009 was 0.74°C using combined Hadley centre and CRU datasets compared to the 1850-1899 period average temperature and 0.84°C using GISS dataset compared to the 1880-1899 period average temperature. All used temperature records show the 2000s decade (2000-2009) was the warmest decade. The rate of global average temperature change has increased from around 0.06°C per decade over last 100 years, to 0.16-0.20°C in last decade.”

Europe has felt this evolution quite strongly. It “warmed more than the global average. The annual average temperature for the European land area up to 2009 was 1.3°C above 1850-1899 average temperature, and for the combined land and ocean area 1°C above. Considering the land area, nine out of the last 12 years were among the warmest years since 1850. High-temperature extremes like hot days, tropical nights, and heat waves have become more frequent, while low-temperature extremes (e.g. cold spells, frost days) have become less frequent in Europe. The average length of summer heat waves over Western Europe doubled over the period 1850 to 2009 and the frequency of hot days almost tripled.”

What does all this tell us about the future? In synthesis, “the annual average temperature in Europe is projected to rise in this century with the largest warming over eastern and northern Europe in winter, and over Southern Europe in summer. High temperature events across Europe including temperature extremes such as heat waves are projected to become more frequent, intense and longer this century, whereas winter temperature variability and the number of cold and frost extremes are projected to decrease further. According to the projections, the most affected European regions are going to be the Iberian and the Apennine Peninsula and south-eastern Europe.”

---

6. See EEA, *Impacts of Europe's changing climate — 2008 indicator-based assessment*, 2008, and also the interesting synthesis of A. Behrens, A. Georgiev and M. Carraro, *The future impact of climate change across Europe*, CEPS, 2010.

7. EEA, *Global and European temperature – Assessment published*, June 2010.

The variability of the weather will consequently increase in general. It will likely bring more precipitation floods and droughts. Floods will provoke more risks in the North, droughts in the South, but basically it will be worse in the South, where the rise of temperature extremes will be heavily felt. River floods, which have already increased, could become worse, especially in Central Europe and the British Isles. In a longer term, a simple rise of 0,5 m of the sea could jeopardize many important coastal cities in Western Europe. The temperature rise will also create problems of water scarcity, more particularly in the Mediterranean countries. Water availability might fall by 20-30% under a +2°C scenario and by 40-50% under a +4°C scenario. This will have important consequences: on the water quality, on households and many economic activities, on human health. Some argue nevertheless that desalination could have a legitimate role to play in long-term water management but the process of turning salty water into drinking water remains for the moment energy intensive and expensive. The transport of such water is also costly.

In the domain of the exploitation of natural resources, changes in agriculture will be contrasted, generally positive in the North, and negative in the South. The impact of the previous elements (temperature extremes, droughts and floods) will of course amplify this. The crop yields in forestry will also diminish, except maybe in Northern Europe. Even there, however, the combination of temperature rise and extreme weather accidents could even annihilate the positive consequences of a warmer climate in the most favored zones. The present degradation of biodiversity will also increase (disappearance of some species and displacement of others).

With regard to ecosystems and biodiversity, plant and animal species risk extinction if increases in global temperature exceed 1.5-2.5°C. This will affect economies and societies.

In the field of energy, there remains a lot of uncertainty surrounding the evolution of global energy demand. On one side, the needs for heating will certainly diminish (especially in the North). On the other side, the needs for summer cooling will increase (especially in the South). The North areas will benefit from increased precipitation, melting glaciers and thus run-off water. Consequently, hydropower production there could increase by 5% or more. On the other hand, the Mediterranean and Central Europe will suffer from a decrease in hydropower (around 25% in 2050), limiting as a result the electricity production. Increased risks of storms and floods may also threaten energy infrastructure. All these elements plead for diversification of energy sources and the development of renewable energy.

So Europe will not be spared and, as indicated in the introduction, Europe has already warmed faster than the global temperature. In the European Union, climate change will most likely have very different impacts in the North and the South of Europe. These impacts could as a matter of fact increase very strongly this divide. However, the North should not feel protected. These evolutions could provoke conflicts and migrations. In other words, if there may be some positive aspects of global warming, these are by far exceeded by negative impacts.



## 2. The Climate and Energy Package Objective: 30% Reduction of the EU Greenhouse Gases Emissions by 2020... Maybe

### 2.1. The March 2007 European Council

In January 2007, the European Commission issued a communication<sup>8</sup> addressed to the European Council. The key points were the following ones. Global warming must remain limited to no more than 2°C above the pre-industrial temperature. To stay within this limit, the world needs to cut greenhouse gas emissions by as much as 50% of 1990 levels by 2050. As an essential step towards this long-term reduction, it was proposed that the EU pursues in the context of international negotiations the objective of 30% reduction in greenhouse gas emissions by developed countries by 2020 (compared to 1990 levels) under a new global climate change agreement. The EU is responsible for 14% of worldwide emissions of greenhouse gases. The EU had to take a firm independent commitment to achieve at least a 20% reduction of greenhouse gas by 2020, by the EU ETS and by other climate change policies and actions in the context of the energy policy. In addition, action by developing countries will be also essential, since their emissions are projected to overtake those from developed countries by 2020. For this reason, it was estimated that developing countries should start to slow the rate of growth in their emissions as soon as possible and then reduce their emissions in absolute terms from 2020-2025 onwards. Finally, it is necessary to halt tropical deforestation completely within the next decades and then reverse it through afforestation or reforestation schemes. Deforestation currently contributes around 20% of global greenhouse gas emissions.

In March 2007, on this basis, the European Council adopted a commitment to reduce European GHG emissions by at least 20% by 2020 compared with 1990 levels and concluded that this reduction target would be increased to 30% provided that other industrialized countries commit themselves to comparable emission reductions in the context of an international agreement.

The European Council also admitted the impossibility to meet this new objective of 20% GHG emission reduction by 2020 without an integrated approach of the climate and energy policies since energy production and use are the main sources of GHG emissions. With this in mind, it adopted the energy action plan

---

8. Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions – Limiting global climate change to 2°C. The way ahead for 2020 and beyond – [COM (2007) 2].

for 2007-2009 which fixed notably an objective of saving 20% of the EU's energy consumption compared to projections for 2020; a binding target of 20% share of renewable energies in overall EU energy consumption by 2020; and a binding target to achieve at least 10% of consumption for biofuels by each Member State. It called for a European Strategic Energy Technology Plan (SET-Plan) and for a review of the Community guidelines on State aid for environmental protection and other relevant Community instruments which can provide incentives to make them more supportive of the Community's energy and climate change objectives. The need to develop clean fossil fuel technologies was also underlined, in particular CCS for which a specific technical, economic and regulatory framework had to be developed and for which a specific mechanism had to be established in view to stimulate the construction and operation of up to 12 CO<sub>2</sub> CCS demonstration projects by 2015. The strengthening and extension of global carbon markets was also stressed.

The next step was to translate these objectives into action. A European Commission green paper on "adapting to climate change in Europe – options for EU action" was presented mid-2007<sup>9</sup>. At the beginning of 2008, a package of concrete legislative proposals<sup>10</sup> was tabled. It was based on five key principles<sup>11</sup>: the targets must be met, the effort required by the various Member States must be fair, the costs must be minimised, the EU must drive on beyond 2020 to make even deeper cuts in greenhouse gases to meet the target of halving global emissions by 2050 and the EU must do everything possible to promote a comprehensive international climate agreement.

It is important to underline that the Commission's evaluation of the package's costs was quite positive. It went from 2,2% GDP (for Bulgaria) to 0,1% GDP (for Cyprus), with an average of 0,58% for the EU as a whole<sup>12</sup>. This evaluation seems more or less in line with the global outline of the Stern review on the economics of climate change<sup>13</sup>. The Stern review's most important evaluation concerned the costs to stabilize at 500ppm. This evaluation was between -1,0% and + 3,5% GDP, with an average of + 1% GDP, which was widely quoted. This has however been described as far too positive<sup>14</sup>.

---

9. COM (2007) 354 final, completed by a Commission staff working document SEC (2007) 849.

10. COM (2008) 16; COM (2008) 17; COM (2008) 18; and COM (2008) 19.

11. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – 20 20 by 2020 – Europe's climate change opportunity, COM(2008) 30, 23 January 2008.

12. SEC (2008) 85, vol. II, p. 42.

13. <http://www.webcitation.org/5nCeyEYJr> (accessed August 17, 2010).

14. See for example HELM, Climate-change policy: why has so little been achieved?, in D. HELM AND C. HEPBURN eds., The economics and politics of climate change, Oxford Univ. Press, 2009, pp. 3-35, esp. 24-31.



After long and difficult negotiations between the EU institutions, the package of legislative proposals was definitively approved in April 2009. It is usually called the “EU climate and energy package” and Member States got 18 months to transpose it into national law. In parallel to this energy/climate package, revised guidelines on state aid for environmental protection and a SET-plan were also adopted. These instruments complement the climate and energy package.

## 2.2. The EU climate and energy package

The EU climate and energy package<sup>15</sup> is composed of four instruments: (1) a Directive 2009/29/EC on the ETS post-2012<sup>16</sup>; (2) a Decision No 406/2009/EC on the effort of Member States to reduce their GHG emissions in non-ETS sectors; (3) a Directive 2009/28/EC promoting the use of energy from renewable energy sources<sup>17</sup>; a Directive 2009/31/EC organizing a legal framework on carbon capture and storage.

Two important remarks must be made however before describing its content. Firstly, the climate and energy package imposes henceforth that the GHG emission reductions have to be made by comparison with the 2005 levels and not anymore by comparison with the 1990 levels.<sup>18</sup> The consequence of this change is important because it means that the EU independent commitment to reduce by 2020 the overall EU GHG emissions by 20% (compared to 1990 levels) corresponds in reality to a reduction of 14% (compared to 2005 levels). Secondly, this 14% reduction (compared to 2005 levels) is divided between the ETS and non-ETS sectors that the climate and energy package distinguishes: a 10% reduction target for the non-ETS sectors by 2020 (from 2005 levels) and a 21% reduction target for the ETS sectors by 2020 (from 2005 levels). The target for the ETS is larger because the Commission has deemed it cheaper to reduce emissions in the electricity sector than in other sectors.

---

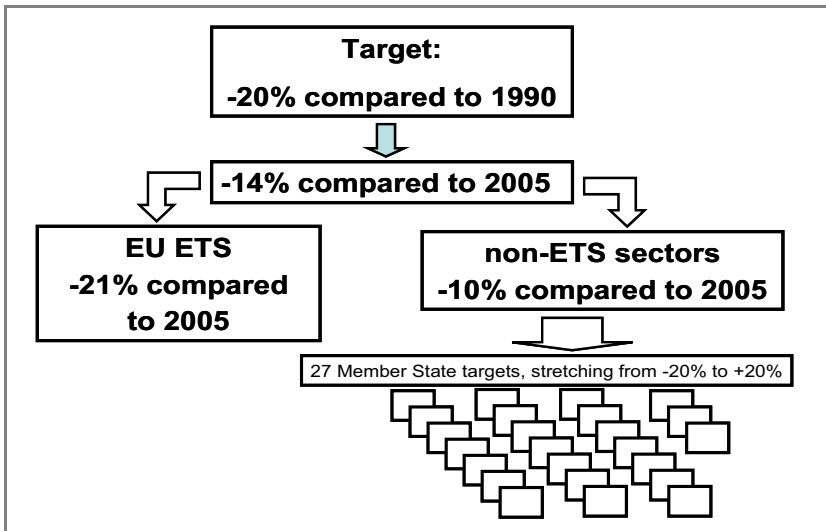
15. OJ 5.06.2009, L 140, pp. 16 to 148.

16. The Directive 2009/29/EC amends Directive 2003/87/EC which establishes a scheme for greenhouse gas emission allowance trading within the Community for the period prior to 2012.

17. The Directive 2009/28/EC amends and repeals Directives 2001/77/EC and 2003/30/EC.

18. The justification given for such a change is that the data for 2005 are more reliable and more easily available than those for 1990.

These various EU targets can be presented in the following schematic way:



(Source: European Commission, MEMO/08/34)

### 2.3. The debate about moving to a 30% emissions reduction

After the failure of the Copenhagen conference to reach the goal of a binding international agreement on a second commitment period to tackle climate change, the Commission had to assess the situation. In that perspective, in May 2010, it presented a communication with a double objective: analysing the options to move beyond 20% GHG emissions reduction and assessing the risk of carbon leakage in the context of the revised EU ETS directive<sup>19</sup>. According to this document, the context had changed deeply since 2008 (the most important factor being the economic impact of the financial crisis).

Because of this change of context, the costs of meeting the 20% GHG reduction target by 2020 has fallen from 70 Bn € to 48 Bn € per year. The additional costs of moving to a 30% reduction target are estimated at 33 Bn € per year, or an additional 0,2% of GDP. The cost-effective split between efforts in the ETS and non ETS sectors is also estimated largely the same in the case of moving to a 30% target. The ETS cap would be 34% rather than the current 21% while the overall target for non-ETS sectors would be 16% rather than the current 10%. The incremental impact of carbon leakage is considered limited, provided that

19. COM (2010) 265, accompanied by a Commission's staff working document SEC (2010) 650.

free allocation of allowances and access to international credits remained in place. The Commission indicates however that, if uncertainties remain around the implementation of the Copenhagen Accord, pledges, additional steps could be taken to address the increased risk of carbon leakage.

The European Council of June 2010 took note of this communication. It invited the Commission to undertake further analyses, including consequences for each Member State. Germany, France and the UK took a rather favourable position<sup>20</sup>. Other countries, like Italy or most Eastern countries, were less favourable<sup>21</sup>.

---

20. <http://www.ft.com/cms/s/0/08538a04-8f78-11df-8df0-00144feab49a.html>. (accessed August 16, 2010).

21. <http://www.euractiv.com/en/priorities/eastern-europe-struggling-meet-eu-climate-targets-news-496400> (accessed August 16, 2010).



### 3. The EU Emission Trading Scheme (ETS)

The European greenhouse gas Emissions Trading Scheme (hereafter “EU ETS”) is considered as the main tool to reduce GHG emissions in the European Union. The EU ETS was established by Directive 2003/87/EC<sup>22</sup>. It began operating on 1<sup>st</sup> January 2005. This system is meant to allow the EU to comply with its commitments under the Kyoto Protocol at the lowest cost. At present, it is the largest one of its kind in the world. Thanks to it, carbon dioxide emissions are henceforth a tradable commodity in the EU. They can be bought and sold in exactly the same way as any of the thousands of products traded on world markets every day.

The basic idea which underlies the ETS is fairly simple. A limit or “cap” is placed on the amount of CO<sub>2</sub> that companies can emit every year. At present, about 12 500 industrial installations are covered by the ETS and each has been awarded an annual quota of CO<sub>2</sub> emission units. One unit or “allowance” equals one tonne of CO<sub>2</sub>. An installation that emits more gases than it has allowances has two options: either to pay a hefty fine or to buy extra allowances on the market (from installations which manage to emit less than their allowances).

The regime foreseen by Directive 2003/87/EC has been strengthened, expanded and improved by the climate and energy package. Directive 2003/87/EC has been revised in order to achieve greater emission reductions by Directive 2009/29/EC which introduces some essential changes<sup>23</sup>. The scope of covered activities and covered greenhouse gases is broadened. The national ceilings are replaced by an EU ceiling. Auctioning of the allocations becomes the principle, and free allocations a slowly dying exception. The use of CDM and JI has been clarified. The new regime will be operational as from 2013.

#### 3.1. The regime of the EU ETS until the end of 2012

##### 3.1.1. *The trading periods*

The current EU ETS provides for two trading periods. The first trading period ran from 1 January 2005 until 31 December 2007. During this first trading period, the objective was to gather operational experience, to “learn by doing”. The second trading period started on 1 January 2008 and is running until 2012

---

22. OJ 2003, L 275/32-46.

23. OJ 2009, L 140/63-87.

(it thereby coincides with the commitment period under the Kyoto Protocol). This second period implements the lessons of the first trading period.

### 3.1.2. *The scope of application*

Not all the six greenhouse gases of the Kyoto Protocol are concerned. Only CO<sub>2</sub>, according to Annex I of the Directive 2003/87/EC, is subject to EU ETS.

Not all companies in the EU<sup>24</sup> participate. The scope of application of the EU ETS is limited to installations emitting CO<sub>2</sub> in one of the four broad sectors listed in Annex I of Directive 2003/87/EC. The four sectors are: energy activities (such as coke ovens), the production and processing of ferrous metals (iron and steel), mineral industry (cement, glass, pottery and bricks) and other activities (pulp and paper production). For most of these activities, there are certain threshold values so that only the largest installations are included.

The current EU ETS excludes thus sectors such as road transport; some industrial sectors; international maritime emissions; and domestic emissions which are included in the scope of the Kyoto Protocol. It also excludes airlines, outside the Kyoto system, until 2012.

However, since 2008, a Member State may include additional activities and gases not listed in the EU ETS, provided it is approved by the European Commission which can, at the same time, authorise the issue of additional allowances and may authorise other Member States to include such additional activities and gases.<sup>25</sup>

### 3.1.3. *The national allocation plans*

Above all, it is important to distinguish two different notions in the cap-and-trade scheme: the *cap* and the *method of allocation*. The “cap” represents the “system constraint” of the trading scheme. It is the total number of allowances that are created to be used by emissions sources that are covered by the scheme. In a closed trading scheme (that is, one that is not linked to another trading scheme), the cap represents the maximum emissions allowed from covered sources. In contrast, the “method of allocation” refers to the way the total

---

24. It should be noted that the EU ETS has been extended to three members of the European Economic Area – Norway, Iceland and Liechtenstein. See Decision of the EEA Joint Committee No 146/2007 of 26 October 2007.

25. Art. 24, § 1 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

number of allowances is distributed. This may be by sale or auction or via some method of free allocation.

The present EU ETS is characterized by a decentralized structure. The cap-setting and the method of allocation of allowances to the installations are decided at national level. More concretely, this means that each Member State is required to draw up a national allocation plan (NAP), to be approved by the European Commission<sup>26</sup>, for each trading period. In each NAP, the country determines the cap (the total quantity of allowances that it intends to allocate) and the method to allocate these allowances to the installations on its territory. This way of doing implies that the total amount of allowances in the EU ETS results from the sum of the allocated allowances by the national governments. There lied an ambiguity that was finally submitted to the judicial authorities after the Commission tried to limit the overall volume of allowances after the price crash of the first period<sup>27</sup>.

As far as the method of allocation is concerned, all Member States have primarily chosen to allocate allowances by using the grandfathering method: allowances are allocated for free on the basis of the historic emissions levels of installations. The auctioning method allowed by Directive 2003/87/EC up to 5% and 10% in respectively the first and second period was very little used.

### 3.1.4. *The use of CDM and JI credits*

To increase the cost-effectiveness of achieving GHG emission reductions, the EU ETS has been linked, via Directive 2004/101/EC<sup>28</sup>, with two flexible mechanisms under the Kyoto Protocol<sup>29</sup>. As a result, installations covered by the ETS are allowed to use credits generated by emission-saving projects carried out in third countries under either the Joint Implementation (JI) or the Clean Development Mechanism (CDM). Credits from JI projects are known as Emission Reduction Units (ERUs) while those from CDM projects are called Certified Emission Reductions (CERs).

Directive 2004/101/EC also details rules on the use of such credits. On the one hand, in exchange for one CER or ERU held by an operator, the Member State must issue and immediately surrender one EU allowance. The use of the CERs

26. The NAPs are assessed by the European Commission on the basis of 12 criteria indicated in Annex III of Directive 2003/87/EC.

27. See § 3.1.7.

28. OJ 2004, L338/18. This Directive 2004/101/EC is also called “the linking Directive”.

29. About these mechanisms, see F. DEHOUSSE and T. ZGAJEWSKI, Climate change: what are the implications for the international system and the European Union?, *Studia Diplomatica*, 2008/1, pp. 49-55.

and ERUs, however, is limited for each installation to a percentage of its allocation of allowances.<sup>30</sup> For that purpose, each Member State must specify in its national allocation plan the maximum extent to which companies may use JI or CDM credits. On the other hand, to ensure the environmental integrity of the EU ETS, CERs and ERUs should not be issued as a result of project activities undertaken within the Community that also lead to a reduction in, or limitation of, emissions from installations covered by the EU ETS, unless an equal number of allowances is cancelled from the registry of the Member State of the CERs' or ERUs' origin. Detailed rules on the treatment of double counting are established by Decision 2006/780/EC.<sup>31</sup>

It is worth noticing that the EU legislation excludes two types of JI/CDM credits: nuclear credits and land use, land-use change, forestry credits. In addition, conditions are attached to the use of carbon credits from hydroelectric projects exceeding 20 MW of installed capacity.

### 3.1.5. *Connecting the EU ETS with other GHG trading schemes*

Like the EU, other countries are developing, or are considering to develop, their own national ETS. Directive 2003/87/EC<sup>32</sup> already provides for the possibility of agreement with third countries that are also Kyoto Protocol Annex B signatories on the mutual recognition of allowances between the Community scheme and other greenhouse gas emission allowance trading schemes.

In this context, it should be reminded that at the end of 2007, the International Carbon Action Partnership (ICAP) was set up. ICAP is a partnership between the European Commission, a number of Member States, US States, Canadian provinces, New Zealand and Norway. They share the vision that a global market is needed. ICAP provides an international forum in which governments and public authorities adopting mandatory greenhouse gas emissions cap and trade systems can share experiences and best practices on the design of emissions trading schemes. This cooperation will ensure that the programs are more compatible and are able to work together as the foundations of a global carbon market.

30. This limit needs to be seen in the light of the supplementary criterion in the Kyoto Protocol. According to this criterion, the use of flexible mechanisms by industrialised countries must be supplemental to their domestic reduction efforts.

31. Commission Decision 2006/780/EC of 13 November 2006 on avoiding double counting of greenhouse gas emission reductions under the Community emissions trading scheme for project activities under the Kyoto Protocol pursuant to Directive 2003/87/EC of the European Parliament and of the Council (OJ 2006, L 316/12).

32. Art. 25 of Directive 2003/87/EC.



### 3.1.6. *Registry, monitoring, reporting, verification requirements*

#### *A/ Registries*

The EU and the Member States are required to establish and maintain registries. Registries are standardized electronic databases ensuring accurate accounting of the issuance, holding, transfer and cancellation of emission allowances. The EU registry is called the “Community Independent Transaction Log (CITL)”. It is distinct from the national registry that each Member State must maintain.<sup>33</sup>

So, any transaction of allowances takes place through the system of Member State registries, themselves linked to the CITL serving as a kind of overall “clearinghouse” for all transactions, meaning that it checks each transaction for any irregularities. Two Regulations 2216/2004/EC<sup>34</sup> and 994/2008/EC<sup>35</sup> lay down general provisions, functional and technical specifications and operational and maintenance requirements concerning a standardized and secured system of registries in the form of standardized electronic databases containing common data elements and the CITL. This legislation on registries also includes provisions concerning the use and identification of CERs and ERUs in the EU ETS. Furthermore, it also foresees, for the period 2008-2012, which coincides with the period under the Kyoto Protocol, that the CITL and Member State registries are linked with the International Transaction Log operated by the UNFCCC secretariat. This linkage also enables account holders in EU registries to import from non-EU registries and use credits from Kyoto Protocol project mechanisms (such as CERs and ERUs).

It should be noted that the Commission has tabled a draft Regulation<sup>36</sup> at the beginning of 2010 containing amendments to the existing registries regulations to put notably a definitive end to CER and ERU recycling. If adopted, this new Regulation will entail the repeal of Regulations 2216/2004 and 994/2008 with effect normally from 1<sup>st</sup> January 2012.

33. See art. 6 of Decision No 280/2004/EC of 11 February 2004 of the European Parliament and of the Council of concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol (OJ 2004, L 49/1), as well as art. 19 and 20 of Directive 2003/87/EC.

34. Commission Regulation (EC) 2216/2004/EC for a standardized and secured system of registries pursuant to Directive 2003/87/EC of the European Parliament and of the Council and Decision 280/2004/EC of the European Parliament and of the Council (OJ 2004, L 386/1). This regulation has been amended by Regulations 916/2007/EC (OJ 2007, L 200/5) and 994/2008/EC (OJ 2008, L 271/3).

35. Commission Regulation/EC 994/2008/CE for a standardized and secured system of registries pursuant to Directive 2003/87/EC of the European Parliament and of the Council and Decision 280/2004/EC of the European Parliament and of the Council (OJ 2008, L 271/3).

36. Draft Commission Regulation (EU) No .../... of ... for a standardised and secured system of registries pursuant to Directive 2003/87/EC and Decision 280/2004/EC [C(2010) xxx final – D009444/03].

## *B / Monitoring and reporting*

Directive 2003/87/EC requires the Commission to adopt guidelines for the monitoring and reporting of greenhouse gas emissions under the ETS. The Commission adopted revised guidelines as Decision 2007/589/EC (so-called the “MRG”) to be used for the phase 2008-2012 (“MRG 2007”).<sup>37</sup> It provides detailed technical interpretation of the requirements indicated in art. 14 and Annex IV of Directive 2003/87/EC. Operators of installations in Member States and candidate countries are required to adhere to these guidelines, which facilitate the full, transparent and accurate monitoring and reporting of the CO<sub>2</sub> emissions. In simple terms, they ensure that “one tone is one tone” across the scheme. Decision 2007/589/EC has been amended by decisions 2009/73/EC<sup>38</sup> and 2009/339/EC<sup>39</sup> to include respectively nitrous oxid and aviation activities.

The verification of emission reports prepared by operators of installations is also a crucial step in the emission trading compliance cycle. The objective of the verification is to ensure that emissions have been monitored in accordance with the guidelines and that reliable and correct emissions data will be reported according to Art. 14, § 3 of Directive 2003/87/EC. Verification provisions are legally provided by Art. 15, with criteria set out under Annex IV, of Directive 2003/87/EC and given detailed interpretation in Decision 2007/589/EC.

### *3.1.7. The functioning of the ETS so far*

Given the lack of experience with emissions trading in Europe and the overall complexity of the system, the establishment of the EU ETS constituted a great challenge to governments and sectors, particularly when one considers the tight timetable to implement the system<sup>40</sup>. From this point of view, its rapid deployment can be seen as a success. On the other side, the EU ETS has not lead to any significant CO<sub>2</sub> emission reductions so far. On the contrary, emissions have slightly increased in the first trading period. Furthermore, during the two trading periods, the EU ETS market was characterized by a swift fall, though for different reasons.

According to the European Environment Agency, installations received in the first trading phase allowances for 2 080 Mt CO<sub>2</sub> per year but only emitted an

37. Commission Decision 2007/589/EC establishing guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC (OJ 2007, L 229/1).

38. OJ 2009, L 24/18.

39. OJ 2009, L 103/10.

40. Shaping the Global Arena, Preparing the EU Emissions Trading Scheme, *CEPS Task Force Report*, No. 61, March 2007.

average of 2 020 Mt CO<sub>2</sub> per year.<sup>41</sup> In other words, the allocation exceeded emissions by 60 Mt per year, corresponding to 3% of the total amount allocated. This over-allocation was visible in almost all Member States. As an immediate result of the over-allocation, allowance prices fell quite dramatically. The first trading period eventually closed at an allowance price of 0,02 euro.

Things seem better in the second trading period. Verified emissions of greenhouse gases from all installations in 2009 totalled 1.873 billion tonnes of CO<sub>2</sub>-equivalent. Emissions of GHG from EU businesses participating to the EU ETS fell 11.6% in 2009 compared with 2008 (3,6% compared to 2007).<sup>42</sup> This significant drop is attributed to several factors. Firstly, the reduced economic activity as a result of the recession and secondly, the low level of gas prices throughout 2009 which has made it much more attractive to produce power from gas rather than more emitting coal. Thirdly, a CO<sub>2</sub> price signal much better than in the first trading period but still too weak (about €13 right now).

Despite the fall of the allowance price at the end of the first period, the EU ETS has created a functioning allowance market. Banks and other commodities traders are increasingly active in the market. A number of exchanges offer carbon trading (for instance, the European Climate Exchange). A transparent price on tradable CO<sub>2</sub> emission allowances emerged as of 1<sup>st</sup> January 2005. Registries, monitoring, reporting and verification are in place. In figures, the allowance market has grown spectacularly, both in terms of volume and value of transactions. In its first year (2005) more than 322 million tonnes of CO<sub>2</sub> allowances were traded on the market, worth more than 6,5 billion euro.<sup>43</sup> In 2006 the scheme saw 1 billion EUAs transacted, worth 18,1 billion euro.<sup>44</sup> In 2007, these figures almost doubled: more than 2 billion allowances were traded corresponding to a market value of 37 billion euro.<sup>45</sup> This positive picture has been tarnished however later by a series of scandals (including a 5 billion euro VAT carousel fraud<sup>46</sup> that accounted for up to 90% of trading in some EU countries,

41. See Report No. 5/2007 of the European Environment Agency, *Greenhouse gas emission trends and projections in Europe 2007*.

42. See Commission's press release IP/10/576 dated 18 May 2010 on the following web site: <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/10/576&format=HTML&aged=0&language=EN&guiLanguage=en>. See also Commission's press release IP/09/794 dated 15 May 2009 on the following web site: <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/794&format=HTML&aged=0&language=EN&guiLanguage=en>

43. *State and Trends of the Carbon Market 2007*, The World Bank, May 2007, p. 11, available from [http://carbonfinance.org/docs/Carbon\\_Trends\\_2007\\_FINAL\\_-\\_May\\_2.pdf](http://carbonfinance.org/docs/Carbon_Trends_2007_FINAL_-_May_2.pdf)

44. Carbon 2007 — A new climate for carbon trading, PointCarbon, 13 March 2007. [http://www.point-carbon.com/getfile.php/fileelement\\_105366/Carbon\\_2007\\_final.pdf](http://www.point-carbon.com/getfile.php/fileelement_105366/Carbon_2007_final.pdf).

45. *State and Trends of the Carbon Market 2008*, The World Bank, May 2008, p. 7, available from <http://siteresources.worldbank.org/NEWS/Resources/State&Trendsformatted06May10pm.pdf>

46. Carousel fraud involves bogus traders buying carbon credits in one country without paying the appropriate VAT, the same trader then sells them on to another country with the VAT added, but failing to pay the tax to the authorities.

and the recycling of CDM credits in Hungary, allowing their reductions to be counted twice<sup>47</sup>).

All in all, it is obvious that the ETS has had a significant impact on corporate behaviour. The EU industry sees now that there can be a price to pay for carbon emissions and takes this new reality into account in its business decisions (but also tries to keep as many free allocations as possible). As far as the impact of the scheme on the competitiveness of European companies is concerned, it seems unlikely that the first years of the ETS have had a significant impact on their competitive position.

It is also clear that the scheme does not function properly yet. Firstly, the scheme can only work effectively if EU governments realistically restrict the total amount of carbon dioxide emissions they make available to companies. The first trading period was characterized by long allowances (i.e. there is a greater allocation of allowances than industry needs in a “business as usual” scenario). In other words, the NAPs for 2005-2007 were too generous and this situation led the price of CO<sub>2</sub> to fall dramatically. This of course did not provide a real incentive for companies to invest in clean technologies. So to avoid a similar situation during the second trading period, the Commission requested an adjustment of several NAPs for the second trading period when it assessed that the level of the proposed national cap was excessive<sup>48</sup>.

Secondly, the widely different national methods for allocating allowances to installations seem to raise the risk of distortions of competition in the internal market. In addition, the EU giving emission allowances for free is subject to critics. Free allocation has also caused windfall profits for the power sector. Thirdly, the limited scope of application of the scheme, both in terms of sectors covered and gases included, hinders the ETS impact. Fourthly, harmonization,

---

47. Marton Kruppa and Ben Garside, 'Hungary sells “recycled” CERs', *Point Carbon*, 11 March 2010; Leigh Phillips, 'EU emissions trading an “open door” for crime, Europol says', *EU Observer*, 10 December 2009; <http://euobserver.com/885/29132>. In brief, the Hungarian authorities sold two million recycled Certified Emission Reduction (CERs) in good faith into the market. The CERs had already been used by Hungarian companies to meet their compliance targets under the European Union Emissions Trading Scheme (EU ETS) and were therefore unusable under the scheme.

48. Some Member States concerned contested the Commission's decision towards them before the Court of Justice of the European Union, arguing notably that the Commission was not competent to impose reductions of allowances. See the General Court judgments in Case T-183/07 Poland v Commission and Case T-263/07 Estonia v Commission. The Commission has appealed on the basis of several grounds against these judgments which annulled the Commission's contested decisions. It considers that the General Court has interpreted too narrowly the powers of the Commission in the NAP assessment process, and has not sufficiently taken into account the objective of the EU ETS to reduce emissions of greenhouse gases, and the need to ensure the equal treatment of Member States. Interestingly, meanwhile, a new NAP has been presented by Poland, corrected after observations from the Commission, and finally approved by the Commission. The total number of allowances finally remains 208.5 Mt per year, which was the level defined in the first annulled decision. See <http://www.euractiv.com/en/climate-environment/eu-poland-move-settle-carbon-quota-row-news-461636>.

clarification and refinement are needed with respect to access to credits from emission reduction projects outside the EU.

Directive 2009/29/EC has taken these issues into consideration in defining a new ETS system for the third trading period, beginning on 1 January 2013 and ending on 31 December 2020. It should be noted that this third trading period will last eight years, as opposed to five years for the second trading period.

Meanwhile, it remains impossible to present a valid evaluation of the ETS efficiency. On the one hand, there is a functioning market and some emissions reductions have been made<sup>49</sup>. On the other hand, there have been repeated price crashes and the biggest of the emissions reduction has been provoked not by the system itself, but by the increase of the energy prices and the huge industrial production drop due to the financial crisis. The ETS has also provoked distortions of competition and undue distributional effects<sup>50</sup>. Basically, the jury is still out.

## 3.2. The EU ETS post-2012

### 3.2.1. *The extension of the ETS scope of application*

As from 2013, the scope of the EU ETS will be extended in two different directions. The system will cover additional sectors and additional greenhouse gases.<sup>51</sup>

At the sectors level, the scheme will be broadened, for instance to the production of numerous metals (including aluminium), meaning that it will not be limited to ferrous metals anymore. It will also be extended to the basic chemical industry (nitric acid or ammonia) or to the production of mineral wool or rock wool. On the other hand, for the power sector, there is no change. The activity of capture, transport and geological storage of CO<sub>2</sub> will also be covered.

---

49. See the 2009 Commission's report: COM (2009) 630.

50. Point Carbon, *EU ETS phase II – the potential and scale of windfall profits in the power sector*, 2008.

51. See Annex I of Directive 2003/87/EC which has been revised by Directive 2009/29/EC. Guidance on the interpretation of this revised Annex I has been published in March 2010. It excludes aviation activities which has its own guidance paper. It is intended as a tool to assist Member States and their competent authorities in implementing the revised scope of the EU ETS Directive and to achieve consistency in its interpretation. The guidance can be found on the following Commission's website: [http://ec.europa.eu/environment/climat/emission/pdf/100318\\_guidance\\_interpr\\_annex\\_i\\_final.pdf](http://ec.europa.eu/environment/climat/emission/pdf/100318_guidance_interpr_annex_i_final.pdf).

At the greenhouse gases level, the scheme will be widened to include perfluorocarbons (PFCs) in the case of aluminium and nitrous oxide (NO<sub>2</sub>) coming from the chemical industry.

According to the Commission, the addition of these sectors and gases will increase the coverage of the scheme by up to 140 to 150 Mt CO<sub>2</sub>. International maritime emissions might be included later<sup>52</sup>, but emissions from agriculture and forestry will not. As of 2012, aviation will also be included in the EU ETS, as it is indicated in Directive 2008/101/EC<sup>53</sup>. The general exclusion of transport remains however an important element.

On the other side, it has also been considered that a large number of installations emitting relatively low amounts of CO<sub>2</sub> are currently covered by the ETS and that the cost-effectiveness of their inclusion is not evident. For that reason, and to lessen the administrative burden, as from 2013, Member States will be allowed to remove these installations from the EU ETS provided certain conditions are provided<sup>54</sup>. The installations concerned are those whose reported emissions were lower than 25 000 tons of CO<sub>2</sub> equivalent in each of the 3 years before the year of application. For combustion installations, an additional capacity threshold of 35MW applies. In addition, Member States are given the possibility to exclude installations operated by hospitals. However, these installations may be excluded from the ETS only if they will be covered by measures (for instance, taxation, agreement with the industry or regulations) that will achieve an equivalent contribution to emission reductions.

### 3.2.2. *The creation of an EU wide cap*

The decentralized approach allowing Member States to determine the total quantity of allowances they intend to allocate and the method to allocate these allowances to their installations on their territory has been identified as one of

52. In the event that no international agreement which includes international maritime emissions in its reduction targets through the International Maritime Organisation has been approved by the Member States or no such agreement through the UNFCCC has been approved by the Community by 31 December 2011, the Commission should make a proposal to include international maritime emissions with the aim of the proposed act entering into force by 2013.

53. Directive 2008/101/EC of the European Parliament and of the Council of 19 November 2008 amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community (OJ 2009, L 8/3). Concerning this Directive, three implementing measures have already been adopted. A Commission Decision 2009/450/EC on the detailed interpretation of the aviation activities listed in the Annex I to Directive 2003/87/EC (OJ 2009, L 149/69-72). A Commission Regulation (EC) No 82/2010 on the list of aircraft operators specifying the administering Member State (OJ 2010, L 25/12). A Commission Decision 2009/339/EC on the inclusion of monitoring and reporting guidelines for emissions and tonne-kilometre data from aviation activities (OJ 2009, L 103/10).

54. See new art. 27 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

the problems encountered by the EU ETS. It makes the EU ETS complex, creates an incentive for each Member State to favour its own industry and provokes discussions between Member States and the Commission. For that reason, this approach has been replaced by a more centralized approach offering a greater harmonization of cap-setting and allocation method between Member States.

Two main features characterize this new approach. On the one hand, all aspects of cap-setting are agreed at EU level. This means that there are no more national allocation plans since the 27 national caps are suppressed. On the other hand, as a scarcity of allowances is essential for having a positive CO<sub>2</sub> market price, a reduction of the quantity of allowances to be allocated to EU Member States will progressively take place.

More concretely, Directive 2009/29/EC foresees that the European Commission will fix an EU wide cap on emission allowances for each individual year covering the third trading period. The progressive reduction of these annual EU wide caps must bring in 2020 to a 21% greenhouse gas emission reduction below reported 2005 levels (leading thus to a maximum of 1 720 million allowances issued in 2020). It is consistent with the 20% GHG emission reduction target below 1990 levels in 2020. A maximum of 5% of the EU-wide quantity of allowances over the period of 2013 to 2020 will be reserved to new entrants.<sup>55</sup>

Starting in 2013, the EU annual cap will afterwards decline year by year at an annual rate of 1.74%<sup>56</sup> (compared to the average annual total quantity of allowances issued by Member States for the second trading period). Indeed, the level at which the cap is set is the primary determinant of the market price for allowances. The scarcer the allowances are, the higher their price.

The estimated annual cap figures indicated by the European Commission<sup>57</sup> are given in the following table:

Year	Moi t CO <sub>2</sub>
2013:	1,974
2014:	1,937
2015:	1,901
2016:	1,865
2017:	1,829
2018:	1,792
2019:	1,756
2020:	1,720

55. See art. 10a, § 7 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

56. This linear reduction factor will apply after 2020 but will be reviewed as from 2020.

57. See question 12 of Commission's MEMO/8/35 dated 23 January 2008.

These cap figures are based on the scope of the EU ETS as applicable in the second trading period (2008 to 2012) and the Commission's decisions on NAPs for this period.<sup>58</sup> They will be adjusted however to reflect the broadened scope of the system in the second trading period (aviation in 2012 for instance) as well as the broadened scope of the system from 2013, provided that Member States substantiate and verify their emissions accruing from these extensions. In the latter case, Directive 2009/29/EC indicates that the Commission will publish adjusted quantities by 30 September 2010.<sup>59</sup> In the meantime, in July 2010, the cap for 2013 has been fixed by the Commission at 1.926.876.368<sup>60</sup>. It remains subject to possible marginal adjustments.

### 3.2.3. *The auctioning becomes the basic rule for allocation of allowances*

During the first years of the ETS, allowances have been predominantly allocated for free in the first and second trading periods. For the third trading period, a fundamental change is operated. Auctioning of allowances becomes the principal allocation method<sup>61</sup>. Several reasons explain this choice. Auctioning best ensures the efficiency, transparency and simplicity of the system and creates the greatest incentive for investments in a low-carbon economy. Auctioning best complies with the “polluter pays principle” and avoids giving windfall profits to certain sectors that have passed on the notional cost of allowances to their customers despite receiving them for free. Today about 4% of the total number of allowances are being auctioned. In 2013, around 50% of the total number of allowances will be auctioned and this proportion will increase in later years.

Auctioning will be used towards all EU allowances which are not allocated free of charge. The Commission will determine and publish the estimated amount of allowances to be auctioned by 31 December 2010.<sup>62</sup>

The distribution amongst Member States of the total quantity of allowances to be auctioned follows a complex rule. 88% of the allowances for auctioning will be distributed to all Member States on the basis of their EU ETS emissions from 2005 to 2007<sup>63</sup>. 10% of the allowances for auctioning will be distributed to the benefit of certain Member States for the purpose of Community solidarity and growth to be used to reduce emissions and adapt to the effects of climate change.

---

58. Emissions from Norway, Liechtenstein and Iceland are not included.

59. See new art. 9a, § 2 and 3 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

60. Decision C (2010) 4658.

61. Art. 10, § 1 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

62. Art. 10, § 1 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

63. For Romania and Bulgaria, it will be in 2007



A further 2% of the allowances for auctioning will be distributed to the most virtuous Member States (all of them are Eastern countries) which in 2005 had achieved a reduction of at least 20% in GHG emissions compared with the base year applicable to them under the Kyoto Protocol<sup>64</sup>.

Member States will be responsible for ensuring that the allowances attributed to them are auctioned. The Commission must adopt a Regulation detailing the rules for the timing, the administration and other aspects of auctioning in order to ensure that it is conducted in an open, transparent, harmonised and non-discriminatory manner<sup>65</sup>. A proposal for such a Regulation has been tabled by the Commission<sup>66</sup>. The latest version of the draft Regulation, supported by the Commission and approved by the Climate Change Committee in July 2010, allows Member States to opt out of the common auction platform and set up their own auction platforms. These must however respect the framework established by the draft Regulation and potential further rules to ensure a proper coordination between the common auction platform and the national ones. The Commission will have to approve each Member State's plan about a national auction platform before it enters into force. The draft Regulation has been sent to the Parliament and the Council for a three-month scrutiny period.

Finally, Member States can determine the use of auctions' revenues, but at least 50% of them must be used to fight and adapt to climate change mainly within the EU, or in developing countries according to some conditions.<sup>67</sup> The Member States will inform the European Commission on the use of revenues through the reports under the GHG monitoring Decision 280/2004/EC.

### 3.2.4. *The slow death of free allocations post-2012*

Free allocation as a method of allocation of EU emission allowances is kept in the EU ETS post-2012 as a transitional measure.

By 31 December 2010, the Commission will adopt implementing measures<sup>68</sup>

64. Art. 10, § 2 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

65. Art. 10, § 4 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

66. Commission's proposal for an auctioning regulation No xxx dated 6 April 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and the Council establishing a scheme for greenhouse gas emission allowances trading within the Community. This proposal of auctioning Regulation is accompanied by an Impact assessment dated 08 February 2010. Both can be found on the following Commission's web site: [http://ec.europa.eu/environment/climat/emission/pdf/proposed\\_auctioning\\_reg.pdf](http://ec.europa.eu/environment/climat/emission/pdf/proposed_auctioning_reg.pdf).

67. Art. 10, § 3 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

68. Art. 10a, § 1 of Directive 2003/87/EC, as revised by Directive 2009/29/EC. These implementing measures will be reviewed if an international agreement on climate change leading to mandatory reductions of GHG emissions comparable to those of the Community is agreed (art. 10a, § 1, in fine).

detailing the rules for the allocation of EU free allowances. These rules will specify that free allocations are based on ex-ante benchmarks for the sectors receiving free allocation in order to ensure that allocations take place in a manner that provides incentives for GHG reductions and energy efficient techniques. The ex-ante benchmarks will reflect the average performance of the 10% most efficient installations (in terms of greenhouse gas emissions) in a sector or sub-sector in the Community in the years 2007-2008.<sup>69</sup> 80% of the total quantity of benchmarked allowances will be allocated for free in 2013, decreasing afterwards each year by equal amounts resulting in 30% free allocation in 2020, with a view to reaching no free allocation in 2027.<sup>70</sup>

Installations of a few sectors only will receive transitional free allocation allowances: district heating; high-efficiency cogeneration in respect of heating and cooling.<sup>71</sup> Here, the total transitional free allocation will gradually decrease in each year subsequent to 2013 at a linear rate of 1.74%.

More generally, installations in sectors or sub-sectors judged to be at significant risk of “carbon leakage” (meaning that they could be forced by international competitive pressures to relocate production to countries outside the EU with less stringent constraints on GHG emissions, with the consequence that such attitude would simply increase global emissions without any environmental benefit) will receive in 2013 and in each subsequent year up to 2020 100% free allocations.<sup>72</sup> A list of the sectors and sub-sectors concerned drawn up on the basis of detailed criteria on CO<sub>2</sub> cost and trade exposure set out in Directive 2009/29/EC<sup>73</sup> has already been established by the European Commission in its decision 2010/2/EU.<sup>74</sup> This list applies for five years from adoption, but new sectors or sub-sectors can be added to the list during this period<sup>75</sup>. Member States may also adopt financial measures for installations in energy-intensive sectors judged to be at significant risk of “carbon leakage.”<sup>76</sup> Guidelines on state aid for environmental protection have been modified in this respect.

No transitional free allocation allowances will be given either to installations for the capture of CO<sub>2</sub>, to pipelines for transport of CO<sub>2</sub> and to CO<sub>2</sub> storage

69. Art. 10a, § 2 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

70. Art. 10a, § 11 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

71. Art. 10a, § 4 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

72. Art. 10a, § 12 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

73. Art. 10a, §§ 14 to 17 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

74. Commission’s decision 2010/2/EU of 24 December 2009 determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage (OJ 2010, L 1/10). This decision was subject to an impact assessment which can be found on the following Commission’s web site: [http://ec.europa.eu/environment/climat/emission/pdf/proportionate\\_ia\\_%20leakage\\_list16sep.pdf](http://ec.europa.eu/environment/climat/emission/pdf/proportionate_ia_%20leakage_list16sep.pdf)

75. Art. 10a, § 13 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

76. Art. 10a, § 6 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

sites or to electricity generators (new entrants included)<sup>77</sup>, except those which will be granted by Member States a derogation to aid modernization of the electricity sector, provided certain conditions are fulfilled.<sup>78</sup> The transitional free allocations granted as such to electricity generators must be deducted from the quantity of allowances that the Member State concerned would otherwise auction and must not exceed in 2013 70% of the annual average verified emissions in 2005-2007 from such electricity generators.<sup>79</sup> They will decrease afterwards every year with the aim of no free allocation in 2020. Any Member State that intends to allocate transitional free allowances to electricity producers have to submit to the Commission an application by 30 September 2011 which contains, on the one hand, the proposed allocation methodology and individual allocations and, on the other hand, a national plan that provides for investments in retrofitting and upgrading of the infrastructure and clean technologies.<sup>80</sup>

Finally, no transitional free allocation will be given to an installation that has ceased operations, unless demonstration has been brought that this installation will resume production within a specified and reasonable time.<sup>81</sup>

### 3.2.5. *The creation of a New Entrants' Reserve*

A maximum of 5% of the EU-wide quantity of allowances over the period of 2013 to 2020 will be reserved to new entrants.<sup>82</sup> By 31 December 2010, the Commission will adopt harmonized rules for the application of the definition of “new entrant”.<sup>83</sup>

Up to 300 million allowances for auctioning in the New Entrants' Reserve will be available until 31 December 2015 to support the construction and operation of up to 12 CCS commercial demonstration projects<sup>84</sup> as well as demonstration projects using innovative renewable energy technologies. There should be a fair geographical distribution of the projects<sup>85</sup>.

77. Art. 10a, § 3 and § 7 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

78. Art. 10c, § 1 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

79. Art. 10c, § 2 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

80. Art. 10c, § 5 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

81. Art. 10a, § 19 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

82. See art. 10a, § 7 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

83. Art. 10a, § 7 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

84. Art. 10a, § 8 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

85. Lithuania, as well as any Member State with an electricity network which is interconnected with Lithuania, may also claim allowances for auctioning from the New Entrants' Reserve under certain conditions (Art. 10a, §§ 9 and 10 of Directive 2003/87/EC, as revised by Directive 2009/29/EC).

In principle, any allowances remaining in the reserve shall be distributed to Member States for auctioning. The distribution key shall take into account the level to which installations in Member States have benefitted from this reserve.

### 3.2.6. *A ceiling on the use of CERs and ERUs*

Large amount of money are already poured into carbon mitigation schemes around the world, with many of these being funded as a result of the EU ETS. There is little doubt that the clearest market signal being given by the EU ETS to date is that it is cheaper to undertake abatement outside the EU than in it. Concretely, according to the Commission's latest progress report issued in 2009, "in total, up to 278 million CERs or ERUs may be used per year by ETS installations from all Member States in the second trading period. This corresponds to 13.4% of the EU wide cap for the second trading period. In 2008, operators used 81.7 million CERs or ERUs which was 3.9% of all surrendered allowances"<sup>86</sup>.

If fostering a global market for carbon abatement is a desirable aim, the EU also wants to show that genuine action can be achieved at home. Hence, installations covered by the EU ETS may continue to use carbon credits in the framework of CDM and JI during the third trading phase. This use must not exceed, however, 50% of the Community-wide reductions below the 2005 levels of the existing sectors under the Community scheme over the period from 2008 to 2020 and 50% of the Community-wide reductions below the 2005 levels of new sectors and aviation over the period from the date of their inclusion in the Community scheme to 2020<sup>87</sup>.

This said, Directive 2009/29/EC does not allow credits from nuclear projects and from certain types of land use, land-use change and forestry ('LULUCF') projects which absorb carbon from the atmosphere. Before submitting its proposal, the Commission had analyzed such a possibility. It concluded this would undermine the environmental integrity of the EU ETS for different reasons<sup>88</sup>.

### 3.2.7. *Connecting the EU ETS with other GHG trading schemes*

With Directive 2009/29/EC, the EU ETS has henceforth clear provisions to link the EU ETS with other similar schemes created at regional or national levels outside the EU.<sup>89</sup> Indeed, it is necessary to develop more and more the carbon

---

86. COM (2009) 630, p. 15.

87. Art. 11a, § 8 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

88. See SEC (2008) 52, pp. 56-61.

89. Art. 25, § 1a and b of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

market to make it a global market. In that perspective, the EU would like to work in particular with the US Administration to create a transatlantic carbon market which act as a driving force to fight climate change<sup>90</sup>.

### 3.2.8. *Registry, monitoring and reporting requirements*

#### *A / Registries*

Directive 2009/29/EC requires that allowances issued from 1 January 2012 onwards will be held in the Community registry instead of in national registries.<sup>91</sup> The scope of the EU ETS has been extended. For all these reasons, a draft Commission regulation for a standardized and secured system of registries is under preparation.<sup>92</sup> Once adopted, it will repeal Regulations 2216/2004/EC and 994/2008/EC with effect from 1 January 2012 (see also point 3.1.6.).

#### *B / Monitoring and reporting*

In addition, the same Directive 2009/29/EC prescribes that by 31 December 2011, the Commission shall adopt a new Regulation governing the monitoring and reporting of emissions from activities listed in Annex I of the Directive. Meanwhile, the Commission's Decision 2010/345/EU has amended Decision 2007/589/EC establishing guidelines for monitoring and reporting GHG emissions to include CCS of carbon dioxide<sup>93</sup>.

### 3.2.9. *The link with an international climate agreement post-2012*

The future of the whole climate package is linked to the conclusion of an international agreement which should replace the Kyoto protocol after 2012, and this is also valid for the ETS system. The consequences of such an agreement have been foreseen by Directive 2009/29/EC. The consequences of the absence of such an agreement have also been foreseen. If this international agreement is concluded, the Commission shall submit quickly a report to the European Par-

90. This of course will not be made easier by the abandonment of the legislative projects aiming to establish a US cap and trade system.

91. Art. 19, § 1 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

92. Draft Commission Regulation (EU) No .../... of [...] for a standardized and secured system of registries pursuant to Directive 2003/87/EC of the European Parliament and of the Council and Decision 280/2004/EC of the European Parliament and of the Council – C(2010) XXX final D008416/03. This draft can be found on the following web site: [http://ec.europa.eu/environment/climat/emission/pdf/regreg\\_iv\\_final\\_consolid\\_100416.pdf](http://ec.europa.eu/environment/climat/emission/pdf/regreg_iv_final_consolid_100416.pdf). (accessed August 10, 2010).

93. OJ 2010, L 155/34-47.

liament and the Council assessing the nature of the measures agreed upon in the international agreement and their implications for the EU.<sup>94</sup> On the basis of this report, the Commission shall then present a legislative proposal amending Directive 2009/29/EC as appropriate.

If the negotiations to establish a new international climate agreement fail, or if major emitters refuse to participate to it – that was the case in Copenhagen in December 2009 – this will place EU energy-intensive sectors in a position of competitive disadvantage. The risk of carbon leakage will increase. Therefore, Directive 2009/29/EC obliged the European Commission to submit a report by 30 June 2010 and to carry an in-depth assessment of the situation with regard to energy-intensive sectors or sub-sectors that have been determined to be exposed to significant risks of carbon leakage by 31 March 2011, accompanied in both cases by proposals considered appropriate<sup>95</sup>.

Following the failure of the Copenhagen conference, the Commission has thus presented its assessment of the carbon leakage threat after the Copenhagen Accord. According to its analysis, the Accord's impact is not significant enough to motivate a change in the measures now used to address the risk of carbon leakage: free allocation, use of international credits and possibility of financial compensation for costs related to greenhouse gas emissions passed on in electricity. If the EU stepped up to 30% while all other countries would keep their low pledges, this would not lead to significant impacts on EU energy intensive industry's output compared to other countries, if crediting mechanisms are kept in place. The relative loss for EU energy intensive industry would remain largely unchanged if not slightly improved compared to the case where the EU implemented the lower end pledge of 20% unilaterally<sup>96</sup>.

Furthermore, as said, Directive 2009/29/EC extends the operators' rights to use credits generated by emission-saving projects undertaken in third countries for the third trading period (see point 3.2.7. above). But the Kyoto framework does not enable ERUs to be created from 2013 onwards without new quantified emission targets being in place for host countries. CDM credits can potentially continue to be generated. In the hypothesis that an international agreement post-2012 is not concluded or is delayed (which was the case in Copenhagen in 2009), there will be for sure a problem regarding the unused allowances acquired by operators of installations under the JI and CDM mechanisms during the trading period of 2008-2012.

---

94. Art. 28, § 1 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

95. Art. 10b, §§ 1 and 2 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.

96. CEC, *Unlocking Europe's potential in clean innovation and growth – Analysis of options to move beyond 20% – Commission staff working document*. [COM (2010) 265, chap. 7]

Directive 2009/29/EC has anticipated such a problem and provides solutions in view of giving some predictability to operators of installations covered by the EU ETS. On the one hand, it establishes a specific regime which offers, without entering into details, the possibility to operators to exchange their unused CERs and ERUs allowed in the period from 2008 to 2012 with allowances valid from 2013 onwards.<sup>97</sup> On the other hand, it prescribes to use credits from high-quality projects in the Community scheme in accordance with agreements with third countries. Such agreements may be bilateral or multilateral. Once an international agreement has been concluded, only credits from projects from third countries which have ratified that agreement shall be accepted in the Community scheme from 1 January 2013.

---

97. Art.11 of Directive 2003/87/EC, as revised by Directive 2009/29/EC.





## 4. The Obligations of the non ETS Sectors

In the present legal framework, the obligations of the Member States regarding the non ETS sectors are quite limited. However, they have to reach the global targets imposed by the Kyoto commitments. The non ETS sectors are thus covered by the general surveillance regime of Decision 280/2004/EC. New obligations will be added by Decision 406/2009/EC.

### 4.1. The general surveillance regime of Decision 280/2004/EC

Decision 99/296/EC did not cover the requirements on monitoring and reporting under the Kyoto Protocol as agreed at COP 6 in Bonn and COP 7 in Marrakech. Therefore, in 2004, Decision 280/2004/EC concerning a mechanism for monitoring Community greenhouse emissions and for implementing the Kyoto Protocol was adopted (hereafter “the second monitoring decision”)<sup>98</sup>.

Under this second monitoring decision, Member States and the Community are respectively required to devise, publish and implement national programs and a Community program for limiting or reducing their anthropogenic emissions by sources and enhancing removals by sinks of all greenhouse gases not controlled by the Montreal Protocol in order to contribute: (a) the stabilization of CO<sub>2</sub> emissions by 2000 at 1990 levels (this objective was met by the Community and its Member States) but also the fulfillment of the Community’s and its Member States’ commitments related to the limitation and/or reduction of all greenhouse gas emissions under the UNFCCC and the Kyoto Protocol and (b) transparent and accurate monitoring of the actual and projected progress of Member States, including the contribution made by Community measures, in meeting the Community’s and its Member States’ commitments relating to the limitation and/or reduction of all greenhouse gas emissions under the UNFCCC and the Kyoto Protocol.

These national programs must be updated and include information on:

- national policies and measures which limit and/or reduce greenhouse gas emissions by sources or enhance removals by sinks on a sectoral basis for each greenhouse gas;
- national projections of greenhouse gas emissions by sources and their removal by sinks as a minimum for the years 2005, 2010, 2015 and 2020, organized by gas and by sector;

---

98. Decision 280/2004/EC of the European Parliament and the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse emissions and for implementing the Kyoto Protocol (OJ 2004, L 49/1).

- measures being taken or planned for the implementation of relevant Community legislation and policies, and information on legal and institutional steps to prepare to implement commitments under the Kyoto protocol as well as information on arrangements for, and national implementation of, compliance and enforcement procedures;
- institutional and financial arrangements and decision making procedures to coordinate and support activities related to participation in the mechanisms the flexible mechanisms of the Kyoto Protocol.

In addition, Member States are required to communicate supplementary information to the Commission (by 15 January each year at the latest) for the assessment of progress and the preparation of annual reports by the Community as required under the UNFCCC and the Kyoto Protocol. Such information includes the elements mentioned in Article 3 of the decision.

Furthermore, Member States had to establish by 31 December 2005 national inventory systems for the estimation of greenhouse gas emissions and removals on their territory. Each year, the Commission in cooperation with the Member States compiles a Community greenhouse gas inventory and a Community greenhouse gas report. It circulates these in draft to the Member States by 28 February and publishes and submits them to the UNFCCC Secretariat by 15 April. For 2006, the Commission had to adopt a Community inventory system. The Commission fulfils these tasks with the assistance of the European Environmental Agency.

The EU and Member States are also required to establish and maintained registries in order to ensure the accurate accounting of the issue, holding, transfer, acquisition, cancellation and withdrawal of assigned amount units, removal units, emission reduction units and certified emission reductions and the carry-over of assigned amount units, emission reduction units and certified emission reductions. These registries incorporate registries established pursuant to Article 19 of Directive 2003/87/EC. The Community and Member States may maintain their registries in a consolidated system, together with one or more other Member States.

Each year, the Commission evaluates whether the progress made throughout the Community is sufficient to meet the commitments made under the UNFCCC and the Kyoto Protocol. On the basis of the assessment, the Commission submit a report to the European Parliament and the Council. This report must contain information on projected emissions and removals, and on policies and measures taken to reduce emissions. The European Environmental Agency also provides assistance to fulfill these tasks.

Since the adoption of decision 280/2004/EC, different progress reports have been adopted. Compared to the previous progress reports, they take into account the enlargement and assess the progress of the 25, now 27, Member States. Although they assessed the progress of the EU-25, developments in the EU-15 are however often highlighted because of their collective target and the burden sharing agreement<sup>99</sup>.

Where appropriate, Decision 280/2004/EC will be amended in order to implement the obligations organised by Decision 406/2009/EC.

## 4.2. The new obligations of Decision 406/2009/EC

The non-ETS sectors covered by decision 406/2009/EC include all sectors except installations covered by the EU ETS; land use, land-use change, forests (LULUCF); international maritime shipping. Taken together, they currently represent some 60% of total GHG emissions in the EU. Some of them are thus essential.

In the non-ETS sectors, Member States hold key competences to adopt and implement climate policies and measures. Such measures can include traffic management, shifts away from carbon-based transport, taxation regimes, the promotion of public transport, urban and transport planning, improved energy performance standards for buildings more efficient heating systems, renewable energy for heating, etc. At the same time, a number of EU-wide measures contribute to emission reductions in these sectors. The most important of these EU measures relate to energy performance of buildings and eco-design requirements for energy-using products; as well as to emissions performance standards for new passenger cars and light commercial vehicles; waste; soil protection; fluorinated greenhouse gases, labelling systems to inform consumers.

According to Decision 406/2009/EC, the non-ETS sectors in the EU must reduce their greenhouse gas emissions by 10% by 2020 in comparison with 2005 levels<sup>100</sup>. The effort to reach this 10% target has been divided among the 27 Member States. Each has received its own individual emission reduction target, expressed as a percentage. Each individual target has been primarily calculated on the wealth of the country (GDP per capita). This should ensure that the reduc-

99. COM (2004) 818; COM (2005) 655; COM (2006) 658; COM (2007) 757; COM (2008) 651; COM (2009) 630.

100. OJ 2009, L 140/136-148.

At first sight, the reference to 2005 and not to 1990 may seem curious. However, considering the huge changes that have happened from 1990 onwards, this simplifies the understanding of the requirements. Furthermore, data for 2005 are both more available and more reliable.

tion efforts and associated costs are distributed in a fair and equitable manner whilst allowing for further economic growth in less wealthy Member States. Consequently, Member States' targets stretch from –20% for the richest Member States to +20% for poorer ones compared to 2005 levels.

These Member States' reduction targets are set out in Annex II of Decision 406/2009/EC and are shown in the table below. They have to take place between 2013 and 2020. In addition, emission reductions in each Member State have to decline year by year according to a linear manner.<sup>101</sup> Determination by the European Commission of the annual emission allocations for the period 2013 to 2020 in terms of tons of carbon dioxide equivalent is expected once reviewed and verified emission data are available<sup>102</sup>. If a Member State's GHG emissions exceed the annual emission allocation, some corrective measures must be taken<sup>103</sup>.

Belgium	-15%
Bulgaria	20%
Czech Republic	9%
Denmark	-20%
Germany	-14%
Estonia	11%
Ireland	-20%
Greece	-4%
Spain	-10%
France	-14%
Italy	-13%
Cyprus	-5%
Latvia	17%
Lithuania	15%
Luxembourg	-20%
Hungary	10%
Malta	5%
Netherlands	-16%
Austria	-16%
Poland	14%
Portugal	1%
Romania	19%
Slovenia	4%
Slovakia	13%
Finland	-16%
Sweden	-17%
United Kingdom	-16%

101. Art. 3, § 2 of Decision 406/2009/EC.

102. Art. 3, § 2 of Decision 406/2009/EC.

103. Art. 7 of Decision 406/2009/EC.

### 4.3. Flexibility mechanisms post-2012

Decision 406/2009/EC allows some degree of flexibility. A Member State is allowed to carry forward from the following year a quantity of up to 5% of its annual emission allocation or to carry over excess emission reductions of a given year to the subsequent years. It may also request from the European Commission a carry forward rate superior to 5% in 2013 and 2014 in the event of extreme meteorological conditions which have led to substantially increased GHG emissions in those years compared to years with normal meteorological conditions. It may transfer up to 5% of its annual emission allocation for a given year to other Member States. It may also transfer the part of its annual emission allocation that exceeds its GHG emissions for that year to other Member States.<sup>104</sup> Modalities concerning the last two transfers will be adopted by the European Commission.

Finally, a limited use each year of carbon credits from CDM, JI and other projects implemented in third countries is also permitted. In synthesis, this limit has been defined as 3% of the GHG emissions of the Member States in 2005<sup>105</sup>.

### 4.4. The impact of a new international climate agreement post-2012

Within three months after the signature of an international agreement by the EU leading to emission reductions exceeding 20% compared to 1990 levels, the Commission will submit a report on the numerous implications of this agreement. On the basis of this report, it will submit a legislative proposal to amend Decision 406/2009/EC<sup>106</sup>. The legislative proposal shall allow, as appropriate, Member States to use, in addition to the credits provided for in this Decision, CERs, ERUs or other approved credits from projects in third countries which have ratified the international agreement on climate change<sup>107</sup>. In addition, from January 2013, only credits from projects in third countries which have ratified that international agreement are used.

Furthermore, the Commission shall propose, on the basis of rules agreed as part of an international agreement, “to include emissions and removals related to land use, land use change and forestry in the Community reduction commitment, as appropriate, according to harmonized modalities ensuring permanence

---

104. Art. 3, §§ 3 to 5 of Decision 406/2009.

105. Art. 5 of Decision 406/2009.

106. Art. 8, §§ 1 and 2 of Decision 406/2009.

107. Art. 8, § 3 and 5 of Decision 406/2009.

and the environmental integrity of the contribution of land use, land use change and forestry as well as accurate monitoring and accounting”<sup>108</sup>.

---

108. Art. 8, § 6 of Decision 406/2009/CE.

## 5. Renewable Energies

There are already two important texts which promote the use of renewable energy sources: Directive 2001/77/EC<sup>109</sup> on the promotion of electricity produced from renewable energy sources and Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport<sup>110</sup>. However, Directive 2009/28/EC has introduced many changes in this field. It will as a matter of fact abrogate the two previous directives on 1 January 2012.<sup>111</sup> A few provisions of these two directives will be, however, repealed before that.

### 5.1. The development of a renewable energy policy in the EU

#### 5.1.1. *The first step*

In 1997, the White Paper entitled “energy for the future: renewable sources of energy”<sup>112</sup> set an indicative target of a 12% share of renewable energy in gross inland consumption. This target represented a doubling of the contribution from renewable energies compared with 1997. This policy was founded on the need to address sustainability concerns surrounding climate change and air pollution, improve security of Europe’s energy supply and develop Europe’s competitiveness and industrial and technological innovation. The White Paper also contained a comprehensive strategy and action plan (to be updated regularly) setting out the means to reach the objective. A key element of the action plan was the establishment of a European legislation to provide a stable policy framework and clarify the expected development of renewable energy in each Member State. The two key pieces of legislation resulting from that were Directives 2001/77/EC and 2003/30/EC. They set indicative 2010 targets for all Member States and required actions to improve the growth, development and access of renewable energy. In addition a Biomass Action Plan<sup>113</sup> was adopted in 2005 to focus attention on the specific need for Member States to develop Europe’s biomass resources.

---

109. Directive 2001/77/EC of the European Parliament and of the Council on the promotion of electricity produced from renewable energy sources in the internal market (OJ 2001, L 283/33).

110. Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport (OJ 2003, L 123, 42-46).

111. Art. 26 of Directive 2009/28/EC.

112. Communication from the Commission – Energy for the future: renewable sources of energy – White Paper for a Community strategy and action plan [Com(97) 599].

113. COM (2005) 628.

Reports have been prepared on the EU's progress towards its 2010 target and on its efforts in general to develop renewable energy. The 2007 report as well as the Renewable Energy Roadmap<sup>114</sup> highlighted the slow progress Member States were making and the likelihood that the EU as a whole would fail to reach its 2010 targets. The Roadmap explained possible reasons for this, which included the merely indicative nature of the national targets and the uncertain investment environment provided by the existing legal framework. The latest report, issued in 2009, confirmed this pessimistic view. It highlighted, that renewable energies have increased their contribution by  $\pm 6\%$  versus the objective of 12% in 2010 but, despite the progress made, it expected that the target of 12% would not be met. The Commission expected a 9% share in 2010<sup>115</sup>.

### 5.1.2. *The second step*

In 2007, the European Council adopted a comprehensive energy action plan for the period 2007-2009<sup>116</sup>. It put particular emphasis on the role that renewable energy and biofuels might play with regard to the integrated EU climate and energy policy above and fixed highly ambitious quantified targets on their use. A binding target of 20% share of renewable energies was accepted for 2020<sup>117</sup>. A binding minimum target of 10% was also established for the share of biofuels in overall EU transport fuel and diesel consumption by 2020. However, this binding character of the 10% target was subject to three conditions: the sustainability of biofuels production, the commercial availability of second-generation biofuels, and the modification accordingly of the fuel quality Directive<sup>118</sup> to allow for adequate levels of blending.

According to the Commission, the EU 20% renewable energy target would bring several advantages for the EU as a whole<sup>119</sup>. It would help the EU to reduce GHG and reach a low emission economy since renewable energies are low-carbon energies and promise cut of the GHG emissions of almost 800 million tonnes a year. It would improve energy security since the EU would be less dependent on imports of oil and gas and, consequently, less exposed to rising

114. COM (2006) 848.

115. Communication from the Commission to the Council and the European Parliament – The Renewable Energy Progress in accordance with Article 3 of Directive 2001/77/EC, Article 4(2) of Directive 2003/30/EC and on the implementation of the EU Biomass Action Plan [COM (2009) 192].

116. Annex I to the European Council conclusions contains the action plan. This action plan is based on a Commission communication entitled “An energy policy for Europe” [COM(2007) 1].

117. See Commission's communication COM(2008) 30, p. 2. See also Annex I of the Presidency conclusions of the Brussels European Council, 8-9 March, 2007 [Council document 7224/1/07 Rev. 1 dated 2 May, 2007, points 28 and 32]. This Annex I contains

118. Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC (JOCE 1998, L 350/58).

119. See Commission's communication COM(2008) 30, pp. 2, 3, 4 and 8 in fine.



and volatile energy prices. It would also contribute to the Lisbon Strategy for growth and jobs since it has been estimated that one million jobs would be created in the sector. The latter is, in addition, very labour-intensive for many small- and medium-size enterprises. Finally, it would help to save some 100 billion Euros.

All this led to the adoption of Directive 2009/28/EC which establishes a more rigorous framework to develop renewable energy and more solid obligations (though no sanctions have been foreseen in case of failure) for 2020. This Directive must be transposed by 5 December 2010.

According to various sources, the share of renewable energies in the EU's final energy consumption amounted more or less to 8.5% in 2008. To reach the fixed 20% target by 2020, the EU will thus have necessarily to make a huge effort of 11.5%. This requires among other things significant infrastructure investments. According to the European authorities, such investment costs should however fall as other energy producers face the costs of ETS allowances and rising price for oil and gas<sup>120</sup>.

By comparison with the 2010 targets, the European Commission seems much more optimistic for the 20% target by 2020 imposed henceforth in Directive 2009/28/EC. On the basis of the Forecast Documents, submitted by the Member States recently, the European Commission has calculated that the net result for 2020 renewable energy consumption should exceed its 20% target by over 0.3 percentage points (see for more details point 5.9).<sup>121</sup>

## 5.2. The current legislative framework and its objectives for 2010

### 5.2.1. *Renewable energy in the electricity sector*

Directive 2001/77/EC<sup>122</sup> on the promotion of electricity produced from renewable energy sources in the internal market set a 22,1% (which became 21% after the 2004 enlargement) indicative share of electricity produced from renewable energy sources in total Community electricity consumption by 2010. It defined

120. See Commission's communication COM(2008) 30, p. 7.

121. The Summary of the Member States' forecast documents can be found on the following web site: [http://ec.europa.eu/energy/renewables/transparency\\_platform/doc/0\\_forecast\\_summary.pdf](http://ec.europa.eu/energy/renewables/transparency_platform/doc/0_forecast_summary.pdf)

122. Directive 2001/77/EC of the European Parliament and of the Council on the promotion of electricity produced from renewable energy sources in the internal market (OJEC 2001, L 283/33). This Directive was modified by Directive 2006/108/EC (OJ 2006, L 363/414) and Directive 2009/29/EC (OJ 2009, L 140/16).

national *indicative* targets for each Member State, encouraged the use of national support schemes, the elimination of administrative barriers and the provision of a better grid access. It also established a guarantee of origin regime. Partly induced by this legislation, Member States put in place a range of support measures for promoting renewable electricity, market based instruments that compensate for the various market failures that leave renewable energy at a competitive disadvantage compared to conventional energy in particular the negative externalities of fossil fuels and security of energy supply.

Currently, the 27 Member States operate 27 different support schemes. According to a 2008 Commission staff working document<sup>123</sup>, despite the requirements established in Directive 2001/77/EC and the member States' efforts, some major barriers to the growth and integration of renewable electricity remain. The harmonisation of support schemes remains a long-term goal on economic efficiency, single market and state aid grounds, but that harmonisation is not appropriate in the short-term. This being said, a 2008 study showed that the part of electricity produced from renewable energy in the EU-27 consumption was only 13.7% in 2006<sup>124</sup>. The Commission has estimated however that with current policies and efforts in place, a share of 19% can be expected by 2010 (rather than 21%)<sup>125</sup>. Although this is not fully satisfactory, there has clearly been a positive evolution. In 2009, a new progress report has confirmed those trends<sup>126</sup>

### 5.2.2. *The transport sector with regard to biofuels*

In 2003, the EU had adopted Directive 2003/30/EC (hereafter the “biofuels Directive”) with the objective of boosting both the production and consumption of biofuels in the EU. Since then, the Commission has set out its comprehensive strategy for developing the biofuels sector<sup>127</sup>.

The 2003/30 Directive established indicative targets of 2% share for biofuels in petrol and diesel consumptions in 2005 and 5.75% share in 2010. The 2005 target share of 2% was not achieved. Biofuels counted for 1% of transport fuel in 2005 and one Member State, Germany, counted for two thirds of total EU consumption<sup>128</sup>. The Commission's conclusion according to the assessment of

123. Commission staff working document – The support of electricity from renewable energy sources [SEC (2008) 57]. This document accompanies document COM (2008) 19.

124. This report can be viewed on the Commission web site: [http://ec.europa.eu/energy/res/publications/doc/2008\\_03\\_progress\\_final\\_report\\_en.pdf](http://ec.europa.eu/energy/res/publications/doc/2008_03_progress_final_report_en.pdf)

125. Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources [COM (2008) 19], p. 3.

126. The Renewable Energy Progress Report. SEC (2009) 503.

127. A EU strategy for biofuels [COM (2006) 34].

128. COM (2006) 34, *op. cit.*, p. 8.

the progress is that the target for 2010 is not likely to be achieved – expectations are for a share of about 4.2%<sup>129</sup>. The results in the field of transport are thus less satisfactory than in the field of electricity. It is surprising considering the strong rise of the oil price from 2005.

### 5.2.3. *Renewable energy in the heating and cooling sector*

In the current EU legislation, no specific targets have been set to increase the share of renewable energies used in the heating and cooling sector in the EU. The latter seem to have attracted little political attention. A report from the European Parliament with recommendations to the Commission on heating and cooling from renewable sources of energy had been established in 2006<sup>130</sup> though. It invited the Commission to submit a legislative proposal for increasing the share of renewable energies in the sector.

This attitude is quite understandable for nearly half of the EU's final energy consumption is used for the generation of heat, making the RES-heating sector a sleeping giant.<sup>131</sup>

## 5.3. Directive 2009/28/EC

### 5.3.1. *The definition of energy from renewable sources*

In Directive 2009/28/EC, energy from renewable sources means “energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases”. It does not thus encompass nuclear energy.<sup>132</sup>

### 5.3.2. *The targeted sectors*

Three sectors are concerned by the requirement to increase the use of renewable energy sources: electricity, heating and cooling, transport. As far as the heating and cooling sector is concerned, Directive 2009/28/EC finally closes the legislative gap which exists so far for this sector.

---

129. Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources. [COM (2008) 19], p. 3.

130. See document A6-0020/2006 du 1.2.2006.

131. Renewable Technology Roadmap, 20% by 2020, EREC, 2008, p.2.

132. Art. 2, (a) of Directive 2009/28/EC .

### 5.3.3. *The EU 20% objective by 2020*

At the EU level, Directive 2009/28/EC sets a mandatory global target of 20% share of energy from renewable sources in overall Community energy consumption by 2020. This includes a mandatory 10% minimum target to be achieved by all Member States for the share of renewable sources in transport.

### 5.3.4. *The Member States' individual target*

#### *A / The global 20% target*

The EU 20% target has been broken down into 27 differentiated legally binding national targets, as shown in the table below. The Commission based its calculation for each Member State on its share of renewable energy in 2005, modulated in order to reflect the efforts already done. On such a basis, the Commission added (a) an equal percentage for all Member States and (b) a different percentage established according to their GDP.

Each legally binding national target represents a percentage of energy from renewable sources of the country's "gross" final consumption of energy. This gross final consumption of energy from renewable sources has been defined as "*the energy commodities delivered for energy purposes to industry, transport, households, services (including public services), agriculture, forestry and fisheries, including the consumption of electricity and heat by the energy branch for electricity and heat production and including losses of electricity and heat in distribution and transmission*".<sup>133</sup> It is calculated as the sum of: (a) the gross final consumption of electricity from renewable sources; (b) the gross final consumption of energy from renewable sources for heating and cooling; and (c) the final consumption of energy from renewable sources in transport (which includes consumption of, for instance, jet kerosene in aviation<sup>134</sup> or heavy fuel in domestic shipping).<sup>135</sup>

---

133. Art. 2 (f) of directive 2009/ 28/ EC.

134. It should be noted that the amount of energy consumed in aviation shall, as a proportion of the Member State's gross final consumption of energy, be considered to be no more than 6,18%. For Cyprus and Malta, the amount of energy consumed in aviation, as a proportion of those Member States' gross final consumption of energy, be considered to be no more than 4,12%. See art. 5, point 6, al. 3 of Directive 2009/28/EC.

135. Art. 5 of directive 2009/28/EC.

EU Countries	Share of energy from renewable sources in gross final consumption of energy, 2005 ( $S_{2005}$ )	Target for share of energy from renewable sources in gross final consumption of energy, 2020 ( $S^{2020}$ )
Belgium	2.2%	13%
Bulgaria	9.4%	16%
Czech Republic	6.1%	13%
Denmark	17%	30%
Germany	5.8%	18%
Estonia	18%	25%
Ireland	3.1%	16%
Greece	6.9%	18%
Spain	8.7%	20%
France	10.3%	23%
Italy	5.2%	17%
Cyprus	2.9%	13%
Latvia	32,6%	40%
Lithuania	15.0%	23%
Luxembourg	0.9%	11%
Hungary	4.3%	13%
Malta	0.0%	10%
The Netherland	2.4%	14%
Austria	23.3%	34%
Poland	7.2%	15%
Portugal	20.5%	31%
Romania	17.8%	24%
Slovenia	16.0%	25%
Slovak Republic	6.7%	14%
Finland	28.5%	38%
Sweden	39.8%	49%
United Kingdom	1.3%	15%

### *B / The 10% target in transport*

Each Member State has to achieve by 2020 a 10% minimum share of energy produced from renewable sources in transport. These 10% represent the percentage of the country's "final" consumption in transport of only: (a) petrol; (b) diesel; (c) biofuels consumed in road and rail transport; (d) electricity in transport.<sup>136</sup> Consequently, the consumption of, for instance, jet kerosene in aviation or heavy fuel in domestic shipping is excluded for the calculation of the 10%.

In other words, the notion of "final consumption of energy from renewable sources in transport" which is used to calculate the 10% target is more limited

136. Art. 3, § 4 of Directive 2009/28/EC.

than the one used, as an element among others, to calculate the share of energy from renewable sources in the country's gross final consumption (see above).

Moreover, the counting for the calculation of the 10% of the final consumption of energy from renewable sources in transport on the one hand and the counting for the calculation of the final consumption of energy from renewable sources in transport as an element to demonstrate the share of energy from renewable sources in the country's gross final consumption are both different. For the former, second generation biofuels count twice<sup>137</sup> and electricity from renewable used in road vehicles counts 2,5 times<sup>138</sup>. For the latter, these factors do not apply. Second generation biofuels and electricity from renewable used in road vehicles count only once.

### 5.3.5. *The monitoring of the Member States' progress*

To be sure that its targets are reached, each Member State is required to do two things.<sup>139</sup> Firstly, it must adopt a *Renewable Energy Action Plan* complying with a template elaborated by the European Commission.<sup>140</sup> Such a plan aims at providing the Member State the flexibility to decide for itself how it wants to meet its national targets, but at the same time it creates investor security and helps to mobilize private capital by setting clear goal and mechanisms on the national level. The action plan contains, notably, a specific sectoral target for each of the three sectors concerned by renewable energies (electricity, heating and cooling and transport) by 2020. It also describes the measures to be taken to reach these sectoral targets (including the cooperation between the different national, regional, local authorities and national policies to develop existing biomass resources). It takes into account the effects of other policies measures related to energy efficiency. The action plan had to be notified to the European Commission by 30 June 2010. Six months before this due date, the Member State also must publish and notify to the Commission a *forecast document*<sup>141</sup>. In February 2010, the Commission had received all Member States' forecast documents<sup>142</sup>. In June 2010, most action plans had not been received.

137. Art. 21, § 2 of Directive 2009/28/EC.

138. Art. 3, § 4, (c) in fine of Directive 2009/28/EC.

139. Art. 4 of Directive 2009/28/EC.

140. This template was published on 15.07.2009. See Decision 2009/548/EC (OJ 2009, L 182/33).

141. This forecast document gives two types of information: (a) the Member State's estimated excess of production of renewable energy compared to the indicative trajectory which could be transferred to other Member States, as well as its estimation for potential joint projects until 2020; (b) the Member State's estimated demand for renewable energy to be satisfied by means other than domestic production until 2020.

142. Member States' forecast document can be found on the following web site: [http://ec.europa.eu/energy/renewables/transparency\\_platform/forecast\\_documents\\_en.htm](http://ec.europa.eu/energy/renewables/transparency_platform/forecast_documents_en.htm)

Secondly, each Member State must follow an *indicative trajectory*. This indicative trajectory foresees interim targets per Member State to be reached every two years until 2020. The indicative trajectory encompasses four interim targets (for 2011/2012; for 2013/2014; for 2015/2016; 2017/2018) which are a % share of the Member State's 2020 target. If the Member State falls under an interim target, it must communicate to the Commission a modified renewable energy action plan to rejoin within a reasonable timetable the indicative trajectory. The Commission evaluates it and may issue a recommendation. The latter can also release the Member State of the obligation to submit an amended action plan if its failure is limited.

### 5.3.6. *Other energy from renewable sources to be taken into account in national targets*

In addition to the energy from renewable sources consumed on its territory, a Member State can count towards its own national targets:

#### *A / Energy from renewable sources consumed in other Member States*

This can be done on a voluntary basis through three different mechanisms of cooperation: statistical transfers between two Member States, joint projects between Member States or joint support schemes. Notification of such operations must be sent to the European Commission.

- *Statistical transfer between two Member States.*<sup>143</sup> A specified amount of energy from renewable sources may be transferred from one Member State to another one. In that case, the transferred quantity is deducted from the amount of energy from renewable sources of the Member State which makes the transfer and added to the amount of energy from renewable sources of the other Member State accepting the transfer.
- *Joint projects between Member States.*<sup>144</sup> Two or more Member States may cooperate on all types of joint projects relating to the production of electricity, heating or cooling from renewable energy sources. This cooperation may involve private operators. Here too, the proportion or amount of electricity or heating or cooling produced from renewable sources in a Member State participating to the joint project can count towards towards the national overall target of another Member State.

143. Art. 6 of Directive 2009/28/EC.

144. Art. 7 to 8 of Directive 2009/28/EC.

- *Joint support schemes.*<sup>145</sup> Two or more Member States may also join or partly coordinate their national support schemes. In such cases, a certain amount of energy from renewable sources produced in the territory of one participating Member State may count towards the national overall target of another participating Member State according to different conditions.

### *B / Imported electricity*

Imported electricity is produced from renewable energy sources outside the Community (meaning in a third country), provided certain conditions are fulfilled.<sup>146</sup> These conditions are the following: on the one hand, the imported electricity has been produced *by* renewable energy installations that become operational after the entry into force of the present renewable directive *or by* the increased capacity of an installation that was refurbished after the date of entry into force of the present renewable directive. On the other hand, to ensure that such imports can be tracked and accounted for in a reliable way, agreements with third countries concerning the organization of such trade in electricity from renewable sources will be considered.

#### *5.3.7. National support schemes*

As in the framework of Directive 2001/77/EC, the Member States may adopt support schemes to provide incentives to develop the production and consumption of renewable energy.<sup>147</sup>

Generally, they will aim at reducing the costs, increasing the sale prices, or increasing the purchased volume of such energy. This covers, but is not restricted to, investment aid, tax exemptions or reductions, tax refunds, renewable energy obligation support schemes including those using green certificates, and direct price support schemes including feed-in tariffs and premium payments.

---

145. Art. 11 of Directive 2009/28/EC.

146. Art. 9 of Directive 2009/28/EC.

147. Art. 3, § 3, a) of Directive 2009/28/EC.



### 5.3.8. *Measures aiming at fostering renewable energies in the electricity sector*

#### *A / Guarantees of origin (GoOs)*

Member States ensure the origin of electricity produced from renewable energy sources can be guaranteed.<sup>148</sup> The aim is to prove to final consumers that a given quantity of energy in a supplier's energy mix was produced from renewable sources.

To this end, a Guarantee of origin (GoO) must be issued in response to a request from a producer of electricity produced from renewable sources:

- a GoO is of a standard size of 1 MWh. This 1 MWh can be taken into account only once;
- a GoO may only be used within 12 months of the production of the 1 MWh. It is cancelled once it has been used;
- GoOs can only be used by an electricity supplier to prove the share or quantity of renewable energy in its energy mix;
- the designated competent bodies supervise the issuance, transfer, cancellation of GoOs. These operations must be done electronically. The system must be accurate, reliable and fraud-resistant;
- the designated competent bodies have non-overlapping geographical responsibilities and are independent of generation/trade/supply activities;

MS must recognize GoOs issued in another MS. A refusal of recognition can only take place in case of serious doubts about the GoO. The refusal decision must be sent to the Commission with justification. The Commission after examination can oblige the MS to recognize the GoO.

#### *B / The simplification of administrative procedures*

Member States ensure that any national rules concerning the *authorisation, certification and licensing procedures* that are applied to plants and associated transmission and distribution network infrastructures for the production of electricity from renewable sources are proportionate and necessary, as well as objective, transparent, non-discriminatory between applicants and take fully into account the particularities of technologies.<sup>149</sup> To that end, they coordinate and define clearly the respective responsibilities of national, regional and local administrative bodies, with transparent timetables for determining planning and

148. Art. 15 of Directive 2009/29/EC.

149. Art. 13 of Directive 2009/28/EC.

building applications. They also ensure that comprehensive information be given and be available at the appropriate administrative level. In addition, administrative charges have to remain transparent and cost-related. Finally, for smaller projects and for decentralized renewable devices, where appropriate, simplified authorization procedures have to be foreseen.

### *C / The facilitation of access to the grid*

Member States also ensure that TSOs and DSOs guarantee the transmission and distribution of electricity produced from renewable energy sources and provide for either *priority access* or guaranteed access to the grid-system of electricity produced from renewable energy sources.<sup>150</sup> Priority access to the grid means that connected generators of electricity from renewable energy sources will be able to sell and transmit their electricity in accordance with connection rules at all times, whenever the source become available. Guaranteed access, in the event that the electricity from renewable energy sources is integrated into the spot market, means that all electricity sold and supported gets access to the grid. This does not imply any obligation on the part of Member States to support or introduce purchase obligations for energy from renewable sources.

Moreover, Member States ensure that TSOs, when dispatching electricity generating installations, give priority to generating installations using renewable energy sources insofar as the secure operation of the national electricity system permits<sup>151</sup> and based on transparent and non-discriminatory criteria. In case significant measures are taken to curtail renewable energy sources in order to guarantee the security of the national electricity system and security of energy supply, the responsible system operators have to report to the competent authority on those measures and indicate which corrective measures they intend to take in order to prevent inappropriate curtailments.

TSOs and DSOs provide any new producer wishing to be connected to the system with the comprehensive and necessary information required (notably, comprehensive and detailed estimate of the costs associated with the connection; precise timetable for receipt and processing of the request for grid connection; approximative timetable for any proposed grid connection).

---

150. Art. 16 of Directive 2009/28/EC.

151. Recital n° 61 suggests however that in such cases, it may be appropriate to provide a financial compensation.

Member States may allow producers of electricity from renewable energy sources wishing to be connected to the grid to issue a call for tender for the connection work.

### *D / Measures concerning costs and tariffs*

TSOs and DSOs have to set up and make public their standards rules relating to the bearing and sharing of costs of technical adaptations, as well as their rules on non-discriminatory implementation of the grid codes.<sup>152</sup> The sharing of costs is enforced by a mechanism based on objective, transparent and non-discriminatory criteria taking into account the benefits which initially and subsequently connected producers as well as TSOs and DSOs derive from the connections. Where appropriate, Member States may require TSOs and DSOs to bear, in full or in part, the costs of technical adaptation. They shall review and take the necessary measures to improve the frameworks and rules for bearing and sharing by 30 June 2011 and every two years thereafter to ensure the integration of new producers.

Finally, Member States ensure that tariffs charged by TSOs and DSOs for the transmission and distribution of electricity from plants using renewable energy sources reflect realizable cost benefits resulting from the plant's connection to the network. Such cost benefits could arise from the direct use of the low-voltage grid.

#### *5.3.9. The specific regime for biofuels*

Biofuel is defined by Directive 2009/28/EC as “liquid or gaseous fuel for transport produced from biomass”.<sup>153</sup>

The use of biofuels provokes various problems, especially the use of biofuels of first generation<sup>154</sup>. Some biofuels do not possess a sustainable character. They can displace some traditional agricultural production or disrupt fragile zones. This explains why many conditions for their use have been integrated in Directive 2009/28/EC. Only sustainably produced biofuels are allowed to count towards the target and Directive 2009/28/EC proposes a comprehensive sustainability and certification<sup>155</sup> scheme. The industry is committed to strict but prac-

152. Art. 16, § 3 of Directive 2009/28/EC.

153. Art. 2, (i) of Directive 2009/28/29/EC.

154. See G. DE SANTI ed., *Biofuels in the European context: facts and uncertainties*, JRC, 2008; OECD, *Economic Assessment of Biofuel Support Policies*, 2008 (<http://www.oecd.org/dataoecd/19/62/41007840.pdf>).

155. Art. 17 and 18, § 4 of Directive 2009/28/EC.

tical sustainability criteria that apply for domestic production as well as imports.

Basically, the biofuels must firstly meet specified GHG savings. The savings must reach at least 35% in 2010, 50% in 2017 and 60% in limited cases in 2018. The methods for evaluating these savings are determined in article 19 and different annexes. Biofuels may also not be produced from raw material obtained from land of high biodiversity value, high carbon stocks or peatlands. Finally, as far as they emanate from agricultural raw materials cultivated in the EU, their production must comply with the EU environmental requirements on agricultural production. The conclusion by the EU of “bilateral or multilateral agreements” with third countries containing provisions on sustainability criteria that correspond to those of Directive 2009/28/EC is also envisaged. The Commission may then decide whether those agreements demonstrate that biofuels produced from raw materials cultivated in those countries comply with the sustainability criteria in question. It must be anticipated that the conclusion of such agreements, as the conditions imposed by the EU, may raise important questions in the framework of the WTO.

The monitoring on biofuels is based on a lot of reports that the European Commission must submit regularly to the Council and the European Parliament. For instance, the European Commission is required to report regularly on third countries and Member States that are significant source of biofuels or of raw material for biofuels consumed within the Community and on national measures taken to respect the sustainability criteria. It is also required to report regularly on the impact on social sustainability in the Community and in third countries of increased demand for biofuel, on the impact of Community biofuel policy on the availability of foodstuffs at affordable prices. Corrective action is taken if necessary. The first reports have to be submitted in 2012.<sup>156</sup> Other numerous reports are also required from the European Commission.<sup>157</sup>

It should be noted that the sustainability and certification scheme for biofuels also applies for bioliquids (solid and gaseous fuels used for other purposes than transport (including electricity and heating and cooling produced from biomass)). The Commission had to report by December 2009 on the sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling. This report was presented<sup>158</sup>.

---

156. Art. 17, § 7 of Directive 2009/28/EC.

157. Art. 18, § 2; 19, § 2 and 4 to 6 of Directive 2009/28/EC.

158. COM (2010) 11. This report can be found on the following web site: [http://ec.europa.eu/energy/renewables/transparency\\_platform/doc/2010\\_report/com\\_2010\\_0011\\_3\\_report.pdf](http://ec.europa.eu/energy/renewables/transparency_platform/doc/2010_report/com_2010_0011_3_report.pdf)

A communication has been adopted by the Commission on the practical implementation of the EU biofuels and bioliquids sustainability scheme and on counting rules for biofuels<sup>159</sup>. This sets out in a non binding way how Member States and economic operators can implement the sustainability criteria and the Renewable Energy Directive's counting rules for biofuels in practice. It is designed to facilitate a consistent implementation of the sustainability criteria. It is accompanied by a communication on voluntary schemes and default values in the EU biofuels and bioliquids sustainability scheme<sup>160</sup>, and also by Decision 2010/335/EU establishing guidelines for the calculation of land carbon stocks for the purpose of Annex V to Directive 2009/28/EC<sup>161</sup>.

Finally, a specific provision for energy from biofuels in transport requires that when the percentage of biofuels, blended in mineral oil derivatives, exceed 10% by volume, Member States have to require this to be indicated at sales points.<sup>162</sup>

### 5.3.10. *Link with the EEP and the SET-Plan*

The EEP<sup>163</sup> is a part of the European Economic Recovery Plan endorsed by the European Council in December 2008<sup>164</sup>. It supports (renewable) energy projects. Nine of them are offshore wind projects qualified for a total of €565 million, which received, following a European Commission's decision taken on 9 December 2009, a financial assistance for a total of €1 billion<sup>165</sup>.

Pursuant to the European Council Conclusions of March 2007, the SET-Plan creates a framework within which renewable energy development can be brought forward. It selects six priority *European Industrial initiatives (EIIs)* on the basis of various criteria<sup>166</sup>. Among others, they cover the areas of wind energy, solar energy (PV and CSP), and bio-energy.

159. OJ 2010, C 160/9-16.

160. OJ 2010, C 160/1-8.

161. OJ 2010, L 151/19-41.

162. Art. 21, § 1 of Directive 2009/28/EC.

163. Regulation 663/2009/EC of the European Parliament and of the Council of 13 July 2009 establishing a programme to aid economic recovery by granting Community financial assistance to projects in the field of energy (OJEU 2009, L 200/31).

164. The European Economic Recovery Plan foresees a financial assistance of €3.8 billion for energy projects in the field of (1) CCS; (2) offshore wind energy; (3) gas and electricity infrastructure with the aim to promote energy policy objectives as well as economic recovery and jobs.

165. To get this financial assistance, competitive procedures were organized (calls for proposals). On 9 December 2009, the European Commission selected 9 offshore wind projects (out of a total of 29 proposals). Details on each individual projects can be found on the following web site: <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/542&format=HTML&aged=0&language=en&guiLanguage=en>

166. The criteria applied are the following ones: the EU added value and additionality; the willingness of actors to join forces; the potential market penetration of the technology in different time horizons; the potential contribution to CO<sub>2</sub> reduction, security of supply and competitiveness.

### 5.3.11. *Impact*

Directive 2009/28/EC establishes quite ambitious targets. Considering the present threat provoked by a rapidly increasing external dependence of the EU in the field of energy, this appears quite justified. Nonetheless, one must not underestimate the difficulties this strategy will encounter<sup>167</sup>. The previous results of Directive 2001/77/EC indicate that such targets are not easily reached, that the time span of energy investments is quite long, that the period considered (2009-2020) is quite short and that it is obviously more difficult to go from 10% to 20% than from 0 to 10%. One must note however that conflicting analyses exist. Some comments indicate that this target will be reached, and that the economic benefits will be higher than expected<sup>168</sup>.

The volume of investments required by the implementation of Directive 2009/28/EC will anyway be quite impressive, and the administrative problems quite huge. Most probably, important subsidies and tax breaks will be required. The implementation of the Directive in the Member States should be as rapid as possible.

Finally, it seems that the potential of biofuels has been overestimated, at least in the short term. The sustainability of first generation biofuels has been widely contested<sup>169</sup>. Most probably, the production of second generation biofuels will not be advanced enough to produce important results in 2020. Consequently, a lot of efforts will have to be concentrated in the use of electricity in the transport sector, if the specific 10% target is to be reached.

---

167. See R. LANE, *Comparative Study on the Main Renewable Energy Support Mechanisms in European Jurisdictions*, 2010; ECOFYS et alii, *Renewable energy policy country profile*, 2009; GREEN, *Climate-change mitigation from renewable energy: its contribution and cost*, in D. HELM and C. HEPBURN eds., *The economics and politics of climate change*, Oxford Univ. Press, 2009, 284-301.

168. See for example FRANHOFER et alii, *The impact of renewable energy policy on economic growth and employment in the European Union*, 2009; G. ALVAREZ et alii, *Study of the effects on employment of public aid to renewable energy sources*, 2009; S. TINDALE, *How to meet the EU's 2020 renewables targets*, CER, 2009.

169. See for example JOANNEUM, *The upfront carbon debt of bioenergy*, 2010; DELFT, *Biofuels: indirect land use change and climate impact*, 2010. A more nuanced approach is given by IFPRI, *Global Trade and Environmental Impact Study of the EU Biofuels Mandate*, 2010; B. EICKHOUT et alii, *Local and global consequences of the EU renewable directive for biofuels*, 2008.

## 6. The Promotion of Carbon Capture and Storage

### 6.1. The role of Carbon Capture and Storage

Fossil fuels (oil, natural gas, coal) represent an important element of the energy mix in the European Union as well as in many other economies. They are of particular importance for the production of electricity (over 50% of EU electricity come from fossil fuels). Their use releases however millions of tons of CO<sub>2</sub> into the atmosphere, thereby accelerating global warming. To continue to rely on fossil fuels as an important element of its energy mix, the EU must thus find solutions to limit the impact of their use to levels compatible with its climate objectives. Carbon Capture and Storage (CCS), also known as carbon sequestration<sup>170</sup>, has the potential to play an important role from that point of view.

CCS is a technology in three phases<sup>171</sup>. (1) It catches CO<sub>2</sub> produced by the burning of fossil fuels. (2) It transports it by pipelines or ships in certain cases to a place of storage. (3) It injects it there in deep underground geological structures<sup>172</sup> to store it. To these three phases, it is essential to add a post-injection monitoring of the site ensuring the safety of the storage. CCS appears at the moment of particular importance for installations involved in energy production from fossil fuels that emit large amount of CO<sub>2</sub> through their production processes. In particular, installations using coal for generating electricity. Coal currently accounts for about 30% of electricity generation in the EU and as the dirtiest of all fossil fuels, it is responsible for 25% of all its CO<sub>2</sub> emissions. This said, from other perspectives, coal also presents considerable advantages compared to oil and gas. The coal market is a well-functioning and relatively stable world market. Coal prices have been lower and more stable than oil and gas prices. Coal is also more widely available throughout the world (notably in Europe), and thus can help to slow the increasing energy dependence of the EU.

The global demand for electricity will continue to strongly increase in the future and so will the use of coal.<sup>173</sup> The EU will be no exception to this global trend towards higher electricity consumption. Therefore, if the EU wants coal to con-

---

170. Carbon sequestration is the general term for both natural and artificial processes that remove carbon dioxide from the atmosphere.

171. Each phase can be achieved through a number of technologies.

172. Various types of geological storage are considered: (1) storage in depleted oil and gas reservoirs but they are handicapped by their uneven distribution over the planet; (2) storage in deep saline aquifers which seems the largest storage potential and which is the preferred storage of most of EU demonstration projects in progress today; and (3) in unminable coal seams but this option seems marginal given its small total world capacity. It may be attractive locally.

173. IEA, World Energy Outlook 2007.

tinue to make its valuable contribution to its energy security without thwarting the achievement of its CO<sub>2</sub> emission reduction target, it needs to develop technologies allowing for drastic reduction of the carbon footprint of its combustion. Furthermore, if such technologies are developed on a sufficient scale to allow the sustainable use of coal and are judged economically viable for commercial deployment, they can also provide solutions for: (a) combustion processes using other fossil fuels, including gas-fired power generation; and (b) other industrial sectors already regulated by ETS such as cement, steel, refineries, pulp and paper.

CCS thus represents an unavoidable solution, within a portfolio of solutions (i.e. energy efficiency, more renewable)<sup>174</sup>. This applies even if CCS does impose an “energy penalty” since it requires extra energy to separate and capture the carbon dioxide. A coal or gas-fired power plant incorporating CCS technology will use more fuel to produce electricity and operate more expensively than a plant that simply releases the carbon dioxide into the air.

This said, the development of CCS will depend on a wide range of factors. If the various components of the process (carbon, transport and storage) are well developed, tested and practised on a small scale<sup>175</sup>, a large-scale use in power generation in an integrated manner still needs to be demonstrated. Furthermore, the costs remain prohibitive until now<sup>176</sup>. In addition, environmental impacts; public and regulatory acceptance that geological storage is safe and efficient; technology transfer and diffusion will also have to be taken into account. Establishing a carbon price will also be essential to stimulate the development of CCS. Today, CCS costs are much higher than the price of CO<sub>2</sub> on the EU ETS. They could however considerably decrease in the future, mostly due to the construction of demonstration projects. Combined with an increasing cost of CO<sub>2</sub> quotas, in the future it will most probably be cheaper to invest in CCS rather than to buy CO<sub>2</sub> emission quotas.

174. See the Communication to the Council and the European Parliament, Sustainable power generation from fossil fuels: aiming for near-zero emissions from coal after 2020, COM(2006) 843, 10 January 2007, and Communication to the Council and the European Parliament – An energy policy for Europe, COM(2007) 1, 10 January 2007.

175. CO<sub>2</sub> capture is already practised on a small scale, while the technology for CO<sub>2</sub> storage is almost identical to that used by the oil and gas industry for decades – to store natural gas or for enhanced oil recovery (EOR). In fact, it uses the same natural trapping mechanisms which have already kept huge volumes of oil, gas and CO<sub>2</sub> underground for millions of years. CO<sub>2</sub> transportation is also well understood: it has been shipped regionally for over 17 years, while a 4,000km onshore network has been operating in the US for over 30 years.

176. Capturing CO<sub>2</sub> is the most expensive part (roughly two thirds of total costs). Transporting CO<sub>2</sub> is the least expensive. Transport costs are however highly dependent on the distance between the plant and the storage site and on whether the storage site is situated on or off shore. Storing CO<sub>2</sub> is more expensive than transporting it. If the storage is located offshore, costs will increase due to the more complicated infrastructure and availability. Monitoring storage integrity after injection also entails a cost that should be taken into account. These costs are however expected to substantially decrease as CCS technology moves from the demonstration phase (2015) to the commercial scale (2020 at the earliest without delay – 2030 if delay). On this point, see the 2008 McKinsey CCS report: “Assessing the Economics”.



Acting on the fact that work still has to be carried out to develop CCS, the European Commission took different initiatives.

## 6.2. The Commission's first initiatives

For a few years now, the European Commission has started a dialogue with stakeholders (scientists, environmentalists, industry) on the matter of CCS and several interest groups have been formed.

The 2005 Commission Communication 'Winning the battle against climate change'<sup>177</sup> announced the Second European Climate Change Programme (ECCP II) and pointed out that it would address carbon capture and storage. A working group on CCS was then set up to explore CCS as a means of mitigating climate change. In June 2006, it adopted a report recommending the issuance by the Commission of a communication outlining the major EU policy choices for CCS accompanied by a proposal for an EU CSS regulatory framework<sup>178</sup>. It also recommended that CCS activities be recognised in the EU ETS. In 2007, Member States and stakeholders were consulted<sup>179</sup>. In 2008, the European Commission presented a communication entitled "Supporting early demonstration of sustainable power generation from fossil fuels"<sup>180</sup> in which the Commission announced under FP7 to create and animate a network of CCS projects (set up in 2010), and a proposal for a Directive on the geological storage of carbon dioxide as part of a larger package on energy and climate change.

In 2005, a platform called ZEP (Zero Emissions Fossil Fuel Power Plants) was also established by the European Commission. ZEP is one of the 35 technology platforms initiated by the European Commission to bring together a range of stakeholders to guide the development and deployment of key technologies.<sup>181</sup> ZEP's goal is to develop EU fossil fuel plants with zero CO<sub>2</sub> emission by 2020. In 2006, it presented a Strategic Research Agenda (SRA) as well as a Strategic Deployment Document (SDD) necessary to achieve its goal. In 2008, it unveiled a proposal for an "EU demonstration programme"<sup>182</sup> of large-scale CCS dem-

177. COM(2005) 35.

178. See [http://circa.europa.eu/Public/irc/env/eccp\\_2/library?l=/geological\\_storage&vm=detailed&sb=Title](http://circa.europa.eu/Public/irc/env/eccp_2/library?l=/geological_storage&vm=detailed&sb=Title) (accessed 18 August 2009).

179. See the two introductory reports: *Choices for regulating CO<sub>2</sub> capture and storage in the EU*, 2007 and *Incentivising CO<sub>2</sub> capture and storage in the European Union*, 2007.

[http://ec.europa.eu/environment/climat/ccs/pdf/policy\\_options\\_paper.pdf](http://ec.europa.eu/environment/climat/ccs/pdf/policy_options_paper.pdf). (accessed 18 August 2009).

180. COM(2008)13.

181. More information the existing technology platforms can be found on the following web site: <http://cordis.europa.eu/technology-platforms/>

182. The EU demonstration programme was previously named the « EU Flagship programme ». It can be found on the following web site: <http://www.zero-emissionplatform.eu/website/docs/ETP%20ZEP/EU%20Demonstration%20Programme%20for%20CCS%20-%20ZEP%27s%20Proposal.pdf>

onstration in response to the 2007 European Council's invitation. This programme foresees that 10-12 projects would be necessary and make the technology commercially available by 2020. It also identifies the need, in addition to the industry participation, of €12 billion complementary public funding. The CCS projects which will be incorporated in the EU demonstration programme will have to be in line with the framework and selection criteria developed by ZEP. The programme also forecasts that, depending on the aggressiveness of the roll-out, between 80-120 commercial projects could be operational in Europe by 2030 and, by 2050, CCS could reduce CO<sub>2</sub> emissions in the EU by 0.6-1.7 billion tonnes a year.

These promising perspectives have been contested. According to some analyses, governments wanting to use CCS have overestimated its value and that it would take a reservoir the size of a small US state to hold the CO<sub>2</sub> produced by one power station. In other words, space needed to store CO<sub>2</sub> has been hugely underestimated<sup>183</sup>.

### 6.3. Directive 2009/31/EC

Directive 2009/31/EC covers essentially one particular part of CCS, namely geological storage. Geological storage refers to the injection of CO<sub>2</sub> in underground geological formations. Its main purpose is to establish a favourable legal framework to ensure environmentally safe storage of CO<sub>2</sub> in geological formations without risk for human health. It thereby aims at removing the existing barriers in EU legislation. To that extent, it amends several EU legislative texts<sup>184</sup>. The number of these legislations reflects the complexity of the matter.

Directive 2009/31/EC indicates where such CO<sub>2</sub> storage is not allowed. It also defines what is meant by geological storage of CO<sub>2</sub> and other important notions.<sup>185</sup> It confirms that only Member States have the right to determine the areas from which sites may be selected. This includes the right not to allow for

183. For different approaches, see for example STANGELAND, *Why CO<sub>2</sub> Capture and Storage (CCS) is an Important Strategy to Reduce Global CO<sub>2</sub> Emissions*, Bellona, 2007; EHLIG-ECONOMIDES and ECONOMIDES, *Sequestering carbon dioxide in a closed underground volume*, *Journal of Petroleum Science and Engineering* 70 (2010) 123-130.

184. See Art. 31 to 37 of Directive 2009/31/EC.

This concerns Directive 2008/1/EC concerning integrated pollution prevention and control; Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment; Directive 2004/35/EC on environmental liability with regard to the prevention and remedying of environmental damage; Directive 2006/12/EC on waste; Regulation 1013/2006/EC on shipments of waste; Directive 2000/60/EC establishing a framework for Community action in the field of water policy, and Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants.

185. Art. 2 of Directive 2009/31/EC.

any storage in parts or in the whole of their territory.<sup>186</sup> Member States ensure that exploration permits, where necessary for a site selection, are delivered.<sup>187</sup> They also ensure that no storage site is operated without a storage permit.<sup>188</sup> Priority for the granting of a storage permit for a particular site can be given to the holder of the exploration permit provided certain conditions are fulfilled. The contents of permit applications and the contents of storage permits are defined by Directive 2009/31/EC.<sup>189</sup>

The European Commission receives the draft storage permits within one month after receipt by Member States. Within four months after receipt of the draft storage permit, the Commission may issue a non-binding decision on it. If the Commission decides not to issue an opinion, it informs the Member State. The national competent authority must notify the final decision to the Commission and must state its reasons where it departs from the Commission opinion.<sup>190</sup> A storage permit can be issued only if the conditions indicated in Directive 2009/31/EC are fulfilled.

Directive 2009/31/EC also contains provisions on changes, review, update and withdrawals of storage permits.<sup>191</sup> It also determines obligations linked to the operation, closure and post-closure of storage sites.<sup>192</sup> These obligations are imposed, on the one hand, to operators of a storage site and, on the other hand, to the competent authorities responsible for monitoring.

Measures to ensure potential users are able to obtain access to transport networks and to storage sites for the purpose of geological storage of the produced and capture CO<sub>2</sub> must be taken by Member States.<sup>193</sup> Dispute settlement arrangements have also to be put in place to enable disputes relating to access to transport networks and to storage sites.<sup>194</sup> A register of the storage permits granted has also to be established.<sup>195</sup> Environmental information relating to geological storage of CO<sub>2</sub> has to be made available to the public.<sup>196</sup>

---

186. Art. 4 of Directive 2009/31/EC.

187. Art. 5 of Directive 2009/31/EC.

188. Art. 6 of Directive 2009/31/EC.

189. Art. 7 and 8 of Directive 2009/31/EC.

190. Art. 10 of Directive 2009/31/EC.

191. Art. 11 of Directive 2009/31/EC.

192. Chapter 4 of Directive 2009/31/EC.

193. Art. 21 of Directive 2009/31/EC.

194. Art. 22 of Directive 2009/31/EC.

195. Art. 24 of Directive 2009/31/EC.

196. Art. 26 of Directive 2009/31/EC.

## 6.4. Financial support

Today, CCS is already happening worldwide. They are a lot of CCS research projects but only a few large-scale commercial CCS projects are in operation. Three large-scale commercial projects in operation have been undertaken by European corporations: the “Sleipner project” in the North Sea undertaken by Statoil since 1996; the “In Salah project” in Algeria undertaken by Statoil, BP and Sonatrach since 2004; the “Snøhvit project” in the Barents Sea undertaken by Statoil since 2008. All of them involve stripping CO<sub>2</sub> from natural gas and storing it in underground geological formations<sup>197</sup>. None of them include CO<sub>2</sub> capture from power plants. Instead, the CO<sub>2</sub> in these three projects is separated from a mixture of natural gas and CO<sub>2</sub>, which is a much simpler operation than capturing CO<sub>2</sub> from power plant flue gas. Other projects give more perspectives, but they are not as advanced. Three European pilot CCS projects include this time CO<sub>2</sub> capture from power plants: the “Castor project” in Esbjerg (Denmark) undertaken by Elsam since 2006, the Vattenfall project at Schwarze Pumpe (Germany) since 2008 and the Total CCS project in the Lacq basin in France since 2007.

The costs of all these projects are quite substantial. This puts the brakes on new CCS projects and technology developments. Hence, sufficient and timely financial resources are a key element and, from this point of view, public funds can be needed. At the EU level, a few instruments already exist to compensate the costs for actors developing CCS: (a) the EU general programmes [such as Intelligent Energy-Europe Programme or the Framework Programme in its seventh stage now (FP7) or the EU Cohesion and structural funds]; (b) the revised state aid guidelines for environmental protection allowing EU countries to subsidize CCS; (c) the EIB products for financing CCS. Recently, two new specific financial programmes for the support of CCS demonstration projects have been developed: the European Energy Programme for Recovery (EEPR) and the New Entrants Reserve fund (NER300).

The EEPR<sup>198</sup> is part of the European Economic Recovery Plan endorsed by the European Council in December 2008<sup>199</sup>. It supports energy projects. Six of them are CCS projects which received, following a European Commission’s decision

197. One can notice that, in all these projects, Statoil (the Norwegian oil and gas company) is present. In addition, all these projects are located outside the territory of the EU.

198. Regulation 663/2009/EC of the European Parliament and of the Council of 13 July 2009 establishing a programme to aid economic recovery by granting Community financial assistance to projects in the field of energy (OJEU 2009, L 200/31).

199. The European Economic Recovery Plan foresees a financial assistance of €3.8 billion for energy projects in the field of (1) CCS; (2) offshore wind energy; (3) gas and electricity infrastructure with the aim to promote energy policy objectives as well as economic recovery and jobs.

taken on 9 December 2009, a financial assistance for a total of €1 billion<sup>200</sup>. Five out of the six selected CCS projects concern coal fired power plants. For each project, up to 50% of eligible costs are covered. According to the European Commission in its most recent report on the progress of the EEPR, and in order that these projects are successfully completed, several issues will need to be carefully monitored. Firstly, continued national funding and industrial commitment will be necessary. Secondly, Member States need to provide the necessary legal framework for CO<sub>2</sub> storage by transposing the CCS Directive into national law. This will avoid delays in the delivery of CO<sub>2</sub> storage authorization and ultimately in the timely approval of the final investment decision. Finally, public awareness of CO<sub>2</sub> storage safety should be properly addressed as this is critical in the implementation of the CCS projects.<sup>201</sup>

The NER is managed jointly by the European Commission, the European Investment Bank and the EU Member States. In the NER300, 300 million allowances (rights to emit one ton of carbon dioxide) in the so-called New Entrants' Reserve of the EU ETS<sup>202</sup> are set aside until 31 December 2015 to support commercial CCS demonstration projects and demonstration projects of innovative renewable technologies in the territory of the European Union. These allowances will be sold by the EIB on the carbon market and the money raised (estimated to about 6 billion if the carbon price is 20 euros/ton<sup>203</sup>) will be made available to finance the selected projects. The money will be awarded through two rounds of calls for proposals organized by the European Commission. Award decisions for the first round should be issued by 31 December 2011 and for the second round by 31 December 2013. The final adoption of a decision ("NER300 decision") containing the criteria and measures for allocating the 300 million allowances was still awaited in July 2010.

NER 300 has fixed a total of 12 commercial demonstration projects. NER 300 will most likely finance a minimum of 8 CCS projects in four categories (oxy-fuel, precombustion, postcombustion and industrial applications). For each project, up to 50% of eligible costs will be covered. Member States keep a crucial role in the process. They are responsible for collecting funding applications

---

200. To get this financial assistance, competitive procedures were organized (calls for proposals). On 9 December 2009, the European Commission selected six 6 CCS projects (out of a total of 12 proposals). The six chosen projects are: Vattenfall's Jaenshalde power plant in Germany; Endesa's Compostilla plan in Spain; Maasvlakte plant in the Netherlands; Hatfield in the United Kingdom; Belchatow in Poland; Enel's Porto-Tolle plant in Italy. Each of them will receive €180 million, except Enel's Porto-Tolle plant which will receive €100 million. Details on each individual projects can be found on the following web site: <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/542&format=HTML&aged=0&language=en&guiLanguage=en>

201. Report from the Commission to the Council and the European Parliament on the implementation of the European Energy Programme for Recovery, COM (2010) 191, p.9.

202. New art. 10a, 8 of Directive 2003/87/EC.

203. This amount could be reduced to much less in case the carbon prices drops.

and for assessing the demonstration projects on the basis of the eligibility criteria. However, no more than three projects can take place within a Member State. The money raised by the sale of allowances by the EIB will also be passed on to the relevant Member States for disbursement. Financing under the NER300 can be combined with other European Community funding, notably the EEPR; However, combined funding under the NER300 and EEPR shall amount no more than 50% of eligible costs.

Finally, as proposed by the European Commission, financial support could also be brought in the future by including CO<sub>2</sub> infrastructure (pipelines and storage sites) in the TEN-E guidelines under revision. Indeed, the commercialization of CCS from fossil fuel power plants requires an infrastructure for the transportation of the captured CO<sub>2</sub> from the source of emission to the storage sites. The Commission has also addressed the issue of resources for CCS development in its communication on financing low-carbon technologies planned under the SET-Plan<sup>204</sup>.

## 6.5. Link with other regulatory topics

### 6.5.1. *The revised ETS Directive*

As far as the revised ETS Directive is concerned, stored CO<sub>2</sub> emissions will be considered as “not emitted” as from 2013.<sup>205</sup>

### 6.5.2. *Regulation 736/96/EC*

A proposal concerning investment in energy infrastructure aims at repealing Regulation 736/96/EC<sup>206</sup>. It establishes a common framework for the notification to the Commission by Member States every two years of data and information on investment projects energy infrastructure (production, transport, storage) in the petroleum, gas, electricity and biofuel sectors, as well as on investment projects (transport or storage) related to carbon dioxide produced by these sectors.

---

204. COM(2009) 519.

205. Art. 12, 3a of Directive 2003/87/EC as revised by Directive 2009/29/EC.

206. The latest version of the proposal can be found in the Council document 6687/10 – ENER 45 dated 3 March 2010.

### 6.5.3. *The SET-plan*

Pursuant to the European Council Conclusions of March 2007, the SET-Plan creates a framework within which CCS development can be brought forward. It identifies CCS as one of the strategic energy technologies and sets the time horizon of 2020 for making its use in power generation a realistic option. CCS demonstration can thus be a new case of a European Industrial Initiative (EII) under the SET-Plan.

### 6.5.4. *No acknowledgment of CCS in the framework of CDM*

During the climate talks in Copenhagen, some countries proposed to add CCS to the UN Clean Development Mechanism (CDM), which allows companies in rich countries to fulfill part of their climate obligations by investing in emission reductions in developing countries. Other countries however expressed concerns regarding the implication of this possible inclusion and highlighted a number of unresolved issues (risks of seepage from storage sites and liability issues in the event of leakage).

Finally, no consensus was reached and CCS will not be taken into account under CDM. UNFCCC's scientific advisory body was tasked to further investigate and report at the next conference in Mexico in 2010 or in South Africa in 2011.

This is obviously no good news for various actors involved. The EU approved €1 billion of economic recovery funding to support six demonstration projects. In some countries, electricity is strongly generated from fossil fuel. For instance, in Poland and the UK, coal provides respectively 94% and 33% of the electricity. Finally, there are countries where fossil fuel reserve such as coal are located or for industries relying heavily on coal inputs such as the steel industry.





## 7. The Framework on Environmental Subsidies

### 7.1. The previous guidelines on state aid for environmental protection

The first guidelines on state aid for environmental protection, promoting sustainable development were adopted by the Commission in 1994<sup>207</sup>. However, during the period between 1994 and 2000, a lot of environmental actions were taken in the field of environment by the Member States and the European Community. The Kyoto Protocol was also adopted at a world level. New forms of operating aids were in addition on the increase, especially in the energy sector. Consequently, new guidelines were needed, in particular to further promote sustainable development without having disproportionate effects on competition and economic growth. These new guidelines entered into force in 2001 (hereafter “the 2001 guidelines”)<sup>208</sup>.

According to the “polluter pays” principle, the entity responsible for environmental pollution must bear the environmental costs. This principle also implies that environmental costs should be internalised, that is to say they should be included in the companies production costs. The 2001 guidelines implement this. They also emphasize that the implementation of the polluter pays principle coincides with the implementation of the banning of state aid. In other words, the granting of state aid is in theory not compatible with the polluter pays principle. Nevertheless, the 2001 guidelines stipulate that the granting of state aid may be authorized, under specific conditions, in the form of investment aid or operating aid, in cases where the aid gives enterprises an incentive to invest in a high level of environmental protection.

All sectors governed by the EC treaty are covered by the 2001 guidelines, with the exception of the agriculture sector. State aid for R & D in the environmental field and for environmental training activities falls however respectively under the scope of the Community framework for State aid for research and development<sup>209</sup> and the Commission regulations N° 68/2001 of January 2001 on the application of Articles 87 and 88 of the EC treaty to training aid<sup>210</sup>. The 2001 guidelines do not apply either to stranded costs.

The 2001 guidelines define several categories of state aid which are acceptable.

---

207. OJEC 1994, C 72/3.

208. OJEC 2001, C 37/3.

209. OJEC 1996, C 45/5.

210. OJEC 2001, L 10/20.

### 7.1.1. *Investment aid*

- a. *aid for undertaking which go beyond Community standard or which increase the level of environmental protection in the absence of a mandatory Community standard.* This category of aid is authorized up to 30% gross of the eligible investment costs. In other words, aid for undertaking to be in line with a new or an existing compulsory Community standard is forbidden, except in the case of SMEs. The latter may obtain within a limited period of time state aid up to a maximum of 15% gross of the eligible costs in order to meet a new compulsory Community standard;
- b. *aid in energy* to promote energy savings, combined production of heat and electric power, renewable sources of energy. The basic rate for such aid is 40% of eligible costs. This said, for renewable sources of energy, the rate of aid may be extended to 50% of eligible costs if the investment supplied an entire community and up to 100% when shown to be necessary;
- c. *aid for rehabilitation of polluted industrial sites.* Such aid may be authorised up to 100% of the eligible costs plus 15% of the costs of the work;
- d. *aid for relocation of undertaking to a new site.* Such aid is not authorized except when the activities of the undertaking create major pollution where it is established (precisely in an urban area or in a Natura 2000 designated area). In that case the aid may amount to up to 30% gross of the eligible investment costs;
- e. *aid to help SMEs for advisory/consultancy services in the environmental field.* Such aid may be granted under the provisions of regulation EC No. 70/2001<sup>211</sup>;
- f. *bonuses to firms located in assisted regions or to SMEs.* These bonuses may be given as additional aid. For firms located in assisted regions, two options are proposed: either the basic aid rate already mentioned plus 5% points gross in the regions covered by Article 87 (3), c) and 10 percentage points in the regions covered by Article 87 (3) a) or the regional aid rate plus 10% points gross. For SMEs, a 10% points gross may be authorized. The bonuses for assisted regions and SMEs may be combined but the maximum rate aid may never exceed 100% gross of the eligible costs.

### 7.1.2. *Operating aid*

- g. *aid to promote waste management.* Such aid must comply with the classification of the principles of waste management<sup>212</sup> and may only be granted

211. Commission regulation (EC) No. 70/2001 of 12 January 2001 on the application of Articles 87 and 88 of the EC Treaty to state aid for small and medium-sized enterprises (OJEC 2001, L 10/33).

212. Classification given in the Community strategy for waste management [COM(96) 399 final].

when “absolutely necessary”. Firstly, the aid is strictly limited to compensating for extra production costs by comparison with the market prices of the relevant products or services. Secondly, the aid is temporary. Thirdly, the aid may be granted for a period of 5 years, where the aid is degressive (100% of the extra costs in the first year but they must have fallen in a linear fashion to zero by the end of the fifth year). In the case of a non degressive aid, its duration is limited to five years and its intensity must not exceed 50% of the extra costs;

- h. *aid under the form of national temporary tax exemptions or reductions.* Such temporary tax exemptions or reductions can be granted in two circumstances. Firstly, a tax is levied by a Member State in the absence of a Community directive for reasons of environmental protection. In that case, a tax exemption may be granted temporarily to firms affected in order to allow them to adopt rapidly to the new tax burden. Secondly, the tax is levied by a Member State as the result of a Community directive. In that case, there are two Scenarios. On the one hand, if the national tax rate is higher than the minimum rate laid down in the Community directive, a temporary tax exemption may be granted to affected firm with the result that they pay the tax at a rate lower but at least equal to the minimum rate set by the Community Directive. On the other hand, if the national tax rate is equal to the minimum rate laid down in the Community directive and if the national temporary tax exemption granted to affected firms has as result that they pay the tax at a lower rate than the minimum rate set by the Community Directive, such a temporary tax exemption constitutes a forbidden aid, unless it is authorized by the Community directive itself and considered “necessary” and not “disproportionate in the light of the Community objectives pursued”.

Furthermore, national tax exemption covering a 10-year period with no degressivity may be authorized under the conditions fixed by the 2001 guidelines when a Member State has adopted a tax in a sector of activity or on products for environmental reason and that the tax concerned is not foreseen by Community legislation or exceeds the one laid down by Community legislation,

- i. *aid in energy* (renewable energy sources, combined production of heat and electric power). Member States may grant, according to four options described in the 2001 guidelines, an aid which covers the difference between the cost of producing energy from renewable energy sources and its market price. Member States may also grant to firms for the production of combined electric power and heat aid in the same way as for renewable energies sources if the production costs for this power and heat exceed the market price.

## 7.2. The new 2008 guidelines on state aid for environmental protection

The revised state aid guidelines<sup>213</sup> adopted by the Commission entered into force beginning of April 2008. They replace the one of 2001<sup>214</sup> and will be applicable until 31 December 2014. They set out how Member States may grant environmental aid to ease the burden of the shift to a low-carbon economy. Here too, they apply to state aid to support environmental protection in all sectors governed by the EC Treaty unless specific rules provide otherwise. However, the financing of environmental protection measures relating to air, road, railway, inland waterway and maritime transport infrastructure, including any project of common interest as identified in Decision n° 1692/96/EC<sup>215</sup> is not covered by the guidelines. Moreover State aid research, development and innovation in the environmental field is subject to the rules set out in the Community framework for State aid for research and development and innovation<sup>216</sup> The market diffusion stage of eco-innovation (acquisition of an eco-innovation asset) is covered by the guidelines.

Compared to previous guidelines, these encompass broader measures. The measures covered by the 2008 guidelines are: aid for early adaptation to standards or to go beyond mandatory standards, aid for acquisition of clean transport vehicle, aid for environmental studies, aid for energy saving, aid for renewable energy resources (including biofuels respecting the sustainability criteria), aid for cogeneration and for district heating, aid for waste management; aid for the remediation of contaminated sites; aid for the relocation of undertaking, aid involved in tradable permit schemes, aid in the form of reductions of or exemptions from environmental taxes.

Compared to previous guidelines, the 2008 guidelines also allow generally for higher amounts of aid. The aid intensities can go for large enterprises to a maximum of 60% of the eligible investment cost, for medium-sized enterprises to a maximum of 70% of the eligible investment cost and for small enterprises to a maximum of 80% of the eligible investment cost. In general, the aid intensity percentage increases when the aid is given to SMEs. In addition, if enterprises have obtained the aid through a competitive bidding process, they may even claim up to 100% of the eligible investment cost. Up to 100% of the eligible investment cost can also be claimed for the remediation of contaminated sites.

213. Community guidelines on state aid for environmental protection (OJEU 2008, C82/1).

214. OJEC 2001, C 37/3.

215. Decision 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network (OJEC 1996, L 228/1). This decision has been amended several times.

216. OJEC 2006, C 323/1.

Contrary to the 2001 guidelines, there is no longer a bonus for aid to assisted regions or for renewable energy installations serving all needs in an entire community.

The 2008 guidelines maintain the possibility of state aids in the form of tax reductions and exemptions from harmonised environmental taxes provided the beneficiaries pay at least the community minimum tax level, that is to say the minimum level of taxation provided for in Community legislation. For energy products and electricity, the minimum level of taxation is laid down in Annex I to Council Directive 2003/96/EC<sup>217</sup>. Where the companies do not pay at least the community minimum tax level, the Member States must demonstrate that the state aid is necessary and proportionate.

The guidelines foresee two types of assessment method: standard assessment and detailed assessment. The latter allows for deeper examination and is used when large aid amounts to individual enterprises are involved. Schemes involving tax exemptions and reductions will only be assessed at level of the scheme – that is, individual enterprises will not be subject to a detailed assessment.

Finally, there is a link between the 2008 guidelines and the Commission General Block Exemption Regulation n° 800/2008<sup>218</sup>. This regulation will relieve the Member States from the obligation to notify certain aid measures to the EC, and thus reduce the administrative burden. It is foreseen that certain types of environmental protection aid under a certain amount will not have to be notified to the EC in the future. In addition, under the block exemption, a simplified method can be used to calculate the aid amount.

---

217. Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity (OJEU 2003, L 283). This Directive has been amended several times.

218. Commission Regulation n° 800/2008 of 6 August 2008 declaring certain categories of aid compatible with the common market in application of Articles 87 and 88 of the Treaty (General block exemption Regulation) (OJEU 2008, L 214/3).



## 8. Energy Efficiency

Energy efficiency was not initially an element of the climate package proposals. This seemed paradoxical since it remains probably the most important remedy to the problem. The most environment friendly energy unit is certainly the one which is not spent (sometimes called the “white energy”)<sup>219</sup>. From a communication point of view, this absence was especially puzzling, if one considers that the EU energy sector must deal with other challenges than climate warming<sup>220</sup>. However, during the 2008 negotiations of the climate package, this weakness has been corrected. A new provision about energy efficiency (art. 4) was inserted in Decision 406/2009/EC. It restates the objective of a 20% reduction of energy consumption for 2020<sup>221</sup>.

### 8.1. The 2006 plan

The 1970s have shown that huge processes in energy efficiency are possible. These progresses were certainly not voluntary but imposed by the two oil shocks. During this period, the energy intensity of GNP has substantially declined in the developed world, especially in Europe and Japan. Unfortunately, the strength of this evolution has substantially diminished after the reduction of oil prices during the 1980s.

An EU energy efficiency action plan was adopted in 2000<sup>222</sup>. A few legislative measures were adopted during the next years. In 2005, the Commission opened a wide-ranging debate with a Green Paper on energy efficiency<sup>223</sup>. The Green Paper placed energy savings at the centre of the EU’s ambitions to boost competitiveness and jobs (the Lisbon strategy) saying it could:

- save at least 20% of its present energy consumption by 2020, or the equivalent of €60 billion a year;
- contribute to reducing Europe’s dependence on oil and gas imports as prices of fossil fuels continued to surge;

---

219. According to a 2009 study, the potentials of a low policy intensity may reach 15% for the EU27 in 2020 and 22% in 2030. For a high policy intensity, the potentials could reach 22% in 2020 and 33% in 2030 (see Fraunhofer Institute et alii, *Study on the Energy Savings Potentials in EU Member States, Candidate Countries and EEA Countries Final Report*, 2009, p. 9. See also S. Lechtenböhmer et alii, *Energy Efficiency as a key element of the EU’s Post-Kyoto Strategy – Results of an Integrated Scenario Analysis*, 2005.

220. See F. Dehousse, *The Coming Energy Crash and its Impact on the European Union*, Egmont Paper n°17, Egmont Institute, 2008.

221. The 20/20/20 strategy did not become however the 20/20/20/20 Strategy.

222. See COM (1998) 246 and the action plan adopted by the Council in 2000 (Bull. EU, 12-2000, pt. 1.4.50).

223. COM (2006) 105.

- be the quickest and most cost-effective manner to reduce GHG emissions and help the EU meet its commitments under the Kyoto Protocol on climate change.

According to the Commission, half of the savings mentioned in the paper could be met by simply improving the enforcement of existing legislation. The remaining 10% would need to come from innovative solutions. The European Council endorsed the Commission's proposals in 2006. So a new energy efficiency action plan was proposed by the Commission in 2006, promoting 20% energy saving potentials by 2020<sup>224</sup>. The Action Plan for Energy Efficiency (EEAP) was approved by the Council<sup>225</sup>. The plan's running time is until 2012. It outlines a framework of policies and measures and targets as priorities the residential (households) and commercial tertiary buildings (with savings potentials estimated at 27% and 30% respectively), the manufacturing industry (with the potential for a 25% reduction), and transport (with the potential for a 26% reduction in energy consumption). Ten priorities are identified in the 2006 efficiency action plan.

The first priority is clearly to energise equipment labelling and minimum energy performance standards for appliances and other energy-using equipment on the basis of the labelling and eco-design directives. Special attention is given concerning minimum energy performance standards to 14 priority products groups (including boilers, water heaters, consumer electronics, copying machines, televisions, standby modes, chargers, lighting, electric motors and other products). This implies a revision of Directive 92/75/EEC on labelling<sup>226</sup> to strengthen it and enlarge its scope (for instance to commercial refrigeration) and the use of the provisions of Directive 2006/32/EC on energy end-use efficiency and energy services<sup>227</sup> to draft guidelines, a code of conduct and a certification procedure applicable to all sectors.

The second priority aims at substantially reducing heat loss in buildings, as well as at extending the scope Directive 2002/91/EC on energy performance of buildings to cover small buildings, to develop minimum performance standards applicable to new and renovated buildings and to promote so-called "passive" houses. The third priority consists of making power generation and distribution more efficient by developing minimum binding efficiency requirements for new electricity, heating and cooling capacity lower than 20 MW and by considering, if necessary, such requirements for larger production units. In addition, the

---

224. COM (2006) 545.

225. Bull. EU, 11/2006, pt. 1.23.4.

226. OJ 1992, L 297/16.

227. OJ 2006, L 114/64.



development of a new regulatory framework to promote the connection of decentralized generation is announced.

The fourth priority concerns the transport sector, notably to address energy efficiency and CO<sub>2</sub> emissions from cars to ensure that 120 g CO<sub>2</sub>/km target is achieved by 2012 and to propose to strengthen EU requirements for labelling of cars to incentivize consumers and producers towards more efficient vehicles through the amendment of Directive 1999/94/EC. Consideration is also given to a European Norm and international standard for maximum rolling resistance limits and labelling for road vehicles tyres, as tyres and tyre pressure can improve vehicle fuel efficiency by more than 5%. To finish on transport, market-based instruments for the maritime sector and measures to include the aviation sector in the EU ETS are also considered as well as the elaboration of a green paper on urban transport to develop alternatives to car transport.

The fifth priority bears on facilitating appropriate financing of energy efficiency investments for SMEs and Energy Service Companies. The sixth priority aims at boosting energy efficiency within the framework of the Cohesion Policy, in particular in the new Member States. The promotion of networking between Member States and regions is also underlined to ensure financing of best practice in energy efficiency. The seventh priority promotes a coherent use of taxation, notably by preparing a Green Paper on indirect taxation and subsequently by reviewing Directive 2003/96/CE (called “the Energy Tax Directive”). As regards vehicle taxation, Member States are also requested to adopt as soon as possible the Commission’s proposal to relate taxation to CO<sub>2</sub> performance<sup>228</sup>.

The eighth priority consists of raising efficiency awareness through education, training plans and programs, in particular for energy managers in industry and utilities. The ninth priority concerns the creation of a “covenant of mayors” bringing together in a permanent network the mayors of 20-30 of Europe’s largest and most pioneering cities in view of exchanging best practices. Finally, the tenth priority aims at fostering energy efficiency worldwide through framework agreements with key external trading partner countries (Brazil, China, India, Japan, Russia and the United States) and international organization. This has to be done in collaboration with international institutions.

One can see that the most important priorities announced in this program were of a legislative nature. Revealingly, their adoption has not always been easy since 2007. Moreover, in general the implementation of the Community existing energy efficiency legislation is poor in Member States.

---

228. COM (2005) 261.

From this point of view, an interesting development was the presentation by the Commission of the first assessment of national energy efficiency action plans (NEEAPs) as required by Directive 2006/32/EC on energy end-use efficiency and energy services<sup>229</sup>. This assessment provides a first overview of the strategies presented by the Member States. Though providing encouraging signs, this assessment reveals a considerable gap in several Member States between the political commitment to energy efficiency and the measures adopted or planned, as reported in the NEEAPs, and the resources attributed to preparing it. The Commission's communication entitled "energy efficiency: delivering 20% target"<sup>230</sup>, published end of 2008, confirms the gap between the Member States' political commitment to energy efficiency and their actions. It stresses that only one third of the actions foreseen in the 2006 action plan have been completed and that the remainder are ongoing and still need active commitment both at EU and national levels. Finally, it concludes that though some progress have been made, there is a risk of not meeting the 20% energy saving target by 2020 if energy saving potentials is not being realized fast enough. Indeed, there are strong indications that measures already adopted by the EU should only achieve energy saving of about 13% by 2020, even if properly implemented by Member States.

The results of the public consultation are contained in a Commission's document dated August 2009 entitled "Evaluation and revisions of the action plan for energy efficiency – Report on the public consultation June-August 2009".

## 8.2. The EU energy security and solidarity action plan

In 2008, the second strategic energy review was launched<sup>231</sup>. It focused on security of energy supply. The basis of the analysis lies in the growing dependence of the EU. That is mainly why the Commission proposed to adopt a new action plan, called the "EU energy security and solidarity action plan (ESSA plan)"<sup>232</sup>. This ESSA plan defines priorities. Among these priorities, the improvement of energy efficiency by a bunch of legislative revisions in view to make energy savings in key areas. These key areas were the following (a) improvement in the legislation on the energy performance of buildings and (b) intensification of the implementation of ecodesign and cogeneration Directives. A new Sustainable Energy Financing Initiative is also prepared jointly with the EIB and the finan-

229. COM (2008) 11.

230. COM (2008) 772.

231. This document has not an official reference yet. Two accompanying technical documents are SEC (2008) 2794 and 2795.

232. Second Strategic Energy Review – An EU Energy Security and Solidarity Action Plan [COM/2008/0781].

cial organisations to mobilise large-scale funding from capital markets for investments in energy efficiency as well as renewable energies, clean use of fossil fuels and combined heat and power from renewable in Europe's cities.

In 2009, the European Council approved the EESA plan<sup>233</sup>, further refined in the Council (TTE) conclusions of 19 February 2009<sup>234</sup>. At that occasion, the European Council invited the European Commission to rapidly propose a revision of the energy efficiency action plan. Evaluation is ongoing and the Commission intends to deliver a new energy efficiency action plan in 2011.

### 8.3. Adopted energy efficiency measures

Though the EU has struggled to get targets and action straight, some measures have been adopted in 2009 and 2010. They are numerous and it is not possible to describe all of them.

Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products is an important milestone<sup>235</sup>. It has enlarged the scope of Directive 2005/32/EC that covered only energy-using products<sup>236</sup>. The requirements on the individual product groups are set in implementing regulations. In that framework, the Commission's Regulation 244/2009/EC implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for non-directional household lamps was quite symbolical<sup>237</sup>. The manufacture and import of all inefficient non-clear (non-transparent, also known as pearl or frosted) lamps, which is deemed the most wasteful, has been banned. After three years, all incandescent bulbs, which generate more heat than light, will be phased out completely.

There was also an important agreement in 2010 between the Parliament and the Council concerning two main texts. Directive 2010/31/EU on the energy performance of buildings<sup>238</sup> requires all new buildings to be "nearly zero" energy by 2021 and new buildings owned or rented by public authorities by 2019. Directive 2010/30/EU on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products<sup>239</sup> extends

233. Presidency conclusions of 19-20 March, 2009 – Document 7880/1/09 rev. 1 of 29 April 2009.

234. See the conclusions of the 2924<sup>th</sup> Council meeting of transport, telecommunications and energy of 19 February 2009 – document 6670/09.

235. OJ 2009, L 285/10-35.

236. OJ 2005, L 191/29.

237. OJ 2009, L 76/3-16.

238. OJ 2010, L 153/13-35.

239. OJ 2010, L 153/1-12.

the scope of existing EU laws from household appliances to cover all energy-related products as well as energy-consuming commercial and industrial products like cold storage rooms or vending machines. In addition, last year's compromise added three more classes to the existing A-G labelling format in order to distinguish between several different 'A' classes, in which a large number of products have ended up as technology has developed.

On the reverse, the long discussions about setting minimum energy efficiency standards for boilers, which began in 2007, have not produced a result yet. The deadline, initially in 2009, has already been reported twice, and the Commission is now hoping for a vote of the national experts at the beginning of 2011. Gas and oil-fired central heating boilers are estimated to be responsible for 17% of the EU's CO<sub>2</sub> emissions in 2005, making them an important contributor to climate change.

#### 8.4. Link with ICT

There are multiple ways by which Information and Communication technologies (ICT) can improve energy efficiency.

On one side, ICTs are routinely employed, for instance, in the monitoring and control of energy-use buildings. ICTs also turn the traditional energy meter into an ICT device capable of collecting and communicating a live stream of data and other information on their energy use to consumers. Such information can in turn be used by consumers to help them better understand how much energy they consume and where, how much it costs, how it varies over time and thereby enable them to act so as to achieve savings.

The Commission has acknowledged that ICT-based innovations may provide one of the potentially most cost-effective means to help Member State achieve the 2020 targets. A 2008 Commission communication identified the many ways in which ICT can contribute to energy efficiency gains<sup>240</sup>. In 2009, the Commission launched an action plan to increase ICT usage to facilitate the transition to an "energy efficient, low-carbon" technology.<sup>241</sup> This was followed by a public consultation which was to serve as a preparation ground for a Commission recommendation. The results were contained in a document which can be found on the Commission web site.<sup>242</sup> The Commission also supports activities to encour-

---

240. COM (2008) 241.

241. COM (2009) 111.

242. See the consultation's results:

[http://ec.europa.eu/information\\_society/activities/sustainable\\_growth/docs/report\\_pc\\_lowcarbon.pdf](http://ec.europa.eu/information_society/activities/sustainable_growth/docs/report_pc_lowcarbon.pdf).

age the development and application of ICT tools to improve energy efficiency [framework program (FP7), ICT policy support program (ICT PSP)]. A lot of projects focus on buildings and smart grids sectors<sup>243</sup>.

Later, the Commission adopted a set of recommendations<sup>244</sup> intended to increase the use of intelligent technologies in the fight against climate change. These recommendations invite Member States notably to adopt through their national regulatory authorities:

- by the end of 2010 at the latest, minimum functional specification for smart metering that focuses on providing consumers with improved information on, and improved capabilities to manage, their energy consumption;
- by the end of 2012 at the latest, set up a coherent timeframe for the roll-out of smart metering.

They are also invited to engage all relevant stakeholders in large-scale pilots and demonstrations of smart metering and smart grids, to build consensus on the requirements for the emergence of future ICT-enabled innovations.

On the other side, the ICT sector can also contribute directly to the reduction of its own GHG emissions. It was thus invited to commit to a progressive decarbonisation process leading to a measurable and verifiable reduction in energy intensity and carbon emissions of all processes involved in the production, transport, sales of ICT equipment and components.

In that framework, the Commission has developed some Voluntary Codes of Conduct to improve the energy efficiency of data centres, digital TV services, broadband equipment and external power supplies. There is thus, for example, a voluntary Code of Conduct on Data Centres Energy Efficiency, adopted in 2008 and revised and complemented by a Best Practices Guide in 2010. To date this code of conduct has been endorsed by 75 companies. There is also a Code of Conduct on Energy Consumption of Broadband Equipment of 2008. The energy consumption in the use-phase of ICT equipment is also covered of course by the Directive 2005/32/EC establishing a framework for the setting of ecodesign requirements for energy-related products<sup>245</sup>. The Commission has finally encouraged the launch of the ICT for Energy Efficiency Forum where the ICT sector is working to establish a methodology to measure its own carbon emissions and once this has been agreed to commit to reduction targets<sup>246</sup>.

243. See the Cordis website: [http://cordis.europa.eu/fp7/ict/sustainable-growth/energy\\_en.html](http://cordis.europa.eu/fp7/ict/sustainable-growth/energy_en.html)

244. Commission recommendation C(2009) 7604.

245. OJ 2005, L 191/29-58.

246. See [http://ec.europa.eu/information\\_society/activities/sustainable\\_growth/ict4ee\\_forum/index\\_en.htm](http://ec.europa.eu/information_society/activities/sustainable_growth/ict4ee_forum/index_en.htm) (accessed August 11, 2010).

## 8.5. Much remains to be done about energy efficiency

All this reflects a rather slow development of the successive plans covering energy efficiency. As the Commission itself acknowledged in the 2010 consultation document about a new energy strategy, “the energy savings potential continues to be greatly underutilised”<sup>247</sup>. The Commission has thus envisaged new initiatives.

In the framework of the new Europe 2020 strategy, it has for example begun a dialogue with Member States on how to determine national targets, which would facilitate tighter monitoring of progress towards the EU common objective as well as more regular adjustment of national strategies. In parallel the Commission has embarked on the preparation of a new framework for energy efficiency policies which will both address bottlenecks to implement already adopted measures and propose additional policies to fully exploit the energy savings potential and achieve the 20% energy savings by 2020. “Preliminary results of the ongoing evaluation of the Energy Efficiency Action Plan show that there is yet progress to be made in areas such as energy supply and transformation and the role of utilities, transportation, establishment of a well functioning market for energy services. Also in other areas additional instruments could be needed to support the legislation (e.g. buildings)<sup>248</sup>.”

---

247. EC, Towards a new Energy Strategy for Europe 2011-2020, 2010, p.

248. Idem.

## 9. Greenhouse Gases Emissions of Cars

### 9.1. The development of the policy

Road transport is currently the second biggest sources of greenhouse gas emissions in Europe. It contributes about one fifth of the EU's total emissions of CO<sub>2</sub>, with passenger cars responsible for around 12%. It remains one of the few sectors whose emissions keep rising, thereby acting as a brake to the global progress made by other sectors.

The Commission first adopted a Community Strategy for reducing CO<sub>2</sub> emissions from cars in 1995<sup>249</sup>. The strategy was based on three pillars: (1) voluntary commitments from the car industry to gradually improve the fuel efficiency of new vehicles, (2) improvements in consumer information<sup>250</sup> and (3) the promotion of fuel efficient cars via fiscal measures. In 1998, the European Automobile Manufacturers Association (ACEA) adopted a commitment to reduce average emissions from new cars sold to 140 grams CO<sub>2</sub>/km by 2008 and, in 1999, the Japanese and Korean Automobile Manufacturers Associations adopted a similar commitment to reduce average emissions from new cars sold to 140 grams CO<sub>2</sub>/km by 2009.

This strategy has produced limited results so far. Although some improvements in vehicle motor technology have led to a 12.4% fuel efficiency improvement between 1995 and 2004, improvements have been offset by increased transport and car size. In the period 1990-2004 CO<sub>2</sub> emissions from road transport even increased by 26%. The June 2006 European Council therefore unanimously stated that “*in line with the EU strategy on CO<sub>2</sub> emissions from light duty vehicles, the average new car fleet should achieve CO<sub>2</sub> emissions of 140g/km (2008/09) and 120g/km (2012).*”<sup>251</sup>

In 2007, the European Commission issued a Communication<sup>252</sup> in which it reviewed its strategy. It acknowledged the limited results and came to the conclusion that a legislative framework would be necessary to achieve the 120

---

249. Communication from the Commission to the Council and the European Parliament – A community strategy to reduce CO<sub>2</sub> emissions from passenger cars and improve fuel economy, COM (95) 689.

250. See Directive 1999/94/EC which requires the display of a label on fuel consumption and CO<sub>2</sub> emissions on all new cars, the publication of national guides on the fuel efficiency of new cars, the display of posters at the dealerships and the inclusion of fuel efficiency information in printed promotional literature.

251. Renewed EU Sustainable Development Strategy, Council of the European Union, 8 June 2006, available from <http://register.consilium.europa.eu/pdf/en/06/st10/st10117.en06.pdf>

252. Communication from the Commission to the Council and the European Parliament, Results of the review of the Community Strategy to reduce CO<sub>2</sub> emissions from passenger cars and light-commercial vehicles, COM(2007) 19.

grams CO<sub>2</sub>/km /km target by 2012. The Commission’s view was subsequently endorsed by the June 2007 Environment Council which “*urged the European Commission to come forward, as soon as possible and before the end of 2007, with a legislative framework to reduce CO<sub>2</sub> emissions from cars (...)*”. The Commission presented its proposal in 2007<sup>253</sup>.

Based on this revised strategy, a proposal for a Regulation to reduce the average CO<sub>2</sub> emissions of new passenger cars (which account for about 12% of the European Union’s carbon emissions) was presented in 2007.<sup>254</sup> This proposal gave birth to Regulation 443/2009/EC.<sup>255</sup> This proposed legislation is the cornerstone of the EU’s strategy to improve fuel economy of cars and ensure that average emissions from the new passenger car fleet in the Community do not exceed 120g CO<sub>2</sub>/km through an integrated approach. This Regulation entered into force and was directly applicable on the third day following its publication in the Official Journal of the European Union. The measures implementing the Regulation should be completed by the end of 2010, especially regarding the procedure for approving innovative technologies (econ-innovations).

Regulation 443/2009/EC does not include light commercial vehicles due to the necessity to gather more data on them. For that reason, on 28 October 2009, and also as part of the revised strategy mentioned above, the European Commission adopted a new legislative proposal to reduce CO<sub>2</sub> emissions from light commercial vehicles (vans).<sup>256</sup> Once adopted, this new Regulation should supplement Regulation 443/2009/EC.

Since then, things are moving. The Competitiveness Council in its conclusions on the “Need for a new industrial policy”<sup>257</sup> of 2 March 2010 invited the European Commission to come forward with an action plan for clean and energy-efficient vehicles (including the growing role of fully electric cars and plus-in hybrids).

In 2010, the European Commission issued a Communication entitled “European strategy on clean and energy efficient vehicles” which builds on the ongo-

253. Proposal for a Regulation of the European Parliament and of the Council setting emission performance standards for new passenger cars as part of the Community’s integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles, COM/2007/856, 19 December 2007.

254. COM (2007) 856, accompanied by SEC (2007) 1723 and SEC (2007) 1724.

255. Regulation (EC) No 443/2009/EC of the European Parliament and the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community’s integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles (OJ 2009, L 140/1).

256. Proposal for a Regulation of the European Parliament and of the Council setting emission performance standards for new light commercial vehicles as part of the Community’s integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles – COM (2009) 593. This proposal is accompanied by an impact assessment – SEC (2009) 1454 and by the summary of the impact assessment – SEC (2009) 1455.

257. Council Conclusions on the need for a new industrial policy (doc. 6391/10 of 2 March 2010).



ing measures and sets out an ambitious medium- to long-term policy through an Action Plan. This Action Plan highlights the necessity of further reduction of CO<sub>2</sub> emissions from conventional vehicles. In addition, the scope of the Commission's communication covers not only light-duty vehicle but also two- and three-wheelers and quadricycles, taking into account the increasing role of the latter in the urban mobility and acknowledges the need to cover heavy-duty vehicles and progress quickly also in other fields of transport.

This 2010 communication was welcome by the Competitiveness Council held on 25 May 2010 which shared the Commission's analysis that while conventional vehicles powered by the internal combustion engines will remain dominant until at least 2020, electric and hydrogen vehicles are highly promising ultra-low carbon power-train technology. It also emphasized that, in the light of scientific and market evidence, electric vehicles (including pure electric and plug-in hybrids) are now ready for mass production by some manufacturers and for broad consumer acceptance, whereas hydrogen vehicles need further technological development and remain a valid ultra-low carbon mobility option in the longer-term perspective. It also notes that rechargeable electric vehicles could be a bridge to hydrogen fuel cell vehicles and urged European standardization bodies to develop, as a matter of priority by mid-2011, a harmonized solution for the interoperability between electric vehicles and the charging infrastructure and to address safety risks and electromagnetic compatibility. Finally, it also encourages public authorities to provide for appropriate support framework, in compliance with state aid rules in order to speed up the uptake of clean and energy efficient vehicles

## 9.2. Regulation 443/2009/EC for passenger cars

Regulation 443/2009/EC aims to strike a careful balance between the interests of the European car industry and the need to reduce GHG emissions in the road transport sector.

### 9.2.1. *Scope of application*

Regulation 443/2009/EC covers passenger cars which are registered in the Community for the first time and which have not previously been registered outside the Community.<sup>258</sup> Special purpose vehicles such as wheel-chair accessible vehicles are excluded from the scope of application. Small volume independent man-

---

258. Art. 2 of Regulation 443/2009/EC.

ufacturers may under certain conditions benefit from a derogation.<sup>259</sup>.

### 9.2.2. *The 120 g/km target*

Regulation 443/2009/EC sets a binding target for new cars of 120 g/km by 2012<sup>260</sup>. To meet that target, the present Regulation delivers an integrated approach focusing on mandatory reductions to reach an objective of 130 g CO<sub>2</sub>/km on average for the new fleet through improvements in vehicle motor technology, and further reduction of 10 g CO<sub>2</sub>/km or equivalent, by other complementary measures (for instance, the increased use of biofuels or efficiency improvements for car components with impact on fuel consumption such as tyres and air conditioning systems).

Regulation 443/2009/EC defines a limit value curve of CO<sub>2</sub> emissions allowed for new vehicles according to the mass of the vehicle. The curve is set in such a way that the fleet average to be achieved by all cars registered in the EU is 130 g/km. A so-called limit value curve implies thus that heavier cars are allowed higher emissions than lighter, provided the overall fleet average is preserved. In other words, this means that manufacturers may make cars with emissions above the limit value curve provided these are balanced by cars which are below the curve as long as the fleet average remains at 130 g/km.

In 2012, 65% of each manufacturer's newly registered cars must comply on average with the limit value curve set by Regulation 443/2009/EC. This will rise to 75% in 2013, 80% in 2014, and 100% from 2015 onwards.<sup>261</sup>

Regulation 443/2009/EC also provides manufacturers with the necessary incentive to reduce the CO<sub>2</sub> emissions of their vehicles by imposing an excess emissions premium.<sup>262</sup> More concretely, until 2018, if the average CO<sub>2</sub> emissions of a manufacturer's fleet exceed its limit value in any year from 2012, the manufacturer has to pay an excess emissions premium for each car registered. This premium amounts to €5 for the first g/km of exceedance, €15 for the second g/km, €25 for the third g/km, and €95 for each subsequent g/km. From 2019, already the first g/km of exceedance will cost €95.

Super-credits will be given for passenger cars with specific emissions of less than 50 g CO<sub>2</sub>/km.<sup>263</sup> Until 2015, a 5% reduction will also be granted to vehicles

---

259. Art. 11 of Regulation 443/2009/EC.

260. Art. 1 of Regulation 443/2009/EC.

261. Art. 4 of Regulation 443/2009/EC.

262. Art. 9 of Regulation 443/2009/EC.

263. Art. 5 of Regulation 443/2009/EC.

designed to be capable of running on a mixture of petrol with 85% ethanol ('E85') which meets relevant Community legislation or European technical standards.<sup>264</sup>

### 9.2.3. *Long-term target*

Regulation 443/2009/EC indicates that a target of 95 g/km will be specified for the year 2020. The modalities for reaching this target and the aspects of its implementation including the excess emissions premium will have to be defined in a review to be completed non later than the beginning of 2013<sup>265</sup>.

### 9.2.4. *Eco-innovation*

Manufacturers can be granted a maximum of 7 g/km of emission credits on average for their fleet if they equip vehicles with innovative technologies, based on independently verified data.<sup>266</sup> The European Commission must adopt by 2010 detailed provisions for a procedure to approve such innovative technologies.

### 9.2.5. *Pooling*

Manufacturers, other than those which have obtained a derogation according to article 11 of Regulation 443/2009/EC, have the opportunity to form a pool for the purposes of meeting their obligations<sup>267</sup>. In such a pool, manufacturing groups can team up in order to share the burden. The pool must respect open, transparent and non-discriminatory conditions. Where manufacturers form a pool, they are deemed to have met their targets under this Regulation provided that the average emissions of the pool as a whole do not exceed the target emissions for the pool.

### 9.2.6. *Monitoring and reporting*

Each Member State shall record information for each new passenger car registered in its territory and transfer this information to the Commission.<sup>268</sup> The data which must be collected are detailed in Annex II. The Commission will

---

264. Art. 6 of Regulation 443/2009/EC.

265. Art. 1, al. 2 of Regulation 443/2009/EC.

266. Art. 12 of Regulation 443/2009/EC.

267. Art. 7 of Regulation 443/2009/EC.

268. Art. 8 of Regulation 443/2009/EC.

keep a central register of the data reported by Member States and will calculate provisionally each year for each manufacturer the average specific emissions of CO<sub>2</sub>. The provisional calculation will be communicated to each manufacturer. After a period of a few months, the Commission will either confirm or amend its calculation. It will then notify the manufacturers which have exceeded their emissions target.

By 31 October of each year, commencing in 2011, the Commission will publish a list indicating a series of information about each manufacturer.<sup>269</sup>

### **9.3. The legislative proposal for light commercial vehicles**

This draft regulation is closely modelled on Directive 443/2009/EC. So it will be described more briefly. The debate is going on in the Council and the Parliament's position should be adopted before the end of 2010.

#### ***9.3.1. Scope of application***

The draft Regulation<sup>270</sup> covers light commercial vehicles (LCVs – vans). The vehicles affected by the draft Regulation are vans, which account for around 12% of the market for light-duty vehicles. This includes vehicles used to carry goods weighing up to 3.5t (vans and car-derived vans, known as N1) and which weigh less than 2610 kg when empty.

#### ***9.3.2. The 175 g/km target***

The draft Regulation sets a binding target for LCVs of 175 g/km by 2016, to be applied as of 2014.

Emissions limits are set according to the mass of vehicle, using a limit value curve. The curve is set in such a way that a fleet average of 175 g/km is achieved. A so-called limit value curve of 100% implies that heavier vans are allowed higher emissions than lighter vans while preserving the overall fleet average. Only the fleet average is regulated, so manufacturers will still be able to make

---

269. Art. 10 of Regulation 443/2009/EC.

270. Proposal for a Regulation of the European Parliament and of the Council setting emission performance standards for new light commercial vehicles as part of the Community's integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles – COM (2009) 593. This proposal is accompanied by an impact assessment – SEC (2009) 1454 and by the summary of the impact assessment – SEC (2009) 1455.

vehicles with emissions above the limit value curve provided these are balanced by other vehicles which are below the curve.

From 2014, a manufacturer must ensure that those vehicles registered in the EU for which it is responsible have average emissions that are below its target when 75% of the vehicles are taken into account. For the calendar year 2015, the percentage rises to 80% and from 2016 onwards to 100% of the manufacturer's fleet.

The draft Regulation also provides manufacturers with the necessary incentive to reduce the CO<sub>2</sub> emissions of their vehicles by imposing an excess emissions premium. More concretely, until 2018, if the average CO<sub>2</sub> emissions of a manufacturer's fleet exceed its limit value in any year from 2014, the manufacturer has to pay an excess emissions premium for each car registered. This premium amounts to €5 for the first g/km of exceedance, €15 for the second g/km, €25 for the third g/km, and €120 for each subsequent CO<sub>2</sub> g/km. From 2019, already the first g/km of excess will cost €120. This value is higher than the one for passenger cars (€95) because of the differences in compliance costs.

### 9.3.3. *The long-term target*

A target of 135 g/km is specified for the year 2020. Confirmation of the target with the updated impact assessment, the modalities for reaching this target, and the aspects of its implementation, including the excess emissions premium, will have to be defined in a review to be completed not later than the beginning of 2013.

### 9.3.4. *Super credits*

Vehicles with specific emissions of less than 50 g /km will be given additional incentives whereby 1 low-emitting van will be counted as 2.5 vehicles in 2014, as 1.5 vehicles in 2015, and 1 vehicle from 2016.

### 9.3.5. *Eco-innovations*

Manufacturers can be granted a maximum of 7 g/km of emission credits on average for their fleet if they equip vehicles with innovative technologies, based on independently verified data.

### **9.3.6. Pooling**

Manufacturers may group together to form a pool and act jointly in meeting the specific emissions targets. Independent manufacturers who sell fewer than 22,000 vehicles per year can also apply to the Commission for an individual target instead.

## 10. Greenhouse Gases Emissions of Fuels

Directive 2009/30/EC<sup>271</sup> amends Directive 98/70/EC relating to the quality of petrol and diesel fuels<sup>272</sup>. It has two main objectives. Firstly, after many debates about the sustainability of first generation biofuels, it aims at defining sustainability criteria for biofuels used to meet greenhouse gas reduction requirement. Secondly, it aims at reducing the life cycle greenhouse gas emissions by up to 10% per unit of energy from fuel and energy supplied, and at least by 6%. It also tightens the environmental quality standards for a number of fuel parameters.

### 10.1. Biofuels sustainability

Firstly, the text aims at defining the same sustainability criteria for the use of biofuels for the purposes of this Directive on the one hand and Directive 2009/28/EC on the other. Otherwise, contradictions could create many problems.

Directive 2009/30/EC distinguishes biofuels in general from biofuels produced from waste and residues.<sup>273</sup> Biofuels produced from waste and residues are submitted to a reduced number of conditions. Both categories must represent a reduction of GHG emissions of at least 35%.

Some sustainability criteria aim at ensuring that biofuels qualify for incentives only when it can be guaranteed that they do not originate in biodiverse areas or, in the case of areas designated for nature protection purposes or for the protection or rare, threatened or endangered ecosystems or species, the relevant competent authority demonstrates that the production of the raw material does not interfere with those purposes. Specific rules have been foreseen to calculate the impact of greenhouse gas emissions in case of land conversion.

Some problems can arise concerning biofuels imported from third countries. Directive 2009/30/EC introduced moderate instruments concerning this question. It encourage the development of multilateral and bilateral agreements and voluntary international or national schemes that cover key environmental and social considerations, in order to promote the production of biofuels worldwide in a sustainable manner (and even social norms). In the absence of such agree-

---

271. OJ 2009, L 140/88.

272. OJ 1998, L 350.

273. New art. 7b of Directive 98/70

ments or schemes, Member States must require economic operators to report on those issues.

## **10.2. The reduction of the life cycle greenhouse gas emissions from fuel**

The reduction of GHG emissions from fuel is meant to complete the reduction of these emissions from cars. In a very complex formula, “suppliers should, by 31 December 2020, gradually reduce life cycle greenhouse gas emissions by up to 10% per unit of energy from fuel and energy supplied. This reduction should amount to at least 6% by 31 December 2020, compared to the EU-average level of life cycle greenhouse gas emissions per unit of energy from fossil fuels in 2010, obtained through the use of biofuels, alternative fuels and reductions in flaring and venting at production sites. Subject to a review, it should comprise a further 2% reduction obtained through the use of environmentally friendly carbon capture and storage technologies and electric vehicles and an additional further 2% reduction obtained through the purchase of credits under the Clean Development Mechanism of the Kyoto Protocol” (recital 9).



## 11. The Set-Plan

In 2007, after the call of existing European technology platforms for joint action at EU level and after a public consultation with all stakeholders<sup>274</sup>, the Commission decided then to adopt a first SET-Plan<sup>275</sup> endorsed by the spring European Council held on 13-14 March 2008. The SET-plan is the technology pillar of the EU climate and energy package. It attempts to put technology development at the core of climate change mitigation policies. This first SET-Plan is considered as the start of a dynamic process that will be regularly reviewed and adjusted to changing needs and priorities.

### 11.1. The SET-Plan objectives

The strategic objective of the SET-Plan is ambitious. On the one hand, it aims at accelerating the development of low carbon technologies in order to avoid that the EU imports such technologies to achieve its own climate change objectives by 2020 and by 2050. On the other hand, it aims also to allow the EU to become a global leader in the development and market take up of these technologies in order to grasp the opportunities of these new markets worldwide. This must be done by putting in place a process to rationalize and render more effective current efforts by the EU, Member States, Industry, Research and Financing communities.

### 11.2. The Strategy

#### 11.2.1. A new joint strategic planning

The joint strategic planning must orient the research and innovation efforts towards technologies and measures with the greatest potential to deliver the European energy policy targets. In that perspective, two things were realized. (1) A *European Community Steering Group on Strategic Energy Technologies*

---

274. See the Commission's report on the public consultation on the European Strategic Energy Technology Plan (SET-Plan) dated 01.09.2007.

275. See Commission's communication "A European Strategic Energy Technology Plan (SET-Plan) [COM(2007) 723]. This communication was accompanied by several Commission's staff working documents: SEC(2007) 1508 gives a full impact assessment while SEC(2007) 1509 gives the summary of the full impact assessment; SEC(2007) 1510 offers a description of the current status and prospects of key energy technologies for the identification of potential European initiatives that could be considered as part of the SET-Plan. SEC(2007) 1511 contains an analysis of Energy Research capacities in EU Member States.

It is another Commission's communication entitled "Towards a European Strategic Energy Technology Plan (SET-Plan) [COM(2006) 847] which has established the basis for the preparation of the Plan.

has been created. This Steering Group, chaired by the European Commission, is made up of high level government representatives with expertise in energy and research from all 27 EU Member States. It is responsible for coordinating policies and programs, promoting joint activities and identifying resources to ensure implementation of the SET-plan initiatives. It is also tasked with reviewing the SET-plan's progress and ensuring its goals are achieved. It is assisted by a Secretariat and its work is supported by regularly up-dated information provided by a web-portal called SETIS<sup>276</sup> (European Energy Technology Information System), both provided by the Commission. (2) The Commission organized a *European Energy Technology Summit*.

Furthermore, the transition to a sustainable interconnected, low-carbon energy system will take decades and affect many sectors, including environment, transport and trade. A clear view is needed on how it will be done. The Plan foresees that the European Commission will develop its ideas in this area. It is assisted by the European Strategy for Research Infrastructures (ESFRI). ESFRI was created in 2002 as a forum composed of representatives of all EU Member States and associated countries plus one representative of the European Commission. It aims to support coherent and strategy-led approach to policy-making on research infrastructures in Europe, and to facilitate multilateral initiatives leading to the better use and development of research infrastructures, at EU and international level.

### 11.2.2. A more effective management

All activities must be covered by a more effective implementation, execution and management regime of all activities across the whole innovation process. In that perspective, six priority European Industrial initiatives (EIIs)<sup>277</sup> have been selected on the basis of various criteria<sup>278</sup>. They are in the areas of wind; solar (PV and CSP); bio-energy; CO<sub>2</sub> capture, transport and storage; electricity grid; sustainable nuclear fission (gen-IV).<sup>279</sup> The EIIs could take the form of “public (Member State) – public (EC) – private partnerships. The implementation of those EIIs will be in cascade (not all at once). A preparation process is ongoing.

276. SETIS website is the following: <http://setis.ec.europa.eu/>.

277. To be more precise, the European Industrial Initiatives are *technology programmes* to achieve quantified technology objectives agreed between private and public (EC and Member States) partners. Through the roadmaps (presented by the European Commission), they establish the technology, developments actions for a 10 year (2010-2020) period for the sectors to reach those objectives. With a limited number of Key Performance Indicators (KPIs) for each III, progress in the implementation of these actions will be reviewed and monitored in a simple, open and transparent manner.

278. The criteria applied are the following: the EU added value and additionality; the willingness of actors to join forces; the potential market penetration of the technology in different time horizons; the potential contribution to CO<sub>2</sub> reduction, security of supply and competitiveness.

279. To these EIIs, initiative on fuel cells and hydrogen must be added. They have been already launched.

On 3-4 June 2010, a high level summit conference will take place in Madrid. The main focus of the conference will be the formal launching of the EIs that demonstrate their maturity and their cost-effectiveness, as well as the presentation of their main aspects, including scope of activities for 2010-2012, budgets, funding instruments, management and governance structures.

### *11.2.3. The European Energy Research Alliance*

A *European Energy Research Alliance (EERA)* has also been created by ten leading European Research Institutes<sup>280</sup>, after the signing of a Declaration of Intent in 2008. Its objective is to enable greater cooperation across Europe of the research work going on in universities, research institutes and specialized centres through the conception and implementation of joint research programmes aligned with the SET-Plan priorities to the point where they can be embedded in industry driven research. EERA's membership will in principle be open to all research organizations that can contribute to achieving its objectives. New Member States are in particular invited to join. The European Energy Research Alliance (EERA) is now ready to launch its first research activities

### *11.2.4. A better allocation of means*

A cost-effective and results-oriented allocation and increase of means (financial and human). In that perspective, the Commission issued in 2009 a communication on financing low carbon technologies in the framework of the SET-Plan.<sup>281</sup> This communication identifies notably the key technologies and activities where investments are needed in the 10 coming years. Indications on how much money is needed and on how the money should be divided are also presented. The bulk of the funds required will have to come mainly from the private sector and from Member States, but it is not clear how the financial burden should be shared between the two. Currently, energy research funding is about 70% private and 30% public, excluding nuclear research. A contribution from the EU budget and the BEI is also foreseen. The European Energy Research Alliance could also bring, with the expansion of its activities, an additional public investment. In a separate working document, the European Commission has also drawn up technology roadmaps 2010-2010<sup>282</sup>, accompanied by cost estimates. The technol-

280. They are: CEA (France), CIEMAT (Spain), CRES (Greece), ECN (The Netherlands), ENEA (Italy), JÜLICH (Germany), INETI (Portugal), RISO DTU (Denmark), UKERC (United-Kingdom), VTT (Finland) . These research institutes encompass an annual R&D budget on energy research of more than 1,300 M€.

281. COM(2009) 519/4, accompanied by the following working documents: SEC (2009) 1295; SEC (2009) 1296; SEC (2009) 1297.

282. SEC(2009) 1295.

ogy roadmaps represent a stable planning framework, enabling industry, the EC and Member States to identify and develop joint actions.

To come back to the financing question, with today's level of knowledge, the Commission believes that investment in the EU has to increase from the current €3 bn per year to around €8 bn per year to effectively move forward the SET-Plan. This would represent an additional investment, public and private, of €50 bn over the next 10 years.

#### *11.2.5. A improved international cooperation*

International cooperation will be approached differently depending on whether the third countries are developed countries or developing countries. With developed countries where competition is a key element, more cooperation on “public good” research (for instance safety and public acceptance) as well as on longer-term frontier research is needed. With developing and emerging economies, the Community interest lies more in helping them develop and grow in a more sustainable manner while building new markets for EU industry. This includes networking technology centres, large-scale demonstration projects on technologies, innovative financing mechanisms, the use of the Kyoto mechanisms.

The Steering Group, the EIIs and the EERA should also bring about a reinforced international cooperation strategy, as well as the EU speaking with a single voice in international fora. Cooperation here with the US is on very good track, as well as Japan. The Commission has also begun discussions with India, Canada, Russia, Brazil, China (not progressing very much).

## 12. Adaptation: A Substitute for Mitigation?

In 2007, the Commission presented a Green Paper on Adapting to Climate Change in Europe<sup>283</sup>. This opened a wide process of consultation. Research efforts also identified action to be taken in the short-term. A white paper has thus been presented in 2009<sup>284</sup>. It has been accompanied by three sectoral papers on agriculture<sup>285</sup>, health<sup>286</sup> and water, coasts and marine issues<sup>287</sup>. These seem to be considered as the three priority areas of adaptation.

According to the EEA, the most vulnerable areas in Europe are Southern Europe, the Mediterranean Basin, Outermost regions and Arctic region. Furthermore, mountain areas, in particular the Alps, islands, coastal and urban areas and densely populated floodplains are facing particular problems. In Northern and Western Europe a more complex balance between negative and positive effects is projected for moderate levels of climate change<sup>288</sup>.

The Commission examined a wide range of options. At an early stage, some of them were abandoned. They encompassed substantial changes in EU financing schemes. Such schemes, according to the Commission, could not be foreseen under the current multi-annual financial framework, and could not pre-empt any post 2013 multi-annual financial framework. Consequently, three main options for short-term action at EU level were defined. Option A (Baseline) constrained the development of adaptation strategies to the national level. Option B (process towards an EU adaptation policy) opened a phase of definition of a EU adaptation policy. Option C (EU Adaptation Action Plan) gave priority to new legislative initiatives to promote sustainable adaptation actions. Finally, option B was preferred.

The white paper thus encompasses two phases. During the first one, from 2010 to 2012, the EU will define the framework of its strategy. From 2013, this strategy should then be implemented. During the first phase, a solid knowledge base on the impact of climate change for the EU shall be built. Adaptation will be taken into consideration in different key policy areas. Various policy instruments (market-based instruments, guidelines, public-private partnerships) will

---

283. COM (2007) 354.

284. COM (2009) 147; SEC (2009) 387.

285. SEC (2009) 1093.

286. SEC (2009) 416.

287. SEC (2009) 386.

288. EEA, *Impacts of Europe's changing climate — 2008 indicator-based assessment*, 2008, esp. pp. 31-36.

be used. International cooperation shall be developed. This strategy was globally adopted by the Council<sup>289</sup>.

---

289. Bulletin EU 6-2009, § 1.23.3.

## 13. International Aspects: The EU and the Post-Kyoto Regime

### 13.1. The preparation of the Copenhagen conference

The EU played a fundamental role in the adoption of the United Nations Climate Change Convention in 1992. This role remained fundamental during the negotiation of the Kyoto Protocol. The ETS was meant from the beginning to be connected to other cap and trade systems in the framework of the Kyoto Protocol. The EU thus gave a high importance to the negotiation of a new international climate convention, to replace the Kyoto protocol after 2012.

At the beginning of 2009, the Commission proposed a strategy for the Copenhagen Conference<sup>290</sup>. It relied on agreeing with other developed countries on a set of GHG reduction targets, ensuring comparable efforts, in order to collectively deliver 30% emission reductions in 2020 compared to 1990. Developing countries had to commit to deliver collectively a deviation of 15-30% below business as usual in 2020. Significant financial commitments for emission reductions and adaptation had to be taken, especially towards the most vulnerable and poorest developing countries. Finally, bilateral partnerships with other developed countries had to be explored to share experience on designing domestic emissions trading systems and to facilitate the creation of a robust OECD-wide carbon market by 2015.

A second communication was presented later on the financial aspects of the negotiation<sup>291</sup>. It proposed to increase the international finance to help developing countries combat climate change. According to the Commission, the scale of finance required for mitigating emissions and adapting to climate change in developing countries had to reach roughly € 100 billion additional investments per year by 2020. These € 100 billion had to come from three different sources: domestic finance (public and private) in developing countries, the international carbon market and international public finance. As much as € 38 billion could be expected from the international carbon market, if designed properly. In that context, it was indispensable to establish a new sectoral crediting mechanism, while focussing the Clean Development Mechanism (CDM) on least developed countries. International public finance was estimated in the range of € 22 to 50 billion per year (which is quite wide). This required the contribution not only from industrialised countries but also from economically more advanced devel-

---

290. COM (2009) 39.

291. COM (2009) 475/3.

oping countries. On this basis, the EU contribution to international public finance was estimated from around 10% to around 30% (which is also very wide).

### 13.2. The Copenhagen Accord

The Copenhagen accord in fact defines a very general outline. It is a very loose framework for further negotiations. Firstly, it defines a goal for limiting the global temperature increase to 2 degrees Celsius. It thus establishes a process for countries to enter specific mitigation pledges by January 31, 2010. In a joint letter dated 28 January 2010, the EU and its Member States formally notified to the UN that the EU will reduce its GHG emissions by 20% compared to 1990 levels. In this letter, the EU also reiterated its offer to increase this cut to 30% provided that other major emitters agree to take on their fair share of a global reduction effort.

The Copenhagen accord also anticipates in broad terms a system for the reporting and verification of States' action. Developed countries commit themselves to contribute 30 billion dollars in new and additional resources during the period 2010-2012 to assist developing countries in the reduction of emissions, the preservation of forests and the adaptation to climate change. Finally, they commit themselves to transferring 100 billion dollars per year by 2020 to the developing countries.

Different instruments are foreseen in that perspective. A Copenhagen Green Climate Fund will have to manage the new financial resources. A high level panel will examine the possible ways of reaching the 2020 financial goal. A new technology mechanism will define rules about transfers. Finally, a specific mechanism will channel the funds for reduced deforestation.

Seen in the short term context of the conference, such an accord may easily be perceived as a success. Before Copenhagen, there was no commitment of China and the USA, which are the two main GHG emitters. There was no general commitment of the developed countries to provide finance for mitigation and adaptation in the developing countries. There was more or less nothing concerning the fight against deforestation. Now, such things exist. It makes little sense to present them as insignificant. On the other side, seen in a long term perspective, made of long trail of negotiations from 1988, many years of discussion concerning the succession of the Kyoto protocol, and the accelerated degradation of the climate problem, these changes appear clearly inadequate. The



approved outline still requires very long, detailed, and difficult negotiations, and the 2012 deadline is now closer.

It is thus possible to present the accord as both a tactical success and a strategic failure (which is the stuff that led to many lost wars). The outcome is clearly more than nothing, but insufficient considering the time-scale of the problem. Even if Copenhagen represents a progress, honesty requires to acknowledge that climate warming progresses much quicker than the international cooperation against it.

This is clearly confirmed by the Commission's analysis of the impact of the Copenhagen Accord, presented in May 2010. "The Copenhagen Accord does not yet give certainty that these reduced emission levels will be actually accomplished. Most high end targets are conditional on others taking similar action, on a legally binding international agreement or on the need for further international financial or technical support making their degree of implementation uncertain. Furthermore possible double counting of targets and pledges through the carbon market and the issues related to surplus Assigned Amount Units and LULUCF accounting could further weaken the ambition level. Adding all these uncertainties up would result in a much bleaker picture with emissions almost back to business as usual"<sup>292</sup>.

### **13.3. The causes of an insufficient result**

It is really important to distinguish the causes of this unsatisfactory outcome, if one wants to improve it. Otherwise, one runs the risks of concentrating exclusively on one aspect without increasing much the probability of a success.

#### ***13.3.1. The process***

A lot of people have incriminated the weakness of the presidency of the conference, and also the cumbersome rule of the UN regarding the negotiation and the approval of an agreement. A Danish compromise was seen as biased to many developing countries. The formal approval of the agreement was blocked by 5 States among 192. Finally, the separation of two tracks in the negotiation (Kyoto and UNFCCC) obviously complicated it.

---

292. COM (2010) 265, p.3.

Various comments emphasize that it is impossible to negotiate in depth about such complex and numerous topics without restricting the format of the negotiation. As a matter of fact, it seems that the situation could be improved. A first writing board could be composed of the main polluters and financiers. The rules concerning the signature and the entry into force of the treaties could be made a little bit softer. The strict Kyoto framework could also be made more open to allow various forms of commitments from the parties. On the other side, it is difficult to condemn fully the UN framework, as it gives at least a voice to the countries which are the most threatened by climate warming. The advantage of the UN is precisely that its legitimacy is the most difficult to contest. The challenge is to make it a little bit more efficient.

### *13.3.2. The structure*

The process cannot be separated from the institutional framework of the negotiation. The Copenhagen conference suffered also from the absence of an international organization especially dedicated to the climate, or at least to the environment (with a section covering climate).

The negotiations have become extremely complex. They require a lot of technical background. They cover a lot of various topics (cap and trade systems, financial transfers, intellectual property transfers, research, control of emissions,...). Some of them are related to the activities of different international organizations, and thus require coordination. All of this can of course be brought to the negotiation table, but it is much more difficult to do it without a solid administrative structure.

### *13.3.3. The heart of the matter: how to define a world efficient and fair system in a completely new area?*

However, these defects must not hide the essence of the difficulty. Even with a better process and a better institutional setting, it is not evident that the result would have been fundamentally different. In the present context of aggravation of climate change, the world's States have to commit themselves to important changes. They also need to find an agreement about the repartition of the efforts. They need a system which is both efficient and fair. This is a very difficult target to reach.

As far as efficiency is concerned, the “cap and trade” regime established by the Kyoto system has not proven its full usefulness yet. At the regional level, the EU system, which is the biggest, has been prone to ups and downs. This could indi-

cate that a “cap and trade” system must at least be completed by a mechanism that can guarantee a minimum of stability for the carbon price. A carbon tax has been described as the best supporting mechanism<sup>293</sup>. At the international level, the clean development mechanism (CDM) has provoked many negative reports<sup>294</sup>. It should at least be thoroughly revised. Furthermore, the surveillance of the States’ policies has not appeared satisfactory until now, and should therefore be strengthened.

In synthesis, whatever has been launched by the Kyoto protocol, there have been, even in the most ambitious States, few real constraints concerning the reduction of GHG emissions. As a very logical result, these emissions have not diminished very much. And their growth in the world has in fact accelerated. In an insufficiently commented forecast at the end of 2009, the IEA has announced that the world was now on a track for a rise of 6° Celsius in 2100 (which is quite far from the 2° C sponsored in the Copenhagen Accord).

This evolution has made more necessary a quick reduction of GHG emissions. It has been estimated that they should now reach a ceiling in 2020 in the developed countries. Needless to say, such measures will impose much higher constraints in the energy consumption. It is thus inevitable that their adoption will provoke huge resistances.

The difficulty of the debate about efficiency is compounded by the equity question. Countries, like people, are not eager to commit themselves to a policy they see as unfair. Developing countries emphasize the difference between themselves and the developed countries in the GHG emissions per capita. They understandably ask for some equalization before they begin to restrain their own emissions. Some of them even ask for a compensation covering the two last centuries of GHG emissions. Finally, they consider that they require technology transfers which should be financed by the developed countries.

To reach some kind of consensus about equity in any international debate gathering developed and developing countries is never easy. It is thus not surprising that the climate debate is particularly difficult, since it raises new, complex and essential questions. Moreover, climate, as we have seen, is the utmost of the collective good. Climate change has rightly been described by the Stern report as “the greatest market failure”. This is an essential qualification, because it

293. See HELM, EU climate change policy – A critique, in D. HELM and C. HEPBURN eds., *The Economics and Politics of Climate Change*, Oxford Univ. Press, 2009.

294. See M. WARA and D. VICTOR, *A Realistic Policy on International Carbon Offsets*, Stanford PESD, 2008.

means that the solution requires not only interdictions (which is largely the stuff of WTO and partially of banking negotiations), but positive measures.

Moreover, these positive measures must cover a broad specter of domains, which are complex and depend from other international organizations. For example, it is not enough to adopt a target for financial transfers to the developing countries: the funds (hopefully additional) must be efficiently administered. Technology transfers depend on WIPO rules. Possibly new rules must be defined. Trade measures, taxes, technological standards measures depend on WTO rules, etc...

Last and most fundamentally, even without any international aspect, even between equally developed countries, at the end, climate change is always about the rationalization of energy consumption (less energy and/or better energy). In the short term, this is always costly, and thus rather unpopular. The improvement of energy technologies requires a lot of investments and time. They offer perspectives only in the long term. In the short term, there is thus no easy solution. On the other side, in the long term, it can be said that the more we wait, the more expensive and dolorous a transition towards a low carbon future will become. This remains the most fundamental impediment to any progress.

#### *13.3.4. The next steps*

In April 2010, the Commission has proposed a revised strategy<sup>295</sup>. Taking into consideration the probability that there would be no new treaty adopted in 2010, it proposes a step by step approach. First, it announces an analysis of what practical policies would be required to implement the 30% emission reduction, and a pathway for the EU transition to becoming a low-carbon economy by 2050. Second, it underlines the need to develop the international carbon market, considered as essential for driving low-carbon investments and reducing global emissions cost-effectively. The Commission acknowledges, however, the pending problem of the Kyoto Protocol. The limited number of committed countries and other serious weaknesses (accounting rules for forestry emissions and handling of surplus national emission rights from the 2008-2012 period) must be addressed<sup>296</sup>. Third, it proposes that the EU implements swiftly its commitment to provide €2.4 billion in ‘fast start’ financial assistance to developing countries annually in 2010-2012.

---

295. COM (2010) 86.

296. See the interesting synthesis of Commission staff working document: COM (2010) 86, §§ 1.1.9 and 1.2.2.

## Conclusions

An evaluation of the impact of any new EU policy is naturally very difficult. This is especially true in the field of climate warming, for different reasons. Firstly, climate is by definition difficult to anticipate. This is one of the fundamentals of the topic. Secondly, there are numerous intricacies with other topics, beginning with energy (but also transport, agriculture, architecture... and other aspects of the environmental policy of course). The effects of the EU measures also depend on the evolution of economic growth (the financial crisis was a blessing for the reduction of GHG emissions).

More fundamentally, climate warming is by essence a global threat, which can only find a solution with a global action. The EU could reduce by 80% its GHG emissions in 2030 and have no impact whatsoever on the growth of world temperature if this reduction is compensated by additional rises in other zones of the world. All this said, in a long term perspective, some general comments can be made.

### 1. What has the EU achieved until now?

In 1997, the EU accepted important commitments in the framework of the Kyoto protocol. Since then, it has reached substantial results. As the EEA related in 2009, “GHG emissions in the European Union are decreasing and are expected to continue to do so with the implementation of all measures planned by Member States. In 2008, for the fourth consecutive year, emissions in the EU decreased to reach their lowest level since 1990. The EU-27 has been achieving significant decoupling of its emissions from economic growth. Greenhouse gas emissions in the EU-27 now represent 11 to 12% of global greenhouse gas emissions and each EU citizen emits on average 10.2 t CO<sub>2</sub>-equivalent every year”<sup>297</sup>. The GHG of the European economy has also diminished strongly since 1990. Between 1990 and 2005, GHG emissions in the EU-15 have been reduced by 7.6% GHG emissions, although GDP increased by 44%<sup>298</sup>.

In spite of these positive elements, some facts indicate that the EU effort has remained limited until now. Firstly, the EU benefited from the easy targets attributed at the time to Central and Eastern Countries (as a matter of time they began their economic transition just in 1990). Secondly, the EU has also used the flex-

---

297. EEA, *Greenhouse gas emission trends and projections in Europe 2009 – Tracking progress towards Kyoto targets*, EEA Reports 9/2009, p. 8.

298. COM (2009) 630, p. 3.

ibility mechanisms established by the Kyoto protocol. However, the efficiency of these mechanisms has become increasingly criticized<sup>299</sup>. Thirdly, the price of carbon has remained very low and no rise perspective appears in the foreseeable future. Fourthly, and lastly, the heaviest positive factor in the EU achievement is now the 2009 economic recession, which has brought quite a reduction of GHG emissions.

Furthermore, the next years will not be easy. In fact, between MS projections for 2020 and the EU's 2020 targets (–20% and –30% respectively), a quite significant gap appears. The EU will thus have to follow a much steeper emission reduction path after 2012 as compared to the period 1990-2012. Depending on the actual target, in 2020 emission reductions will have to amount to 1,000-1,500 Mt CO<sub>2</sub> equivalents compared to baseline scenario<sup>300</sup>.

## 2. What will be the costs?

The costs will undoubtedly be substantial. In synthesis, energy is the first pillar of our economy, so reorganising it in depth represents inevitably a huge endeavour. Furthermore, the development of new technological solutions (for renewable energy, carbon sequestration or treatment of nuclear waste) will require much money<sup>301</sup>. Energy infrastructures cost a lot, and require also a long pay-back. However, the long term costs could be limited. The Commission's evaluations in the impact assessment of the climate package limit this around 0,58-0,45% GNP, depending on the availability of CDM<sup>302</sup>. Considering the seriousness of the threat, this should be considered as a bargain. It must be however repeated that such positive evaluations have been criticized with good arguments. One must also take into consideration the social consequences that could be provoked by a steep rise of energy prices.

299. Ten MS of the EU-15 as well as Hungary and Slovenia have decided to use the Kyoto mechanisms to reach their Kyoto targets. Together, these EU-15 MS would acquire 93.1 Mt CO<sub>2</sub>eq. per year for compliance under the first commitment period under the Kyoto Protocol. This represents approximately 2.2 percentage points towards the EU-15 Kyoto target of –8% (see Table 12 in the SWD). These 10 MS together have decided to invest almost € 3 billion to acquire units through JI, CDM or emissions trading. Austria, the Netherlands, Spain, Luxembourg and Portugal allocated the largest budgets (€ 531 million, € 506 million, € 409 million, € 330 million and € 305 million, respectively, for the five-year commitment period). In Slovenia, the budget has been estimated for € 80 million. Hungary plans to participate in international emission trading. (COM [2009] 630, p. 15).

About these mechanisms' problems, see the staff working document accompanying the 2009 communication on the preparation of the Copenhagen Conference: SEC (2009) 32, pp. 87-89 and especially L. Schneider, *Is the CDM fulfilling its environmental and sustainable development objectives? An Evaluation of the CDM and options for improvement*, Ökoinstitut, 2007.

300. COM (2009) 630, p. 5.

301. See M. AMANN et alii, *Emission scenarios for non-CO<sub>2</sub> greenhouse gases in the EU-27 – Mitigation potentials and costs in 2020*, IIASA, 2008.

302. SEC(2008) 85/3, p. 7 (there are of course a lot of different possible scenarios).

Anyway, whatever their level may be, these costs must of course be compared with the costs of doing nothing, which could become much more important. If the temperature rise goes beyond 2 degrees, it risks becoming uncontrollable. This would represent a huge risk for coastal zones, agricultural production, and poor populations.

### **3. What will be the impact on the European Union?**

The impact on the European Union will be substantial, and probably more in the long term.

Firstly, climate change has become a brake in the drive to full market economy that has characterized the world economy since the 1980s, even if the adoption of the Kyoto protocol has paradoxically brought new market instruments in the field of international environmental law. As the Stern review has quite strongly – and correctly – emphasized, climate change is “the greatest market failure the world has seen”<sup>303</sup>. This reality will thus inevitably stimulate the creation of instruments to correct this failure.

In the EU, the fight against climate change is already provoking an adjustment in the implementation of the single market rules. It requires more discrimination between carbon and nocarbon energy, between heavy and light forms of energy consumption. National regulations or taxations aiming in that direction will probably benefit more in the future from the exceptions to the basic principles established by the European treaties, as free movement or free competition. Subsidies and tax exemptions with the same objectives will gain a new legitimacy. A collateral damage could be that rules will most likely become more complex.

These tendencies can only be strengthened in the future. Whatever progress has been accomplished since 1997, and however impressive the legal provisions, either international or European, may appear, climate warming has accelerated. The GHG emissions have not been stabilised. Consequently, substantially harder efforts will be required during the next ten years everywhere, and thus in the EU.

Secondly, the fight against climate change brings new legitimacy to the European Union. As a matter of fact, that topic has risen in ten years at the top of the agenda of the European Council. Like most environmental problems, climate

---

303. [http://www.hm-treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/stern\\_review\\_report.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm)

warming is a transnational problem in search of a transnational solution. It is a domain where externalities are very strong, and thus where the EU measures present a strong added value compared to national ones. Without any doubt, the climate package increases in various aspects the integration between the Member States, and thus the powers of the EU institutions. Whether it does this sufficiently, considering the experience of the previous legislative framework, is another question.

This new legitimacy can also be seen externally. The EU has played a fundamental role in the building of the international framework concerning climate change, from the adoption of the UN 1992 convention on the protection of the climate to the present negotiations about the future of the Kyoto system. This has been one of the most significant initiatives of the EU at the international level during the last 10 years.

#### **4. Is the EU action sufficient?**

This last question is especially tricky. First, it can be said that the question itself is not appropriately formulated. Only a global effort may be sufficient to deal with the climate warming threat. The essential lesson of the Copenhagen conference is that the world is not ready for that, even if it has for the first time officially taken note of the threat and of a general objective (to limit the growth of temperature to 2°C).

Second, if one takes into consideration this objective to limit the growth of temperature to 2°C, the result of the present EU measures is not sure at all. The Commission itself has indicated that there was no certainty to reach it. On the contrary, it indicated that there were only 50% chances. Furthermore, a 30% reduction is absolutely necessary in that perspective, and the EU has not taken this decision yet. Furthermore, the real efficiency of offset mechanisms does not appear clearly yet, and it suffers presently from a growing criticism. It must also be reminded that some previous action programs did not reach all their objectives, for reasons often interesting to analyse.

Finally, a lot will depend on the execution. Firstly, the timing of the climate package is very short. 2020 is not very far. This is especially the case considering the very long time-length of most projects in the energy sector. Changing buildings and transport systems does not happen in one year (and sometimes not in one decade). Secondly, the main texts of the climate package still require many implementation measures at the EU level (this is especially the case for the ETS).



Even if the EU action program reaches its objectives, the level of ambition in other zones of the world remains quite modest. As a matter of fact, planet Earth as a whole seems to slide into an accelerated climate change. On some aspects, like the Arctic thaw, it seems now that things are going a lot quicker than expected. This does not necessarily mean that temperatures will become unbearable quickly, since climate science remains a very uncertain one, but this evolution creates definitely an additional source of worry.

So, on one side, the EU action may still appear insufficient. However, on the other side, it must be underlined that it has had until now a positive impact at the global level. The EU played a fundamental role in the creation of the Kyoto regime. The EU is the only regional zone in the world which has reduced its GHG emissions since 1990. In the EU-27, the aggregated GHG emissions dropped by 9.3% between 1990 and 2007. Comparatively, during the same period, the USA's emissions increased by 17%, and in Japan by 14%. This is no trivial difference. Furthermore, the EU has been the first world power that has proposed to deepen this reduction effort. This is not enough but, until now, this remains the best offer on the global table. To conclude, the EU is most probably not very advanced, but even so it remains a little bit more advanced than other developed zones. Whether this is rather comforting or not is left to the reader's appreciation.