Review of European Emissions Trading Scheme.

Applying European emissions trading and renewable energy support mechanisms in the Greek electricity sector (ETRES)

Report for Task 1: International developments in emissions trading and renewable energy support mechanisms

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Introduction

This report is a contribution to the project "Applying European emissions trading and renewable energy support mechanisms in the Greek electricity sector (ETRES)". ETRES is being undertaken from 2003 to 2006 by a consortium of Greek organizations: the Centre for Renewable Energy Sources (CRES – the coordinator), the Regulatory Authority for Energy (RAE), the Greek Association for Renewable Energy Investors (GARI) and the National Technical University of Athens (NTUA). The project is co-funded under the European Commission LIFE-Environment fund (LIFE03ENV/GR/000219). The aim of the ETRES project is to make steps to apply EU climate change and renewable energy (RE) policies and measures in the Greek electricity sector.

The project comprises several tasks. Task 1 is titled "International developments in emissions trading (ET) and renewable energy support mechanisms". This task reviews current and anticipated developments in emissions trading and RE support to achieve understanding and knowledge that assists the ETRES team's work with respect to the Greek electricity sector in subsequent tasks.

This report reviews the current status of the European emissions trading scheme. The report includes a section on Greek emissions status.

Acronyms

AIJ	Activities Implemented Jointly
AAU	Assigned Amount Unit
CDM	Clean Development Mechanism
CHP	Combined heat and power
CER	Certified Emissions Reduction
CERUPT	Certified Emission Reductions Procurement Tender
CO_2	Carbon dioxide
COP	Conference of the Parties
EC	European Commission
EEA	European Environment Agency
EIA	Environmental impact assessment
EMAS	EU Eco-Management and Audit Scheme
ERU	Emission Reduction Unit
EU	European Union
EUA	European Union emissions trading Allowance
FDI	Foreign direct investment
GHG	Greenhouse gas
GWh	Giga watt hour
IPCC	Intergovernmental Panel on Climate Change
ISO	International Standards Organisation
JI	Joint Implementation
LULUCF	Land use, land use change and forestry
Mt	Mega tonne
MW	Mega watt
NGO	Non-governmental organization
NAP	National Allocation Plan
PCF	Prototype Carbon Fund (World Bank)
RMU	Removal Unit
tCO_2e	Tonne of carbon dioxide equivalent
UNFCCC	United Nations Framework Convention on Climate Change
QMS	Quality Management System

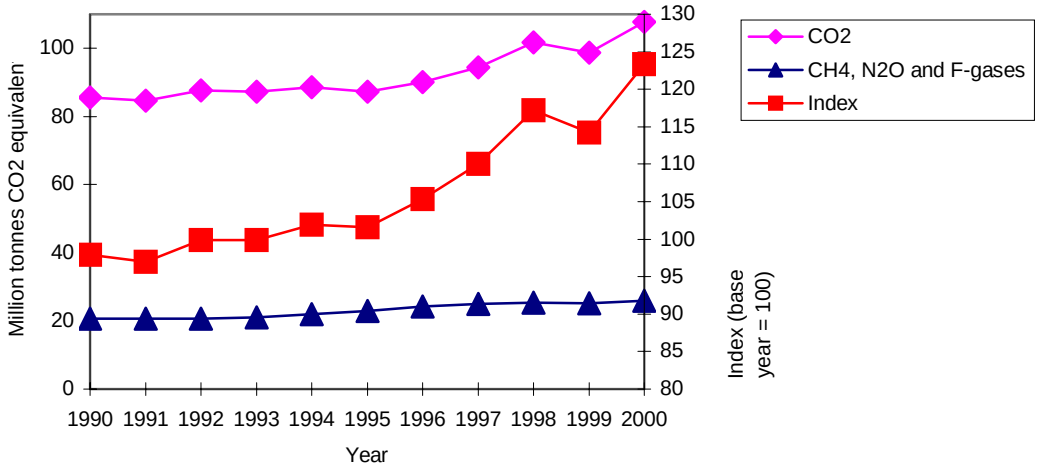
Greenhouse gas emissions in Greece and their mitigation

Greenhouse gas emissions are growing steadily in Greece and are directly in line with the growth in economic activity (measured by Gross Domestic Product) and energy use (Gross Inland Consumption). This section outlines data on emissions and their main sources, reviews the targets, plans and measures in place to reduce the rate of growth of emissions, and considers what the situation may be in the future.

The National Observatory of Athens delivers regular inventories of gaseous emissions in Greece. The inventories consider the emissions of all six gases covered by the Kyoto Protocol (CO_2, CH_4, N_2O and fluorinated gases or F-gases) by the major economic sectors. The 3rd National Communication to the UNFCCC (Ministry for the Environment, Physical Planning and Public Works, 2002) includes inventory data to the year 2000. Emissions in Greece are illustrated with extracts from this data presented in the tables and graphs below.

Emissions of all greenhouse gases grew substantially in the period 1990 to 2000, increasing from 106.1 mtCO_2e in 1990 to 133.8 mtCO_2e in 2000. There is a clear upward trend with some annual variation, for example high incidence of forest fires in the year 2000 gave higher emissions in that year.

Greenhouse gas emissions in Greece 1990-2000
(source: 3rd National Communication)



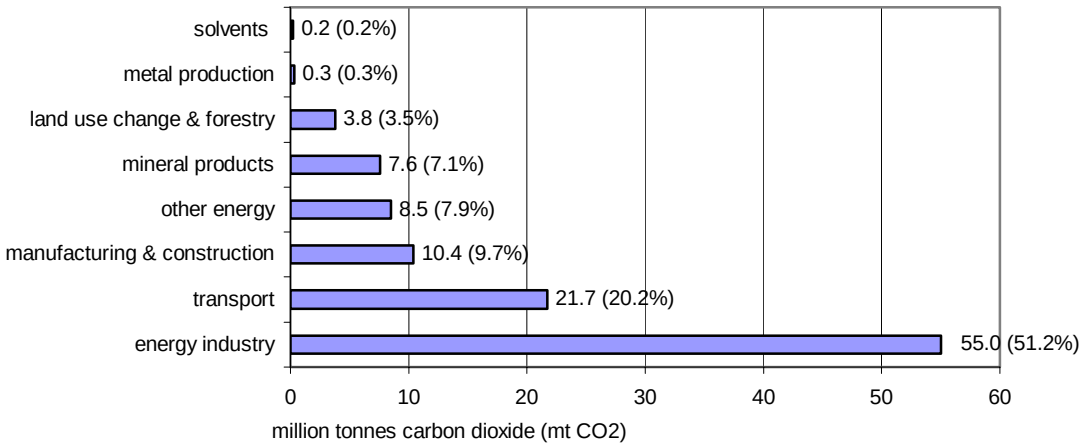
In 2000, CO_2 emissions accounted for over 80% of greenhouse gas emissions in Greece but emissions of other gases are significant and are also growing.

Greenhouse gas emissions in Greece (million tonnes CO_2 equivalent)

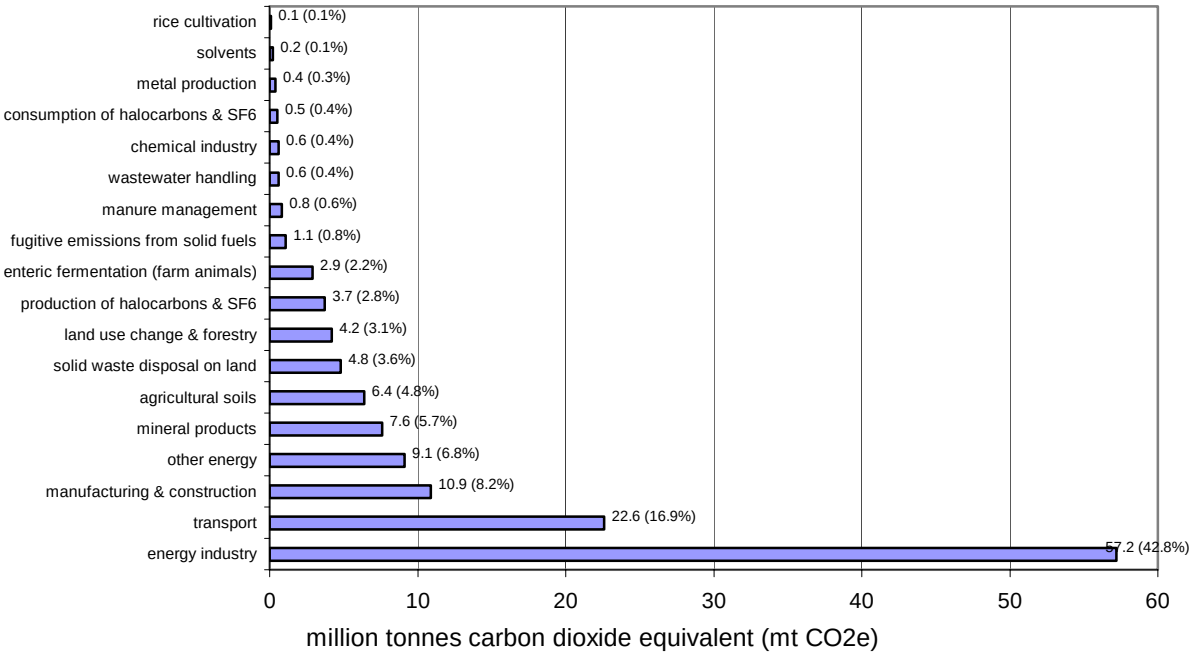
	1990 mt CO_2e	2000 mt CO_2e	%
CO_2	85.6	107.8	80.6
CH_4	8.7	10.6	7.9
N_2O	10.6	11	8.2
F-gases	1.2	4.4	3.3
	106.1	133.8	100.0

Burning fossil fuels for energy production is clearly the dominant source of greenhouse gas emissions in Greece. In the year 2000, the energy industry emitted 55 $mtCO_2$ or 51% of all CO_2 emissions. In terms of all greenhouse gases - CO_2, CH4, N_2O and F-gases – the energy industry emitted 57 $mtCO_2e$ or around 43% of all emissions. There are further emissions from other energy activities including on-site generation in industry. A number of other economic activities emit CO_2. When other greenhouse gases are considered, several more economic activities feature in the statistics.

Carbon dioxide emissions in Greece in the year 2000



All greenhouse gas emissions (including CO2) in Greece in the year 2000

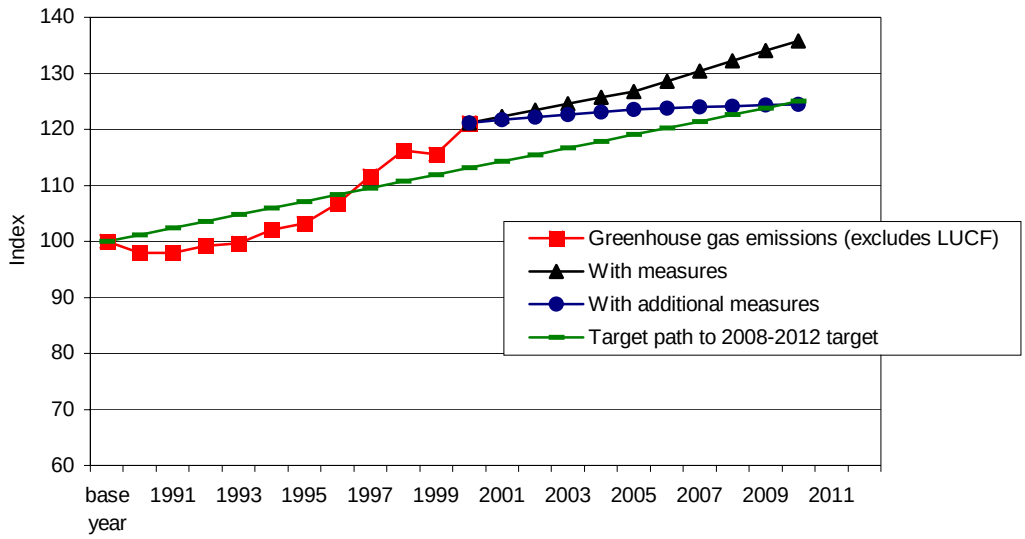


The European Community and all Member States, including Greece, have agreed joint fulfillment of commitments under the Kyoto Protocol. The EC must reduce its greenhouse gas emissions by 8% below 1990 levels by 2008-2012. The agreement to fulfill this jointly allows different reductions by Member States. The Council of

Ministers agreed different emission limitation or reduction targets –essentially in accordance with economic circumstances. The agreement is laid out in Council Decision 2002/358/CE or the so-called "burden sharing agreement". The national target for Greece is to limit the increase in greenhouse gas emissions in the period 2008 to 2012 to 25% over 1990 levels.

The European Environment Agency reports on greenhouse gas emission trends by Member State and for the EC as a whole The graph below, reproduced from such a report (EEA, 2002) shows the greenhouse gas emissions against an assumed straight-line path to the Greek target +25% in the period 2008 to 2012. There are minor differences between data above and the EEA data (eg EEA exclude land use change and forestry).

Historic and projected Greek greenhouse gas emissions and straight line path to 2008-2012 target (sources: MEPPPW 2002; EEA, 2002)



The general conclusion is evident: Greece is well above its Kyoto target path. The so-called "distance to target indicator", or difference between actual emissions and target path measured in index units, was +8.7 in the year 2000 for Greece. The EC as a whole is reasonably close to achieving its target, with distance to target indicator +0.5 in the year 2000. There is great variation between Member States. Nine Member States were above their target paths, with Spain, Ireland and Portugal all with distanct to target indicators greater than 15 index points, and six Member States below their paths. The latter included Germany and the UK – this is significant because these two countries account for some 40% of greenhouse gas emissions in the EU15.

The graph also shows two projections of greenhouse gas emissions in Greece to the year 2010. These were reported in the 3rd National Communication to the UNFCCC and the two scenarios are "with measures" and "with additional measures". The former modeled a future economy in which measures set out in the first national greenhouse gas abatement plan are effective; the latter considered the additional measures set out in the second national plan (see Box 1). "With measures" predicts that greenhouse gas emissions in 2010 will be 147.2 mtCO_2e, or 35.8% above the base year level 108.4 mtCO_2e. "With additional measures" predicts that emissions in 2010

may be 134.9 mtCO_2e, or 24.5% above base year, and within the 25% target for Greece under Kyoto burden sharing.

To achieve the Kyoto burden sharing target will require a change in the current straight-line relationship between the growth in the Greek economy and in greenhouse gas emissions. Step change in the sectors that are significant sources of emissions will be required. The energy sector is the most important. Rapid growth of natural gas power generation and market penetration of renewable energy and cogeneration coupled with vigorous measures to reduce growth in energy demand could, for example, put Greek emissions onto a path of lower growth. It does seem that the emissions trajectory presented by the scenario "with additional measures" is highly optimistic. Greek economic development is continuing at pace. The Greek target for 2000 was not met and it is likely that the 2008-2012 target will be missed by a considerable margin.

Box 1: Measures for greenhouse gas abatement in Greece

Hellenic National Action Plan for Abatement of CO_2 and other Greenhouse Gas Emissions, 1995.

This plan proposed measures to achieve an overall specified target for abating emissions of greenhouse gases. Projections based on modeling had indicated that a "business-as-usual" course of events would lead to emissions in 2000 in the order 27% higher than 1990. Under the plan, the target was set to restrict total increase in emissions, with regard to a 'basket' of three gases (CO_2, CH4 and N_2O), in the 1990 to 2000 period to 15% ±3%. The most important abatement measures affected energy generation supply-side and were:

- introduction of natural gas;
- modernization of existing energy system;
- development of cogeneration units in existing and planned power plants;
- large scale exploitation of renewable energy sources.

The main demand side interventions were:

- introduction of natural gas in industry, tertiary and residential sectors;
- energy conservation in buildings and manufacturing units;
- measures affecting energy use in transport.

Second National Climate Change Programme, 2002

This plan defined the additional measures to be undertaken to ensure compliance with the target set out under the EU burden sharing agreement. The main actions were:

- further penetration of natural gas in all final demand sectors including cogeneration;
- promotion of renewable energy sources for electricity generation and heat production;
- energy conservation in the industrial, tertiary and residential sectors;
- promotion of energy-efficient appliances in tertiary and residential sectors;
- structural changes in agriculture and chemical industries;
- transport and waste management options.

Background to the European emissions trading Directive

The European emissions trading scheme (ETS) was established by Directive 2003/87/EC dated 13th October 2003.

The ETS is an instrument for environmental protection, arising from the need for the EU to meet its GHG emissions obligations under the Kyoto Protocol. It is argued that Europe-wide emissions trading will harness cost-effective emissions reduction potential and minimise the distortions of competition and internal market barriers that might arise if different schemes were put in place by Member States.

> **The European emissions trading scheme is a 'cap and trade' scheme that will be mandatory for installations in specified industrial sectors.**

Each participating installation will require a 'permit' to emit greenhouse gases. Permit holders will have 'allowances', denominated in tCO_2e, which allow a corresponding amount of greenhouse gases to be emitted. One EU Allowance (EUA) will equal one tCO_2e. Permit holders will be obliged to hold allowances equal to actual emissions and to have adequate monitoring, reporting and verification of emissions in place.

Member States (or their relevant authorities) will be responsible for granting permits and allocating allowances. Each Member States will draw up a National Allocation Plan (NAP) which lays out the total cap and the allocation of allowances between sectors and installations.

The emissions trading scheme is central to EU efforts to mitigate GHG emissions. The scheme must be successful for EU to achieve its Kyoto target.

Scope

> **The emissions trading scheme covers CO_2**

The EU scheme covers only CO_2 and not other gases, because CO_2 emissions are easier to monitor and it is the most significant GHG by some margin. The scheme is deliberately restricted to those sectors with relatively small numbers of installations and high levels of emissions.

The sectors included in the scheme are:

- **Energy activities**
- **Production and processing of ferrous metals**
- **Mineral industry (cement, minerals, glass)**
- **Pulp, paper and board production**

It is estimated that there will be some 6000 installations covered by the scheme across the EU15. These installations cover some 46% of estimated EU CO_2 emissions in 2010 (or 38% of total GHG emissions in 2010).

The Directive will be in force in accession countries from their date of entry into the EU – so the ten countries that joined on the 1st May 2004 are included in the scheme. There are further ~6000 installations in these countries.

Box 2: Activities covered by the European emissions trading scheme

Installations (or parts of installations) used for research, development or testing are not covered.

Thresholds generally refer to production capacities or outputs. Where one operator carries out several activities falling under the same subheading in the same installation or on the same site, the capacities are added together.

Energy Activities

- Combustion installations with rated thermal input exceeding 20 MW (excepting hazardous or municipal waste installations).
- Mineral oil refineries
- Coke ovens

Production and processing of ferrous metals

- Metal ore (including sulphide ore) roasting and sintering installations
- Installations for the production of pig iron or steel (primary or secondary fusion) including continuous casting, with capacity exceeding 2.5 tonnes per hour.

Mineral industry

- Installations for the production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or lime in rotary kilns with a production capacity exceeding 50 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day.
- Installations for the manufacture of glass including glass fibre with a melting capacity exceeding 20 tonnes per day.
- Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain, with a production capacity exceeding 75 tonnes per day, and/or with a kiln capacity exceeding $4m^3$ and with a setting density per kiln exceeding $300kg/m^3$.

Other activities

- Industrial plants for the production of: pulp from timber or other fibrous materials; paper and board with a production capacity exceeding 20 tonnes per day.

The chemicals industry is not included. Firstly because the CO_2 emissions from this sector are relatively small (of the order of 1% of emissions in the EU) and also because the number of installations might be 30,000 or more, so the scheme would become administratively complex. Under the energy sector any plants over 20MW (thermal input) will be included, so this will include some heat / power / cogeneration plant found in the chemical industry.

The emissions trading scheme will apply to installations that are mostly already covered by the Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EC). Some significant CO_2 emitters currently not included under IPCC are also included, notably energy activities in the range 20-50 MW.

Member States will be able to combine permitting for the IPPC and emissions trading Directives, although there are differences in the permits. The IPPC Directive – with its broad definition of pollution – actually already covers emissions of greenhouse gases. Normally under IPPC, authorities must fix limits on pollutants, with values based on best available techniques. It is intended that the IPPC Directive will be amended so that installations included in emissions trading do not have CO_2 (or other GHG if applicable) emissions limits imposed by their IPPC permit.

Start date and phases

The initial period will be from 1st January 2005 to 31st December 2007 and there will be subsequent consecutive five year periods.

The scheme will start on 1st January 2005 and there will be a first, or preliminary, phase to 31st December 2007 followed immediately by a second five year phase (and subsequent five year phases after that). The second phase will coincide with the first commitment period under the Kyoto Protocol, 1998 to 2012, during which legally binding targets will limit GHG emissions in Member States (and other signatory countries to the Protocol). The preliminary phase is intended to prepare Member States and their industries for the international carbon economy under the Protocol. In view of the fact that there are no legally binding targets limiting GHG emissions until 2008, the preliminary phase differs in a number of limited ways, including opt-outs and lower penalties.

Member States can propose that individual installations and / or individual industry sectors opt out of the scheme for the preliminary period. However, the Commission will retain the right to veto such opt-outs. Most important is the fact that exempted installations must commit to equivalent emission cuts and be subject to the same reporting and verification requirements carrying equivalent penalties for non-compliance. In fact, this provision is actually to allow existing national emissions trading schemes, such as in the UK, to continue operating. There will be no opt-outs in the second phase.

Allocation of allowances

Allowances will be allocated by Member States. The deadline for National Allocation Plans was the 31st March 2004.

During the preliminary phase, Member States must give at least 95% of allowances free of charge, the remainder may be auctioned. In the following period, up to 10% of allowances may be auctioned.

Member States allocation of allowances will be based on the requirements of the scheme and national commitments under the Burden Sharing Agreement. The Directive explicitly states that Member States must show that they are on a path to meeting their Kyoto Protocol obligations. There are safe-guards to protect against over-allocation of allowances.

Box 3: Trading and the Burden Sharing Agreement

Member States have agreed to redistribute their targets under the Kyoto Protocol in accordance with the Burden Sharing Agreement. Greece has agreed to maintain national emissions during the period 2008 to 2012 at 25% above 1990 levels, and other Member States have agreed different commitments. Overall the EU must reduce GHG emissions by 8%. The text below outlines how emissions trading across Europe will be integrated with national commitments.

If allowances are traded within a Member State, there will be no changes to the emissions allowed by that Member State under the Burden Sharing Agreement. For trades by installations in different Member States, adjustments will be made recorded on national registries. Selling an allowance to an installation in another Member State means the originating Member State loses its entitlement to emit one tCO_2e under the Burden Sharing Agreement. Buying an allowance from another Member State will entitle an extra tCO_2e to be emitted in the Member State in which the installation is located.

Thus, the precise entitlements of each Member State will be adjusted to correspond with trades that its installations makes but, in the EU overall, emissions entitlements will remain the same.

The system of linked national registries will obviously be essential to hold and track allowances. It will also be important for progress to be monitored and to check if individual Member States, and the EU as a whole, will achieve their commitments.

The aim of the National Allocation Plan (NAP) is to fix the cap on CO_2 emissions from installations participating in the scheme and to ensure fair allocation of the task of emissions reduction:

- Between sectors participating in the trading scheme and the rest of the economy;
- Among sectors participating in the trading scheme, and;
- Among installations in the participating sectors.

There is some risk that if different principles are used to allocate allowances to companies that compete across Europe, competition might be distorted. For example, a Member State might allocate allowances that exceed the likely needs of a sector or installation, but this would be considered illegal State aid. To protect the internal market, Member States have to apply common criteria for their allocation plans, have to notify the Commission and other Member States, and the Commission can reject plans that do not meet criteria. The criteria for NAPs are laid out in Annex III of the Directive, and this is reproduced in Box 4.

Box 4: Criteria for National Allocation Plans

The following is adapted from Annex III of the Directive

Total quantity of allowances must be consistent with Member State's obligation to limit its emissions under the Kyoto Protocol and European Burden Sharing Agreement, and take into account emissions that will arise from sectors not included in the European emissions trading scheme.

Total quantity of allowances allocated will be consistent with assessments of actual and projected progress towards fulfilling Community's commitments under Decision 93/389/EEC concerning the monitoring of GHG emissions

Quantities of allowances to be allocated will be consistent with the technological potential of installations to reduce emissions.

The allocation plan will be consistent with other EC legislative and policy instruments. The plan must take account of unavoidable increases in emissions resulting from new legislative requirements.

The plan must not discriminate between companies or sectors so that certain activities are favoured. The plan will contain information on how new entrants will be able to begin participating in the trading scheme in the Member State. The plan may accomodate early action. The plan shall contain information on how clean technology, including energy efficient technology, will be taken into account. The plan will include provisions for public to comment, and information on arrangements by which due account of these comments will be made. The plan shall contain a list of installations covered and quantity of allowances to be allocated to each. The plan may contain information on how competition from outside the EU will be taken into account.

Further guidance was provided for each of the above criteria by the EC in the document COM(2003) 830 final dated 7th January 2004.

The EC also published a 'Non-Paper' titled "How to develop a national allocation plan" (European Commission, April 2003). The EC 'Non-Paper' stressed the following points:

- Allocations will be made before the beginning of each period (the initial period being 2005 to 2007 and consecutive 5 year periods thereafter).
- The total quantities of allowances to be allocated to each operator for the whole period will be known from the outset. Allowances will be issued annually.
- The issue of allocation for the period will be closed before the period begins. Any allocation discussions can only concern the initial allocation for the next period.
- A 'benchmarking' approach could be used for allocation (i.e. use a target level of emissions per unit input or output).
- As stated in the draft Directive, allocations to individual operators or sectors must not constitute incompatible state aid (i.e. aid which would distort or threaten to distort competition to an extent contrary to the common interest)
- The NAP must be based on objective and transparent criteria.

The 'Non-Paper' identified six steps in the process of establishing a NAP. These are outlined below. It is stated that the process of drawing up the NAP is likely to require looking at both the historic and expected future emission patterns in the economy as a whole, at the level of sectors, and within sectors.

Box 5: The six steps to establish a National Allocation Plan (source: European Commission, April 2003)	
1) Top-down analysis to define the share of emissions covered by the Directive	The Member State needs to do a top-down economy-wide analysis of the proportion of its total allowable emissions under the Kyoto Protocol that it will allocate to all the installations covered by the emissions trading scheme. Three basic approaches can be taken: • Historical. Consider emissions in a particular year or years. • Forecasting. Estimate the emissions that would result under 'business as usual' without CO_2 abatement measures. • Least cost. Consider which sectors have high / low cost measures and allocate low / high reduction targets respectively.

	Comparing results from all approaches will establish a preliminary range of total allowances to be included in the NAP. The Member State also needs to consider its path to its Kyoto target and measures in other sectors, e.g. transport, not included in the emissions trading scheme.
2) Bottom-up exercise to collect data from installations	A list of the installations to be covered by the scheme needs to be established. Data covering current emissions, historical emissions and expected future emissions should be collected. Data on output could also be collected if there is an intention to use a 'benchmarking' approach to determine allocations.
3) Consolidation of top-down and bottom-up information	The data that the steps 1) and 2) gives is unlikely to coincide closely. Resolving this discrepancy may involve deciding how much abatement action to impose on sectors covered by the scheme and what measures to take for sectors outside the scheme. The result will be a final decision on total allocated allowances, or cap, to be included under the NAP.
4) Setting allocations for sectors and installations	Allocations may be based on historical, forecasting or least cost approaches. Allocation within a sector might also use a 'benchmarking' approach, or a target level of CO_2 emissions per unit input or output.
5) New entrants	The NAP must contain information on how new entrants can begin participating in the emissions trading scheme. New entrants must have access to allowances. Member States may choose to let new entrants buy allowances on the market. In this case, total allocated allowances, calculated under step 3), does not need to be adjusted. Alternatively, a reserve of allowances might be created and new entrants could be given a free allocation. This would reduce slightly the allowances given to initial participants.
6) Completion of the NAP	A summary and draft of the NAP. It must include details on public consultation.

Trading of allowances

Allowances can be traded between companies within or between Member States.

The scheme is also linked to project mechanisms under the Kyoto scheme (see further below)

Companies that require extra allowances will need to buy them - the scheme is consistent with the 'polluter-pays' principle. Each year, companies must submit for cancellation a number of allowances that corresponds to their actual direct emissions. Companies will be penalised if they do not have enough allowances at the point of annual reconciliation.

Allowances will be held and trades tracked by national registers that will be linked. Allowances will only exist in electronic format. Participants will hold accounts in national registries. Clearly a high degree of consistency will be required and detailed rules will be established by the European Commission.

Box 6: Collective pools to trade emission allowances.

Participating industries can pool their allowances, by sector for example. The sectoral association may buy extra allowances or sell surplus allowances on behalf of all. The operators of each installation will

still have to monitor its emissions and, at the point of reconciliation, each will have to hold sufficient allowances to cover its actual emissions. This provision will give some added flexibility to industry in the approach to emissions trading.

It will be possible to hold, or bank, allowances from one year to the next within the preliminary 3 year period and within the second 5 year period of the scheme. Member States must decide whether allowances can be banked from the preliminary period into the second period. The intention is that allowances will be bankable from period to period from 2008 onwards. Banking allowances has no effect on the environmental integrity of the system but does give much greater flexibility for participants. It will help the development of different types of transactions – 'options' etc – that allow risks to be hedged.

Third parties, such as environmental NGOs, will be able to buy allowances and cancel them. This allows the public to participate, but this will not have a significant impact on price in the large liquid market that is foreseen.

The EU-wide scheme will create a uniform price for an allowance across the whole of the scheme. From the start of trading, all installations covered by the scheme, from one side of the Community to the other, will be faced with the same price of emitting one extra tCO_2e. This should, in theory, help ensure that cost-effective emissions reduction measures are taken.

Monitoring, reporting and compliance

Operators will need to identify the activities included and, for each activity on each site, put in place systems to collect data allowing emissions to be calculated or measured.

The EC will draw up guidelines for operators to monitor and report their emissions. The principles on which monitoring and reporting will be based are reproduced in Box 7.

Reports by operators will need to be verified, either by Member States' competent authorities or by independent verifiers.

Member States must decide who will do the verification and who will bear the cost of the verification

Box 7: Principles for monitoring and reporting

CO_2 emissions shall be monitored either by calculation or on the basis of measurement.

The following equation will be used: activity data x emission factor x oxidation factor

Activity data, such as fuel use or production rate, shall be monitored using supply data or by measurement.

Accepted emission factors will be used. Activity-specific emission factors are acceptable for all fuels. Default factors are acceptable for all fuels except non-commercial ones (waste fuels such as tyres,

industrial process gases). Seam-specific defaults for coal and EU-specific or producer country-specific defaults for natural gas shall be elaborated. IPPC default values are acceptable for refinery products. The emission factor for biomass shall be zero.

Some carbon will not be oxidised and therefore will not be emitted to the atmosphere (eg some carbon remains in ash produced by combustion). If the emission factor does not already account for the fact that some carbon is not oxidised, then an additional oxidation factor shall be used.

IPCC default oxidation factors shall be used, unless the operator can demonstrate that activity-specific factors are more accurate.

A separate calculation shall be made for each activity and for each fuel.

Measurement of emissions shall use standardised or accepted methods and shall be corroborated by a supporting calculation of emissions.

For each activity carried out on the site for which emissions are calculated, the report will contain: activity data; emission factors; oxidation factors; total emissions.

For each activity carried out on the site for which emissions are measured, the report will contain: total emissions; information on the reliability of measurement methods.

Member States shall take measures to co-ordinate reports required for emissions trading with other reporting so the burden on business is minimised.

The penalty price for non-compliance is € 40 per tonne from 2005 to 2007 and € 100 per tonne from 2008 to 2012.

Paying the penalty does not remove the obligation to submit allowances corresponding to the excess emissions.

If these penalty prices are compared to actual market prices since trading began in February 2003 (€5-13, see below), it is evident that these have been set at a very high level. It is also important to note that imposition of the financial penalty does not remove the obligation on the operator to submit allowances corresponding to the excess emissions, but rather the operator will have to surrender the allowances in the following year. These features are deliberately made so that operators will not take the penalty, but rather will take measures to reduce their CO_2 emissions or engage in trading to avoid non-compliance. It is important that operators do not simply continue business as usual and take the fines because this would mean that emissions reductions are not achieved.

Links with the rest of the world

The emissions trading scheme will be linked with Joint Implementation and the Clean Development Mechanism

Form the global environmental point of view, the place where emission reductions take place is not important provided that real emission reductions are achieved. Less expensive reductions may be achieved outside Europe, in countries with industries with poor standards of environmental and energy efficiency. There are also benefits in terms of creating a wider market with more liquidity which is less subject to price

shocks etc. This is some of the rationale for linking the EU ETS to developments in the rest of the world.

It is necessary to give some further background and introduce some more acronyms here!

The commitments that developed countries that have taken on under the Kyoto Protocol are expressed as Assigned Amount Units (AAUs). The assigned amount is the total amount of GHG that each country is allowed to emit during the first commitment period of the Kyoto Protocol (i.e. 2008 to 2012). AAUs can be traded, e.g. either to help achieve the assigned amount or if the assigned amount is over-achieved. Indeed, the Japanese and Dutch governments have already purchased AAUs from Eastern European countries. AAUs are sovereign instruments and must be delivered via government accounts in national registries.

There are three mechanisms under the Kyoto Protocol: emissions trading and two project-based mechanisms. The mechanisms use the same commodity, namely tCO_2e, but with different names. The Clean Development Mechanism (CDM) allows developed countries (with caps under Kyoto) to make investments in GHG mitigation projects in developing countries (without caps). Certified Emission Reductions (CERs) are the GHG emission reductions achieved by project activities under the CDM. CERs can be issued for emission reductions achieved from 2000 onwards. Joint Implementation (JI) projects can be undertaken in any developed country. Emission Reduction Units (ERUs) are the reductions achieved by such projects. ERUs can be awarded for reductions from 2008. There are also Removal Units (RMUs), credits related to carbon ‘sinks’ i.e. eligible land use changes and forestry activities.

In a press release dated 20th April 2004, the EC announced that the European Parliament had voted its approval of the so-called “Linking Directive”. The main elements are as follows.

The EU emissions trading scheme will be linked to CDM and JI but neither Assigned Amount Units or allowances from “sinks” will be eligible for use under the EU scheme. The use of credits from 'carbon sinks' will be reviewed by the Commission in 2006. Nuclear power projects are excluded (indeed they are excluded by the Kyoto Protocol). The proposed Directive also requires Member States to ensure that the environmental and social impacts of large hydroelectric power projects are addressed through the application of relevant international criteria and guidelines when they approve such projects.

Companies in the EU trading scheme will be able to use the credits from such projects, once they are issued, up to a percentage of their allowed emissions. The limit will be decided by each Member State and will guarantee that a significant reduction of greenhouse gas emissions still takes place within the European Union, and not abroad. There is no quantitative limit to the amount of CERs or ERUs that can be imported to the EU but Governments are bound to consider the issue of “supplementarity” i.e. doing more than half of the emissions reductions domestically.

The actual process will be as follows. Operators of installations in the EU will hold CERs or ERUs either via generating these themselves through ownership / investment

in JI or CDM projects or via purchase on the market. These operators can apply to their Member State for conversion of the CERs or ERUs to allowances. The allowances would come in addition to those allowances that are allocated in NAPs to operators.

Status of National Allocation Plans

The first draft NAP was published by the UK in January 2004. This ambitious plan was followed by many other NAPs that took a much more lenient approach with allocations to industry. In May 2004, EU Environment Commissioner Margot Wallstrom stated that the NAPs already submitted were "disappointing" and she also announced that infringement proceedings were being commenced against those countries that had not yet submitted draft NAPs. The EC is known to have raised questions with governments of some of the submitted NAPs. However, it is very uncertain how much power Brussels has to change NAPs or to punish those who have not submitted NAPs.

Member states that have submitted drafts to the EC	**Member States that have issued draft NAPs but not submitted to the EC**	**Member States that have not yet published a draft**
Austria	Czech Republic	Belgium
Denmark	France	Greece
Estonia	Italy	Hungary
Finland	Portugal	Poland
Germany		Spain
Ireland		
Latvia		
Lithuania		
Luxembourg		
Netherlands		
Slovakia		
Slovenia		
Sweden		
UK		

An email bulletin from analysts PointCarbon dated 16th June 2004 stated that Greece will not publish a draft allocation plan by the end of June and that it may be "later than July". Greece's Government has been saying for some time that a draft NAP would be out by the end of June, but officials have evidently said that target can no longer be met. It seems evident that, given both the holiday period and the Olympic Games in August, the earliest that the NAP will be delivered is September 2004.

The absolute reduction in emissions to be achieved by the scheme will be known when individual governments determine the caps in their respective countries. Some rough calculations indicate possible approximate size. The EU must reduce GHG emissions from 4206 $mtCO_2e$ in 1990 to 3870 $mtCO_2e$ in the period 2008 to 2012, or 336 $mtCO_2e$ each year. The installations covered by the scheme account for around 38% of GHG emissions in the EU. Assuming a pro rata share of the task of reductions and taking into account the fact that EU GHG emissions have already been reduced from 1990 levels, the scheme may account for around 100 $mtCO_2e$ reduction each

year. The market will be large but media reports of a new financial market with value up to €8 billion seem exaggerated.

Actual trading of allowances to date

Data are published each week by Point Carbon. A chart showing prices of EU allowances over the last twelve months was published on 11th June 2004. This shows price in June 2003 was around Euro 5 per tonne and this rose quite steadily to a price of around Euro 12 in September 2003 rising gradually to a peak of Euro 13 in February 2004. The peak was prior to the deadline for submission of draft NAPs and was driven by the perception that NAPs would stimulate interest in the market as companies became aware that they would need to buy allowances i.e. they would be "short". During February and March, with growing awareness that NAPs would be generous, the market fell sharply, to a bottom level of around Euro 7 in May 2004. The market has since recovered and currently (June 2004) is around Euro 10.

The volume of allowances traded is small. Typically there are a handful of trades each week in Europe, totaling some thousands of tonnes. There are weeks with no trades. The market is clearly illiquid and embryonic. Indeed the first trades only occurred in February 2003. Since that time brokers have reported trades amounting to close to 1 million EUAs. The market will become much bigger once allocations are finalized and the first period of the scheme starts.

Concluding remarks

Published NAPs show that European Governments are taking a lenient approach, allocating allowances that will not create onerous burdens on companies because of concerns that the scheme could harm competitivity. It is unclear whether the European Commission will, or indeed has the political power, to make significant changes to the NAPs. Most observers comment that the Commission will take a pragmatic and long term approach and try to achieve start-up of the scheme on time on 1st January 2005 with a view to tightening the allowances in the second and subsequent periods.

Governments are now looking closely at one-another's NAPs and some Member States, who have proposed more stringent allocations, consider that their industries may be disadvantaged. For example, the UK has adopted relatively stretching targets for UK industry under the NAP (though the targets were softened in a second draft once it became apparent that countries such as Germany were adopting a lenient approach). The UK's approach is guided by their experience with the national trading scheme in the UK that proved that stretching targets are necessary to have buyers in the market and achieve liquidity.

There is some risk that the European scheme may have insufficient companies that are "short" (i.e. buyers) and that a market comprising companies that are "long" (i.e. sellers) will create low prices. Despite the publication of generous NAPs, the price of allowances has recovered in recent months. It is notable that even analysts profess that

they do not know what is driving the prices. It is clear, however, that there are very large uncertainties in price levels because the market is in very early stages with few players and low volumes traded.

The European scheme will be established shortly, irrespective of whether or not Kyoto is ratified. Indications are that allowances in initial years may be relatively generous, however, with increasingly evident impacts from global warming, allowances will inevitably be tightened and the scheme will become an important market-based driver for installation operators across Europe in the medium-term.

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