EU

Leadership on Climate Protection and the Self-interest

– Primary and Secondary Effects of Domestic Action –

by Hauke von Seht*

1. Rationale and core elements of an EU Leadership Initiative on Climate Change

1.1 Uncertain prospects of the Kyoto Protocol

Following the signing of the UN Framework Convention on Climate Change (UNFCCC) at the 1992 Earth Summit in Rio de Janeiro, in 1997 the Kyoto Protocol[1] was agreed upon. The latter is the related legally binding instrument to reduce emissions of the main Greenhouse

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Gases (GHGs) world-wide, celebrated as a milestone in global climate negotiations.

However, apart from ongoing uncertainty about technical details regarding the implementation of the Kyoto Protocol, there are serious doubts about its entry into force. For the latter, two requirements have to be met. First, at least 55 Parties to the Convention will have to ratify. Whereas that might be achieved, the second requirement is more problematic. Ratifying Annex I[2] countries have to represent at least 55 per cent of the total CO_2 emissions of Annex I Parties in 1990 (Article 25 of the Kyoto Protocol). Up to now, no major industrialised country has ratified the Kyoto Protocol. To make the situation worse, the US, accounting for more than one third of the CO_2 emissions of Annex I Parties in 1990, are unlikely to ratify in the near future, due mainly to fierce resistance from US Republicans.

In the past few years, the uncertain prospects of the Kyoto Protocol have contributed to the fact that many countries postponed the actions necessary to fulfil their commitments under the Protocol. Hence, only very few countries did manage to reduce their emissions of GHGs.[3] If this situation continues to be like that, future attempts to weaken the emission reduction targets and to fully exploit all loopholes in the Protocol are likely, because countries will find the existing targets increasingly hard to achieve. Already, some Parties move or continue to move into that political direction.[4] In the worst case, resulting new struggles about the distribution of commitments could endanger the whole Protocol.

1.2 EU should take the lead

What might help at this point is political leadership to keep the climate negotiations on track.[5] Given the current situation, the only key player in sight for a leadership initiative on climate change is the European Union (Ott and Oberthür, 1999: 18–21; see also Ringius, 1999). Already in Kyoto they did, at least to some extent, take the lead among industrialised nations, pressing for more substantial reductions of GHGs than those finally agreed (see, for example, Forum Umwelt und Entwicklung, 1999: 2–3). After the Kyoto meeting they remained, at least rhetorically, committed to decisive action on climate change.

An asset is that public awareness of environmental problems and the issue of climate change is relatively high in the EU (see Oberthür, 1993: 97–98). It can be assumed that a large share of European citizens is likely to back, in principle, enhanced efforts to combat climate change.

Furthermore, the European Union has the financial, economic and technical resources necessary for action and sufficient experience with co-ordinating environmental policies. Finally, EU Member States have substantial diplomatic experience in foreign relations, keep close relations to many parts of the world and have significant political influence. This puts the EU in a strong position for future negotiations (see Oberthür and Ott, 1999: 301–304).

As a core element[6] of an EU leadership initiative Oberthür and Ott (1999: 305) propose a strong strategy for the structural decarbonisation of the EU's economy, noting that "during the negotiations of the Kyoto Protocol, EU leadership was most credible when it started to lay the ground for domestic implementation" (see also Ringius, 1999: 12). In order to minimise concerns about competitiveness they also recommend to co-ordinate efforts among a larger group of countries (also including, for example, Japan), building upon existing experience within the EU with regard to policy co-ordination.

As parts of a decarbonisation strategy Oberthür and Ott (1999: 306–308) suggest to seek agreements on energy efficiency standards; to intensify research and development on renewables and efficient energy use; to introduce climate friendly rules for public procurement and to dismantle climate adverse subsidies. Furthermore, they stress the importance of energy/carbon taxes.

What Oberthür and Ott have not discussed in length is what the EU wide impacts of domestic action would be. This, however, is a key question with regard to the chances of introducing domestic measures. Therefore, this issue will be discussed subsequently.

2. Primary and secondary effects of climate protection measures

2.1 Definitions

In advance to an examination of the different impacts of climate protection measures some terms have to be defined:[7]

Primary effects of climate protection measures: All those avoided effects that could have resulted directly from an increased raising of the mean temperature of the planet's surface.

It has to be emphasised that in this paper the term 'primary' does not mean that climate protection inevitably is the main aim of corresponding measures. This is to say, that the main aim could also be to achieve specific secondary effects. Similarly, also those measures are termed climate protection measures or climate policies that are not primarily aimed at climate protection, but which do contribute to it.

The problem is that primary effects are global and mainly long-term in nature. Those that are facilitating climate protection measures cannot really benefit themselves from them, especially not in the short-term. As will be shown later, things are different with secondary effects.

Secondary effects of climate protection measures: All those effects that do not result from or depend on a reduction in the increase of the mean temperature of the planet's surface.

To clarify these terms, Figure 1 shows different possible consequences of a climate protection measure. However, with regard to the distinction between positive and negative effects it has to be acknowledged, that this also depends on personal viewpoints. For example, the negative primary effect that there are less possibilities to gain new agricultural land also could be regarded as a positive impact. Depending on the ecological importance of the area, environmentalists could prefer not to use the land for agricultural purposes.

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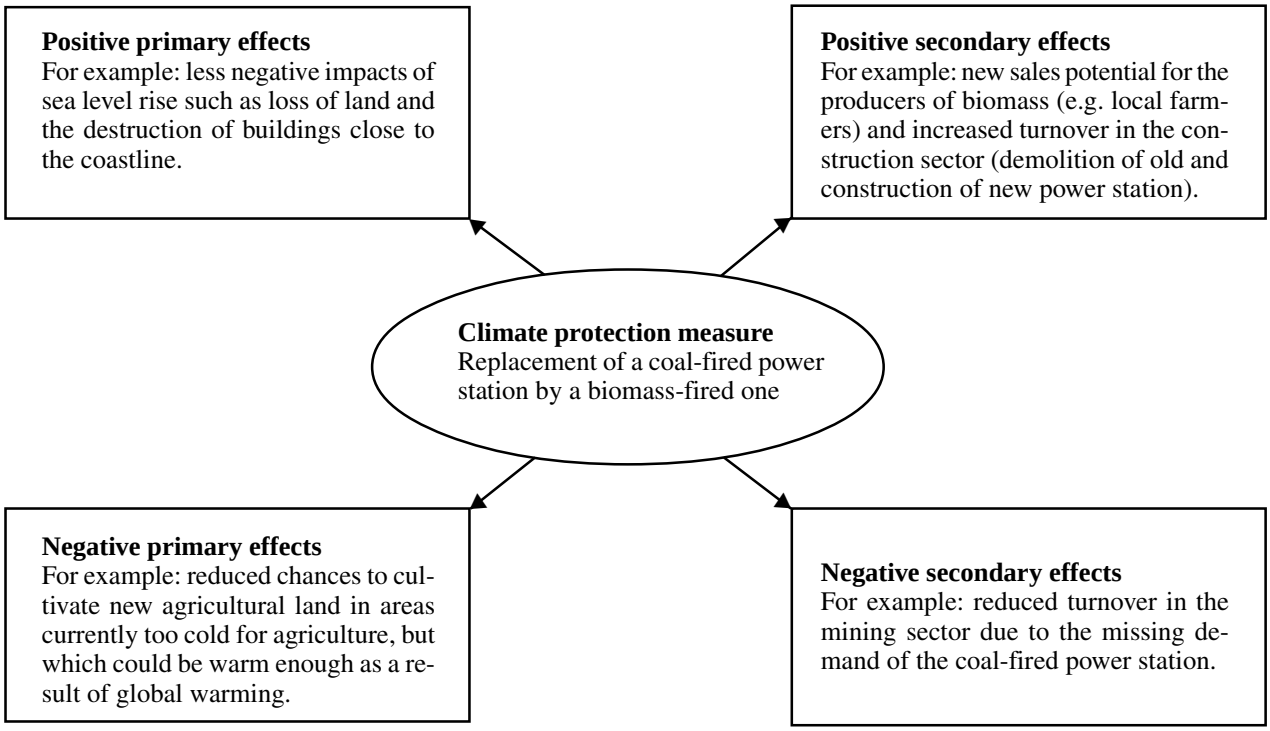
Figure 1 Different effects of a climate protection measure
(based on Seht, 1999; Seht 2000)



2.2 Discussion of the terminology

In some publications the terms 'primary' and 'secondary benefits' are used. Whilst the term primary benefits is used in a way similar to the term positive primary effects (Pearce, 1992: 1), this is not the case for positive secondary effects and secondary benefits. Secondary benefits often is used only to refer to avoided non-GHG related environmental problems that would have resulted from activities that do contribute to global warming, such as transport related emissions of local pollutants (IPCC 1996: 215). Positive secondary effects, as defined in this paper, do, however, also include economic or financial effects and others. More information on this terminology can be found in Seht (1999; 2000).

The negative effects of climate protection measures is quite often only referred to as costs (for example, Ekins, 1996). However, though this could be done if corresponding wide definitions of costs are chosen, not all negative effects are best called costs. For example, if households switch from burning coal to more climate friendly natural gas, this also enhances the (negligible) risk of fatal explosions. It is ethically questionable to refer to resulting loss of life as costs. This gives the impression that loss of human life is only a normal factor in economic calculations, not differing from factors such as costs of energy or transport. The more neutral term negative effects reduces such ethical problems.

Sometimes secondary effects or at least secondary benefits are connected with external effects[8], such as local air pollution resulting from through traffic. For example, Ekins (1996: 14) states:

> "It is the reduction of these various negative external effects associated with fossil fuel use, pursuant on policies to abate CO_2 emissions, that are the secondary benefits of such policies."

What is correct is that many secondary effects are closely related to external effects. However, there are differences. Positive secondary effects (or secondary benefits) of climate protection measures, as defined in this paper, do not only result from avoided negative external effects. For example, as a positive secondary effect, a company can reduce its own (internal) costs by economically profitable energy saving measures (Seht, 1999; Seht, 2000).

3. European self-interest in EU climate policies

3.1 Introduction

Given the mentioned fact that primary effects of climate policies are long-term and global in nature, current European self-interests are more affected by the secondary effects of EU climate policies. Therefore, in the next sections only such effects will be examined.

Given the wide range of possible climate protection measures, the secondary effects are quite numerous. Accordingly, not all effects can be addressed here. It will be focused on financial and economic effects, impacts on security and emission-related effects.[9] ➨

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3.2 Secondary effects of domestic action

While this paper mainly deals with the EU, much of what can be stated on secondary effects is, in principle, valid for many regions.[10] Therefore, while subsequently it will be focused on the EU, some interesting general data and information on other regions will also be included.

Many national stakeholders are anxious that action on climate change would be very costly and could lead to comparative disadvantages on the global market, a fear fuelled by a number of top-down analyses (see, for example, Dean, 1994). However, recent top-down research shows that policies can be designed in ways that allow economic costs to be kept low and bottom-up studies regularly find predominantly low or negative costs.[11] For example:

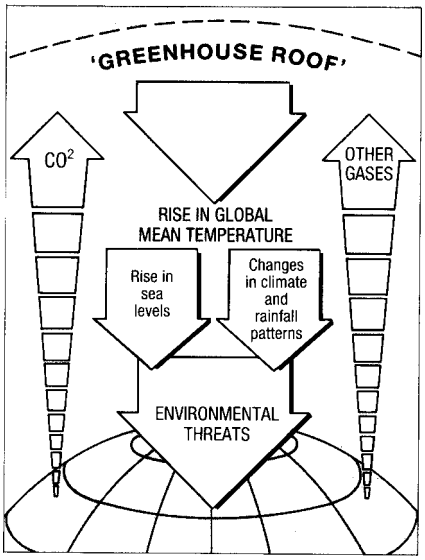
- Johannson and Swisher (1993) estimate on the basis of bottom-up analysis that in most industrialised countries 10–30 per cent of national GHG emissions could be avoided at negative or low costs;
- a recent bottom-up study by Bernow *et al.* (1999) concluded that the average net annual savings due to measures to reduce CO_2 emissions in the U.S. by 7 per cent below 1990 levels by 2010 amount to 46 billion (if -14 per cent CO_2: 43 billion) US $ or 393 (if -14 per cent CO_2: 368) US $ per household;
- a macroeconomic analysis of the European Commission (1999) found that in EU Member States a reduction of 358 Mt CO_2 equivalent from baseline 2010 projections can be achieved by measures that do cost no more than a maximum of 5 Euro per ton CO_2 equivalent (in current prices);
- another recent study (which cannot be classified as bottom-up or top-down) on climate saving energy strategies for the EU found that, if the EU (EU-15) would reduce its carbon emissions 17 per cent below 1990 levels by 2020 through a strategy of investment-led productivity growth, year 2020 cost of energy in the EU could be reduced by 30 per cent (Krause *et al.*, 1999). This figure does not even include the additional positive effects of avoided environmental externalities, such as local air pollution (see below).

An obvious question is, why many financially attractive climate policy options are not used. This cannot be discussed here in detail, but among the most important reasons are lack of information, motivation and financial resources for investment or unfavourable institutional and legal conditions, such as restrictive building laws (Enquête-Kommission, 1995: 541).

It also has to be emphasised that studies on these secondary effects always have their weaknesses and that the exact costs of or the scope for cheap or money-saving climate protection policies remain to some extent unclear.[12] Nevertheless, past experience has proved that there are numerous financially attractive policy-options that could be implemented straight away without any adverse effects on competitiveness. Fischer and Kallen (1997: 285–286), for example, list figures on the costs of municipal energy-management measures in 15 German towns, such as the insulation of public schools. On average, these figures show a profit of 5 DM per DM invested. So, a lack of financial resources does not justify omitting but demands undertaking early domestic action on climate change, provided the financially most attractive measures are selected.

What might be even more important, given the high unemployment figures in many countries, are the secondary effects on employment. Climate policies can significantly contribute to the creation of new jobs. Hennicke and Richter (1998: 80) summarised the results of recent studies on energy saving measures in some Western European countries. In line with most other analyses (see, for example, Umweltbundesamt, 1997), these studies found gains in comparison to the different reference scenarios, varying between plus 32 and plus 104 permanent jobs per PJ energy saved annually. In the mentioned study of Bernow *et al.* (1999), the authors concluded that, in comparison to a baseline scenario, more than +870,000 jobs could result in the US by 2010, if a specified Climate Protection Scenario (CO_2 emissions 14 per cent below 1990 levels by 2010) would be implemented.

There are many reasons for such positive results. Some of which are: investment in energy-saving measures predominantly is investment in employment intense sectors such as mechanical engineering or craft (Umweltbundesamt, 1997: 80); money-saving climate protection measures contribute to increased international competitiveness; many climate protection measures reduce energy imports, keeping more financial resources within the own national or regional economy; early national or regional action on climate change allows domestic companies to develop the capacity to export goods or services for climate protection once other countries follow with corresponding efforts (first-mover advantages);[13] energy/carbon taxes allow to use the levy to reduce the costs of labour (Seht, 2000).



Climate policies also affect energy security: In the case of the European Union, currently about 50 per cent of energy consumption is based on imports. According to scenarios published by the European Commission (1996), this figure will even rise to 55–70 per cent by the year

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2020. A large share of these imports will be due to the consumption of natural gas and oil. This is a risky situation, because global reserves of these fossil fuels are very limited, are predominantly located in geo-strategically problematic regions (Persian Gulf, former GUS Member States in Central Asia and around the Black Sea) and a small number of countries, controlling large shares of the known reserves, will dominate future oil and gas production: MacKenzie (1997) predicts that global oil production will peak at some point between 2007 and 2019 and continuously decline afterwards. On the basis of currently known reserves, natural gas would also be available only for about another 60 years if production levels remain stable, but in the past the share of natural gas of the world energy consumption continuously rose (Baratta, 1997: 1122). Persian Gulf producers possess about two thirds of the world's proved oil reserves and the OPEC's share of world oil production will probably rise from about 40 per cent of the total world production (1995) to almost 60 per cent in 2015 (MacKenzie, 1997: 24). About 40 per cent of the world gas reserves are located in member states of the former Soviet Union and another 30 per cent in the Persian Gulf countries Iran (15 per cent), Qatar (5 per cent), United Arab Emirates (4.1 per cent), Saudi Arabia (3.8 per cent) and Irak (2.4 per cent) (Baratta, 1997:1122).

Against this background, supply shortages and rising costs for energy imports are probable if not likely. In the last few months, the OPEC and some allies did already use their position in the market to more than double the price for crude oil.[14] Climate protection policies that do result in lower levels of oil and natural gas consumption thus substantially increase energy security. Moreover, they reduce the need to get involved in possible future armed conflicts in oil or gas producing regions.[15]

Special emphasis should also be given to the secondary short-term effects of climate policies for air quality. Burning of fossil fuels not only produces GHG emissions, but also local and regional air pollution (emission of SO_2, NO_X, particulates and others), affecting human health, vegetation and the lifetime of materials (Seht, 2000: 69-80). For example, according to a climate protection scenario (CO_2 emissions 14 per cent below 1990 levels) of Bernow *et al.* (1999) US emissions of SO_2, NO_X and PM_{10} would amount to 5.8, 12.9, 1.2 Mt by 2010; substantially lower than the corresponding figures for 2010 in the baseline scenario (12.9 Mt SO_2, 17.5 Mt NO_X and 1.6 Mt PM_{10}). According to another recent study, by 2020, 700,000 avoidable deaths would occur annually as a result of additional particulate-matter exposure under a business-as-usual scenario when compared with a global climate-policy scenario.[16] Furthermore, Ekins (1996: 16), examining estimates of different authors on non-GHG related effects of climate policies in the US, UK, Norway and Germany, found positive emission-related effects of 44-713 US $/ ton C avoided.[17] Finally, Burtraw and Toman (1997), while stressing the uncertainty and variability in studies they examined, identified a role of thumb to suggest that ancillary benefits from the simultaneous reduction of conventional pollutants could be in the order of 30 percent of the incremental costs of GHG reduction.

Numerous other local or regional short-term effects of climate policies can occur, depending on the measures introduced. For example, traffic reduction normally also diminishes noise, accidents and road damage (Seht, 2000; Barker *et al.*, 1993). However, the discussion of further effects would go beyond the scope of this paper.

4. Conclusions

As was outlined, the future of the global climate regime is uncertain. An EU leadership initiative could keep the negotiations on track.

A key part of such leadership would be domestic action. Unfortunately, there is still resistance to decisive EU action. Apparently, this is to some extent due to the fact, that knowledge of the secondary effects of domestic action is still limited.

Following an introduction to the concept of primary and secondary effects, in this paper it was outlined that secondary effects could bring substantial benefits to EU Member States. The effects discussed would already justify a substantial reduction in GHG emissions, irrespective of potential damages of global warming. ❐

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NOTES

[1] Please note: The first part of the paper deals with issues related to the Kyoto Protocol. Assuming that the readers are familiar with the topic, this paper does not include a general introduction to this treaty. For general information on content and structure of the Protocol please take at look at the following new books: Grubb *et al.* (1999), Oberthür and Ott (1999).

[2] Annex I Parties to the UNFCCC are: the European Economic Community and EU Member States, Australia, Belarus, Bulgaria, Canada, Czechoslovakia (now the Czech Republic and Slovakia), Estonia, Hungary, Iceland, Japan, Latvia, Lithuania, New Zealand, Norway, Poland, Romania, Russian Federation, Switzerland, Turkey, Ukraine and the United States.

[3] While the data for the EU are better than, for example, those of the US, also for the EU and most of its Member States data indicate that CO_2 emissions are increasing since 1994 (European Commission, 1999: 3), making it uncertain whether the EU commitment (-8 per cent) can be achieved.

[4] For example, Iceland continues to demand special provisions for countries for which large single-projects (e.g. new steel works) would have a significant proportional impact on their national emissions (see, for example, Decision 16/CP. 4 in FCCCC/CP/1998/16/Add.1.).

[5] In past international negotiations, such leadership initiatives by key players proved to be very successful, as for example leadership of the US with regard to the Montreal Protocol on Substances that Deplete the Ozone Layer (Ott and Oberthür, 1999: 19), an issue where the EU for a number of years opposed US' more ambitious policy (Ringius, 1999: 23). One reason for that success of leadership initiatives is that leading parties are likely to receive massive support from non-governmental organisations at the international level and in other countries. It becomes harder to justify 'backward' a national position as, for example, the most that the national economy can take, if the non-governmental organisations can point to a country which has already adopted a more (environmentally) progressive one. Such public pressure can force countries to adopt more progressive positions.

[6] They propose three core elements. The second is an EU move for early ratification of the Kyoto Protocol in order to allow it to enter into force and to put pressure on other countries to ratify as well. This has also been demanded by many Environmental Non-Governmental Organisations (E-NGOs) (see, for example, Forum Umwelt und Entwicklung, 1999: 3). At the fifth Conference of Parties to the UNFCCC in October/November 1999 (COP5) there were already rumours that the EU is willed to ratify the Protocol at Rio +10 in 2002 at the latest also if other key players, especially the US, will not ratify at that point. Third, Ott and Oberthür suggest that the EU and its Member States should use their long established links to many developing countries to move the climate policy process forward. An alliance between the EU and major developing countries did already contribute to the success of COP1 (see Ringius, 1999: 11). Business-as-usual projections of CO_2 emissions of developing countries also make clear that their emissions have to be fully addressed at some point, because their emissions will increase fast (see, for example, IEA, 1998; Baumert *et al.* 1999).

[7] On the terminology see also Seht (1999; 2000).

[8] For further information on external effects related to the environment see, for example, Brösse (1996), Wicke (1993) or Ecoplan (1992).

[9] The separation of these groups of impacts is, however, to some extent artificial. For example, security related effects are also of importance for economic performance.

[10] For example, reducing combustion of fossil fuels normally results in improved regional air quality, no matter whether the reduction takes place in the US, Japan or Europe.

[11] Macroeconomic top-down models often assume the existence of a competitive stationary equilibrium. Additional simplifying assumptions are, for example, that each actor in the market is perfectly informed, that he acts fully according to his own preferences and that there are sufficient producers and consumers in order to ensure that nobody can influence prices or aggregate production levels. The most important theorem of competitive equilibrium models is, however, that "once the equilibrium has been reached, no transaction can improve the position of one actor without hurting that of another or others; at best, all losses and gains add up to zero" (Jochem, 1999: 101). Consequently, if a business-as-usual-scenario is compared with a climate-policy-scenario in which additional macroeconomic measures are introduced (taxes on the consumption of coal, gas, etc.) these measures often create substantial additional macroeconomic costs (see, for example, IPCC, 1996; Dean, 1994: 27). Nevertheless, as, for example, Kohlhaas (1999) did show, policies can be designed to keep the costs low. Bottom-up analysts evaluate the direct costs of specific mitigation options (wind power, solar heating, etc.). Some hybrid-models try to combine elements of top-down and bottom-up approaches (IPCC, 1996: 282).

[12] Both, top-down and bottom-up approaches, have their weaknesses. Whereas top-down models lack, for example, an explicit consideration of legal barriers to energy efficiency, the investor-user dilemma or consumer preferences, bottom-up models often do not take fully account of transaction costs or programme costs of mitigation policies to overcome market imperfections (for further details see Cline, 1994: 95; Jochem, 1999: 102; Seht, 2000: 28-31 & 38-46). What makes the search for reliable figures on the costs of climate policies even more difficult is, that the details of models (e.g. time-horizon or assumed future fuel prices) also vary within one group of models.

[13] For example, at the beginning of the 1990s, Germany introduced a power feed-in law that favoured wind power. In the space of a few years Germany has become the second-largest producer of windmills, exporting windmills to many countries in the world. Wind energy in Germany now provides jobs for some 13.000 people (europe environment, 1999: I 5).

[14] On 25.11.1998 the average prices for crude oils on the spot-markets in the North-West of Europe ranged from 8.73 (Arabian Light) to 10.78 (Iranian Light) US-$ per barrel (Handelsblatt, 1998: 39). On 10.11.1999 the average prices ranged from 21.76 (Arabian Heavy) to 24.49 (Forties) US-$ per barrel (Handelsblatt, 1999: 56).

[15] To illustrate the latter point it should be said that it seems unlikely that the United States would spend tens of billions of dollars each year – even during peacetime – to maintain military presence in the Persian Gulf if they would not heavily depend on local oil reserves (MacKenzie, 1997: 22).

[16] The authors combined models of energy consumption, carbon emissions, and associated atmospheric particulate-matter concentration under the two different scenarios (Working Group on Public Health and Fossil-Fuel Combustion, 1997).

[17] The figures vary not only because of specific national pre-conditions, but also because of different model-assumptions.

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