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Excerpts from Chapter 7, Environmental Issues for Sustainable Development

POLICY ON CLIMATE CHANGE AND AIR POLLUTION

Policy on climate change

1. While not having any GHG emission abatement target apart from the Kyoto one, the authorities are pursuing policies to reduce emissions in coming years in order to sell or bank permits. The key objective is to reduce the overall energy intensity of the economy, with an explicit target of an 11 per cent reduction in energy use, measured in tonnes of oil equivalents, per unit of GDP by 2005 compared with the 1999 level (Ministry of Environment and Czech Hydro-meteorological Institute, 2001). Such an objective would result in only a slightly faster fall in energy intensity than occurred in the whole of the OECD area in the second half of the 1990s. GHG emissions trends will benefit from the commissioning of the first two units of a new nuclear reactor in Temelin that first operated at full capacity in mid-2003. When trials have been successfully completed by the end of 2004, these units will supply about a quarter of all electricity generated in the country if they operate at 80 per cent capacity and could reduce total GHG emissions by 8 per cent. The electricity company may announce in 2004 whether it would consider the construction of third and fourth units at this site as from 2009.

2. Although increased energy efficiency in the past is likely to have reduced GHG emissions at little or no cost, additional improvements may be expensive if the authorities pursue them by regulating and subsidising instead of further adjusting prices. A history of pricing energy below costs has contributed significantly to the country's very high energy intensity boosting GHG emissions. The regulators have gradually raised energy prices since the early 1990s, which has improved energy efficiency in most sectors of the economy. This has not only reduced GHG emissions but also lifted the output potential of the economy by releasing resources from the energy sectors to be employed more productively elsewhere. In particular, the regulator ended cross-subsidies to the households from industrial consumers in 2002. As a result, domestic electricity prices jumped some 15 per cent, bringing them closer in to line with costs than before. Natural gas prices to households have also risen significantly between 2000 and 2003. Further price hikes might entail negative social consequences, which can be addressed through the general social safety net. Alternative polices to raise energy efficiency (such as energy audits, fiscal subsidies and voluntary agreements) are unlikely to represent an efficient means for reducing greenhouse gas emissions, given the experience of other OECD countries in this area, and building code regulations, while useful, only affect new construction.

3. The government aims to increase the share of renewable energy in total primary energy supply to 5-6 per cent by 2010 and to 8-10 per cent in 2020. Such a programme is at the limits of what is technically feasible given the possibilities for renewable energy sources, notably biomass (World Bank, 1999); as a result it could be costly in relation to alternative methods of reducing greenhouse gas emissions. Indeed, the government gives substantial fiscal subsidies to producers and users of renewable energy, including tax exemptions and direct investment subsidies (the latter amounting on

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average to 17 per cent of total investment costs). It also mandates distribution companies to buy electricity from renewable plants at guaranteed feed-in tariffs. As is the case in most OECD countries, the associated abatement costs have been very high, at around EUR 235 per tonne of saved carbon in the case of biomass and up to EUR 560 in the case of photovoltaic power.[1] Moreover, producing electricity from renewable sources also avoids emissions of local air pollutants. When those additional benefits are factored in the analysis, the estimated abatement costs are lowered to EUR 222 per tonne of saved carbon in the case of biomass and EUR 547 per tonne of saved carbon in the case of photovoltaic power. These estimates are far above the permit price on the EU emissions market, which is forecast to lie in the range of EUR 15 to EUR 73 per tonne of carbon (IEA, 2002 and Criqui and Kitous, 2003). This discrepancy suggests that promoting renewable energy is a costly way to reduce greenhouse gas emissions, needing subsidies from the government and cross-subsidies within the electricity industry to be economic, even allowing for the value of the saved local air pollutant emissions.

4. Climate change policies have so far not aimed at reducing the very high GHG emission intensity of electricity production. Thus, the fuel mix in electricity generation is based on commercial criteria without any official directives or taxes that would encourage the use of cleaner fuels. In this environment, it has been the most profitable for producers to use carbon-rich domestic brown coal for electricity generation. Thanks to very low extraction costs, this fuel has remained competitive even *vis-à-vis* natural gas without any production subsidies. The reluctance to impose a tax that would reduce the demand for coal is partly due to concerns about the social implications in mining communities in Northern Bohemia where rationalisation of the coal industry has already resulted in high unemployment rates. Motivated by similar concerns and the goal of preserving energy independence, the state energy policy released in March 2004 even foresees the construction of new brown coal power plants and a relaxation of environmental regulation for brown coal mining.[2]

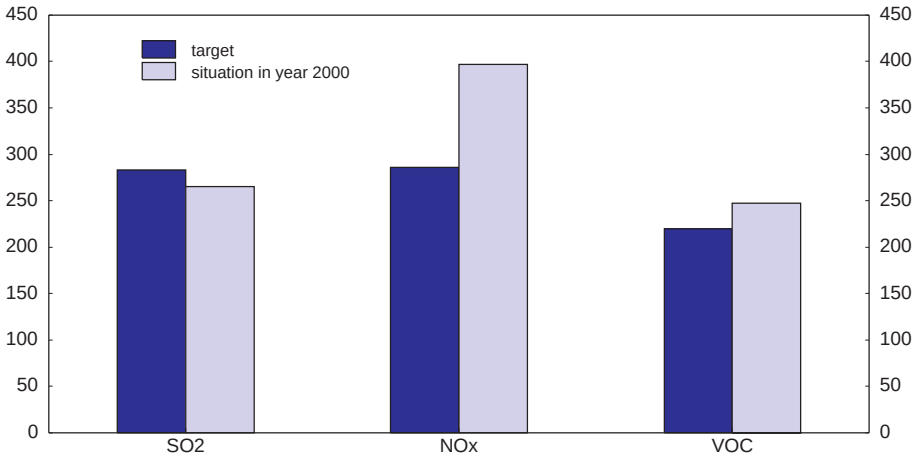
5. However, such choices will be increasingly costly. Pressures on carbon intensive activities will be intensified in coming years as international trading with emissions will raise the cost of coal as a fuel, providing an impetus for carbon abatement by large users in industry and power generation. The possibility to sell allowances on the world and EU markets will create incentives for carbon abatement measures. At the moment, the most pressing issue is to implement the EU emissions trading directive by putting in place the necessary infrastructure and by establishing a national allocation plan. In this respect, the EU directive requires that a minimum proportion of the permits should be issued free of charge: 95 per cent for the first trading period (2005-2007) and 90 per cent for the second period. The Czech authorities will allocate all of the first period permits without charge and plan to do so for second period permits as well. Such grandfathering amounts to transferring the scarcity rent created by the carbon constraint to past polluters. The extent of the transfer is significant as the EU emissions trading scheme will cover more than three quarters of emissions in the Czech Republic. Outside of the EU trading scheme international carbon commerce will also create economic incentives for reducing emissions because of the possibility to sell project-based carbon credits. The legal framework for the market in project-based credits remains to be finalised at the EU and international levels and is contingent upon the entry into force of the Kyoto protocol. Nevertheless, when the price at which the Czech authorities can sell carbon permits becomes clearer, it should be used as a cap on the level of marginal costs in domestic abatement programmes since more costly actions would entail a net welfare loss for the Czech Republic.

Policy on air pollution

6. The Czech Republic is committed to reducing the emission of selected air pollutants in the UNECE Convention on Long-Range Transboundary Air Pollution[3] (CLRTAP) (**Figure 7.3**). The

targets established in the 1999 CLRTAP agreement imply a significant additional abatement for nitrogen dioxides and (non-methane) VOCs by 2010. By contrast, the sulphur dioxide emission target for 2010 had already been met in 1999. The 2002 Clean Air Act[4] transposes EU directives on air pollution and protection of the ozone layer into Czech law (Commission of the European Communities, 2002). All secondary legislation in these fields has already been adopted, but limit values and emission ceilings have yet to be established.

Figure 7.3. **Target in the UNECE Convention on Long-Range Transboundary Air Pollution and the situation in year 2000**



Source: Ministry of Environment (2001) and OECD environmental data.

7. Continued use of regulations to reduce the emission of air pollutants is likely to become increasingly expensive in coming years. The principal method so far, emission limits on new and old stationary sources based on best available technology, has resulted in significant falls in emissions. It has, however, entailed very high investment in abatement technology, exceeding one per cent of GDP in the 1990s on average. By imposing emission limits that are unrelated to their abatement costs, this approach is unlikely to deliver the lowest abatement cost for the economy as a whole. Nonetheless, studies from other countries indicate that the benefits of this policy have exceeded the costs. However, as a future member of the European Union, the Czech Republic is committed to applying emission limits to all large plants irrespective of their ages. Upgrading all large plants has been effective in reducing sulphur emissions and by 2000, the main electricity producer had retrofitted all of its coal plants with desulphurisation units to conform to current Czech legislation,[5] significantly reducing their emissions. However, compliance with the Large Plant Combustion Directive will require a further 60 per cent reduction in emissions for the largest generating plants and more than 80 per reduction for smaller plants.[6] The retrofitting of the old capital stock to further reduce emissions will be expensive and costs are likely to vary from plant to plant**.**

8. Economy-wide abatement costs could be lowered by a greater use of economic instruments. Emission charges are applied to various air pollutants, but they are generally set at too low a level to have a significant impact. For example, the emission charge for sulphur dioxide is only EUR 30 per tonne, compared with EUR 48 and EUR 3 300 per tonne in Slovakia and Sweden, respectively. Tradable emission permits for air pollutants are not used at all in the Czech Republic and might be difficult to implement as the bulk of the fossil fuel power stations are owned by one company though there are a larger number of smaller plants that are independently owned. Under these circumstances emission charges might be a more effective route but in that case taxes would have to be seen as an alternative to regulation by emission limits. Economic instruments have been employed with greater

determination to discourage air pollution from diffuse sources. The road tax on commercial vehicles (levied on a per car basis) is differentiated according to the emission characteristic of the vehicle, a surcharge of 15 per cent being levied on cars from before 1990 and a discount of 50 per cent being given to vehicles that conform to the EURO 3 standard. Motor fuels are also differentiated according to their pollution content and road pricing is being considered by the government.

ENDNOTES

1. The abatement cost estimate is the quotient of the costs by the amount of GHG emissions avoided. For each renewable source, the costs considered comprise expenditure on subsidies and the difference between the feed-in tariff and the wholesale electricity price (multiplied by the corresponding volume). Additional savings come from reduced air pollution. However, in any cost-benefit study pollution savings should be evaluated against an alternative investment, an obvious candidate being the construction of a gas-fired power plant.

2. It is envisaged to transfer the responsibility for environmental regulation of brown coal mining to regions.

3. This treaty addressed some environmental problems of the UNECE region and has been extended by eight protocols which identify specific obligations or measures to be taken by Parties and so lays down the general principles of international cooperation for air pollution abatement.

4. Adopted in February 2002 and entering into force on 1 June 2002.

5. The limits under the 1997 Air Act required emissions less than 500 mg of sulphur per cubic metre of exhaust gas. The Large Combustion Plant directive requires an upper limit of 200 mg per cubic metre.

6. The 1997 law sets a limit of 1 700 mg per cubic metre against an EU limit of 300 mg per cubic metre (Regional Environmental Centre, 1998).

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