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SLOVENIA AND KYOTO OBLIGATION

Summary

The paper gives the possibilities of emission reduction as an obligation from Kyoto Protocol. The Slovenian environmental and energy strategies are regulated to implement the agreement to reduce the emissions of greenhouse gases by 8 % to the year 2012 as regards the basic year 1986 in energy, transportation, industrial and other sectors, especially focused on electric power sector.

SLOVENIJA I OBVEZE IZ KYOTA

Sažetak

U radu su prikazane mogućnosti smanjenja emisija kao ispunjenje obveza iz Kyoto protokola. Slovenske su strategije za okoliš i energiju određene primjenom sporazuma o smanjenju emisija stakleničkih plinova od 8 posto do 2012. godine u odnosu na referentnu 1986. godinu na području energetskega sektora, prometa, industrije i drugih sektora, s posebnim osvrtom na elektroenergetski sustav.

1. FOREWORD

Climate change is a global problem, which cannot be solved by any country alone. The UN Convention therefore includes all countries, the majority of which has already ratified the Convention. The goal of the Convention is to reduce the emission of the main greenhouse gases to the highest possible degree. In December 1997 Slovenia signed the Kyoto Protocol on the reduction of main greenhouse gases and in this way accepted a very responsible task.

The paper deals with the main dimensions of the problem and emphasises the description of the situation in the electric power sector.

2. SLOVENIAN CHARACTERISTICS

The Republic of Slovenia with an area of 20,255 km² borders Italy (232 km of borderline), Austria (330 km), Hungary (102 km), and Croatia (670 km). The Slovene coast of the Adriatic Sea is 46.6 kms long. Slovenia is geologically and climatically extremely variegated. The country is predominantly mountainous, the average height above sea level being 300 to 500 m. The north of the country belongs to the Alps.

West Slovenia is a Kras plateau, the southern part along the border to Croatia is hilly, and the north-easterly part extends into the lowland of Pannonia.

The climate in the south-west is influenced by the Mediterranean, resulting in hot and dry summers and mild winters. The climate in the north is mountainous with mild summers and cold winters. The annual rainfall varies between 1,000 mm along the coast and 1,600 mm in the major part of the country, and reaches even 2,600 mm in the Julian Alps, declining down to 800 mm in the Northeast, where the climate is rather continental.

Slovenia produces fossil fuels: brown coal and lignite as well as some oil and natural gas. In the electric power fuel balance coal is still representing an important share (35 % of total electricity generation in 1997). Production of uranium has been stopped completely.

GDP per capita in Slovenia is by far the highest among the economies in transition (9,471 US\$ in 1996), it is for instance twice as high as in Hungary, and is closer to values in less developed EU countries, i.e. Greece and Portugal.

3. ENVIRONMENTAL POLICY, LEGISLATION AND IMPLEMENTATION

3.1. Accordance with the EU legislation

Forming, changing and implementing of the new Slovene juridical system after the attainment of independence has not yet been completed. During the transition period all former laws remain in force, if they do not contradict the new system, which is taking shape. It is to be anticipated that many existing legal environmental documents will still remain in force for some time.

In shaping the new environmental legislation Slovenia pays special attention to the harmonisation with the legislation of the European Union.

The Law on Environmental Protection from the year 1993 is the basic law on environmental policy and management. The law represents the first complete collection of goals, principles and rules of environmental management after the attainment of independence.

The law on environmental protection is based on Agenda 21, environmental directives of the EU, and the Slovene experience with environmental management. Despite the temporary structural differences in legislation, the Slovene approach is compatible with the EU legislation. However, the price of association with the EU, particularly the adaptation to the environmental legislation of the EU will be a heavy burden for the Slovene economy, although only a rough estimation has been made so far.

3.2. The Law on Environmental Protection

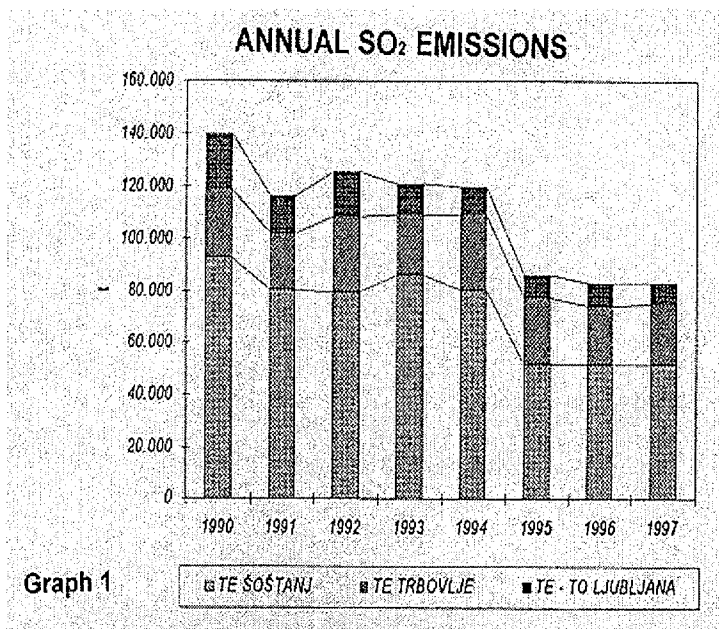
The basic goals of the Law on Environmental Protection are:

- permanent preservation of natural vitality, biological diversity, autochthonism of biological species, and ecological balance,
- preservation of diversity and quality of natural goods, natural genetic fund, and preservation of soil fertility,
- preservation and restoration of variegation and cultural and aesthetic values of the region and of other indispensable natural values,
- reduction and optimisation of use of natural resources, materials and energy.

3.3. Agenda 21

Agenda 21 also calls for the implementation of the most significant international environmental conventions. To assess the readiness of individual countries for their implementation, the UN Commission for sustainable development selected six agreements, which in a comprehensive way deal with problems of sustainable development, significant for all countries. Slovenia has ratified all of them with the exception of the Convention on Fight against Desertification, which is not relevant to Slovenia. Legislation of Slovenia has been adjusted to these conventions. Some other international conventions are still waiting for their ratification. For this purpose, the state legislation has to be accordingly changed or supplemented beforehand.

The implementation and a serious approach of Slovenia to Agenda 21 can also be seen in Graph 1: Emissions of sulphur dioxide for the period from 1990 to 1997.



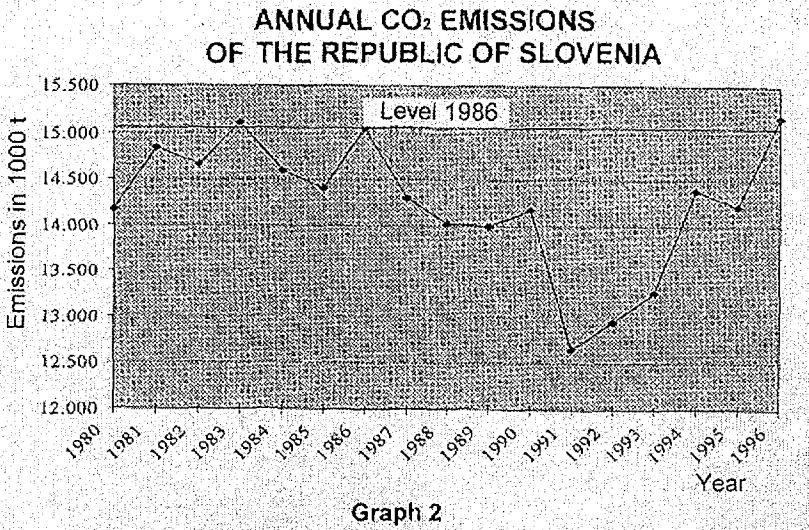
4. KYOTO AND OBLIGATIONS

In December 1997, Slovenia signed the Kyoto Protocol on the Reduction of Emission of Greenhouse Gases.

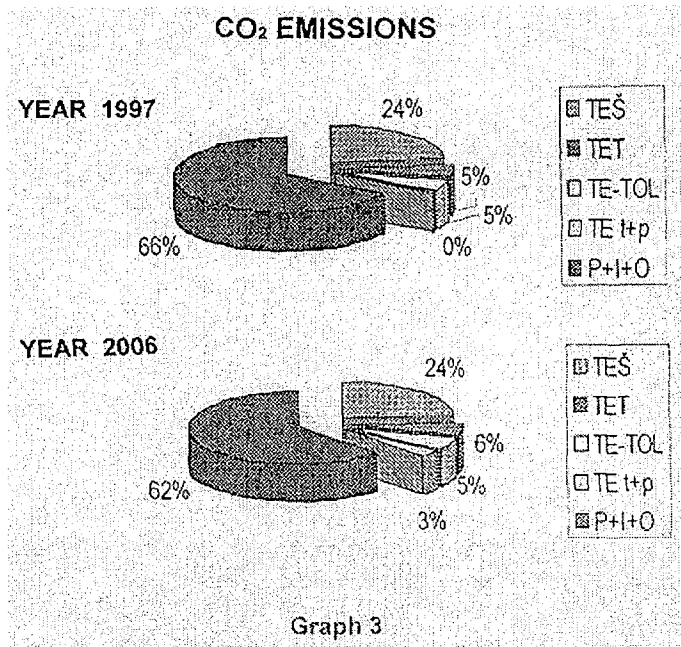
The obligation, which derives from the Kyoto Protocol to UN Convention on Climate Change, and concerns Slovenia, is the reduction of emission of greenhouse gases, listed in the Protocol (CO₂, CH₄, N₂O, HCF-s, PFC-s, and SF₆) on the average by 8% in the first five-year target period 2008 - 2012 with regard to the base year, which is for Slovenia the year 1986. As a country in transition to market economy, Slovenia was allowed to select the base year, whilst for all OECD countries the base year is 1990.

Slovenia decided to select the year 1986, because the emissions of CO₂, which has the largest share among the greenhouse gases, were the highest in Slovenia that year (15,9 million ton).

This can be seen from Graph 2. After 1986, the emissions decreased for several years because of economic problems, derived from the ruin of planned economies in Central and Eastern Europe. After 1991, the emissions started to increase again, and in 1996 they reached the level of 1986. In 1997 the emissions were slightly above this level.



Emissions of carbon dioxide and their shares by sectors in 1997 and 2006 are shown in Graph 3. As it can be seen from the diagram, the electric power sector contributes between 35 and 38 percent of total emissions.



First estimates and calculations prove clearly, that there is a tendency for emissions in all sectors to rise, which is worrisome with regard to the demand for the reduction of CO₂ emissions in Slovenia. The same results concerning the emissions of CO₂ are also shown in the National Energy Plan (NEP), which deals with the period to the year 2006. According to the proposal by NEP, the CO₂ emissions will rise, namely by 10 percent in the electric power sector by the year 2006 with respect to the base year 1986.

During this period the emissions in the electric power sector will rise by 4.9 percent, in other sectors (traffic, industry, other consumption) even by 13.4 percent.

In 1986, the specific emission of CO₂ (in kilogram per generated kWh of electricity) amounted in Slovenia to 0.493 kg CO₂/kWh. In the year 2006, which ends the treated period of NEP, the specific emission of CO₂ will be 0.456 kg CO₂/ kWh. This indicates, that in the year 2006 a reduction of 7.5 percent of the specific emission of CO₂ per generated kWh will be achieved.

With regard to long-term forecast for Slovenia, electricity generation required to meet the demand will increase in the future. A reduction of specific emission of CO₂ per kWh, as well as a reduction of total emissions of CO₂ in the electric power sector will only be possible to achieve with the implementation of the following arrangements:

- increased electricity generation in hydro power plants,
- generation in co-generation plants, using environment-friendly fuels,
- replacement of coal by natural gas in thermal power plants and heating plants (restricted consumption of indigenous coals will increase energy dependence and decrease energy self-sufficiency of Slovenia),
- increase of electricity imports, which however are limited and will increase energy dependence of Slovenia,
- increased electricity generation in the nuclear power plant,
- reduction of transmission and distribution losses,
- electricity generation from renewable resources.

First analyses and scenarios indicate, that the electric power sector would be able to ensure its share of CO₂ emission reduction (minus 8 percent of the basic year 1986). Heavy burdens for the power sector will however bring about substantial changes in meeting the electricity demand and cause high additional costs.

Signing of the Protocol does not bring about any financial obligations for Slovenia, it only indicates the intention of the country to ratify the Protocol in the future (when the decision will be reached). We believe, that during the process of accession to the EU an early ratification would prove advantageous to Slovenia, considering that this topic has in the EU a very high priority and will certainly be a subject of negotiations between associated members and the EU. The fulfilment of obligations from the Protocol - reduction of greenhouse gas emissions - will be performed in the country, applying indigenous measures, and with the aid of three additional mechanisms: trading with emissions, joint implementation, and the mechanism of pure development. Rules for trading with emissions have not yet been defined, likewise it is unclear, what the price for a unit of emissions (1 ton equivalent of CO₂) will be. There is still no agreement on what share of emission reduction will have to be achieved by indigenous measures. The EU firmly insists that all countries should achieve the majority of reductions at home.

5. CONCLUSION

A concerted and detailed analytical handling in the fields of the power sector and environmental protection will be required. For this reason, a close and co-ordinated co-operation between the Ministry of Economic Affairs and the Ministry of Environmental Planning will be required for the judgement of efficient solutions and measures, which will in the end result in an adequate option concerning power supply and environment in the future development of the Republic of Slovenia.

It will be a necessity to elaborate and arrange inter-sectorially harmonised scenarios to find solutions for urgent problems related to the reduction of CO₂ emissions.

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