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Addendum

**METHODOLOGIES FOR ADJUSTMENT APPLIED BY CROATIA FOR THE
GHG EMISSION INVENTORY IN 1990 (BASE YEAR) AND 1991**

METHODOLOGIES FOR ADJUSTMENT APPLIED BY CROATIA FOR THE GHG EMISSION INVENTORY IN 1990 (BASE YEAR) AND 1991

1. To estimate the CO₂ emissions from fuel combustion in 1990, Croatia used the 1996 IPCC Guidelines and adjusted the result using a per capita approach referring to its interpretation of flexibility allowed to Annex I Parties undergoing the process of transition to a market economy under Article 4, paragraph 6, of the Convention.
2. According to the IPCC sectoral approach for estimating the CO₂ emissions from fuel combustion, in 1990 these emissions amounted to 20,543 Gg CO₂. To obtain the estimates of the same emissions on a per capita basis, the per capita CO₂ emissions from fuel combustion of the former Yugoslavia were taken from the IEA statistics for the same year (*CO₂ Emissions From Fuel Combustion, 1971- 1996*, 1998 edition). These per capita emissions (5.800 Mg CO₂) were then multiplied by the population of Croatia in 1990 (4.78 million) to obtain the total emissions from fuel combustion (27,724 Gg CO₂).
3. The estimates obtained using the per capita approach were used to adjust the estimates obtained using the IPCC Guidelines. In doing this, the difference between the estimates obtained by the per capita approach and the IPCC approach was added to the emissions reported in the subsector "Other" under "Energy sector". Thus, this subsector contained an estimate of 7,846 Gg CO₂, 94 per cent of which came from the emissions adjustment and 6 per cent came from statistical difference associated with energy balance and non-energy fuel use.
4. The difference in emissions was assumed to result from oil combustion, and associated energy related emissions of CH₄ and N₂O were adjusted on that basis.
5. Emissions from all remaining sectors including industrial processes, agriculture, land-use change and forestry, and waste were calculated according to the 1996 IPCC Guidelines. These emissions were added to the adjusted emissions from fuel combustion to obtain the national total of 39,391 Gg CO₂ equivalent.
6. The same approach was applied to adjust the emission estimates for 1991.
7. The team was informed that the main reason for adjusting the emission estimates for 1990 and 1991 was that Croatia did not consider appropriate the emission estimates for 1990 obtained by following strictly the IPCC Guidelines. The underlying reason for this stance was that, before 1992, the former Yugoslavia functioned as an integral economic and energy market without formal borders. Territorial allocation of activities after the disintegration of Yugoslavia was therefore extremely difficult according to Croatian officials. Some unresolved aspects of the ownership of power plants built by Croatia before 1992 outside its borders reflected these difficulties (650 MW coal-fired power plants in present Yugoslavia and Bosnia and Herzegovina, producing approximately 4,300 Gg CO₂, and half-ownership of a nuclear power plant with a total capacity of 664 MW built in Slovenia).
8. The team was also informed that, according to the current energy situation of the country, per capita energy consumption (1.88 tonnes of oil equivalent (toe) in 1990, 1.52 toe in 1995 and 1.85 toe in 2000) and related per capita emissions were very low compared with other economies in transition. The ongoing process of economic recovery was accompanied by a recovery in energy demand and associated emissions. As of 2002, Croatia was able to meet the energy demand growth by utilizing existing power capacities, by building new capacity (in 2000 and 2001 one new coal-fired power plant and two cogeneration plants fired by natural gas were commissioned) and by importing energy. In the future, Croatia was expected to meet the energy demand growth primarily by importing natural gas and oil and by building new power generating plants based on natural gas and coal. Renewable energy supply was planned to grow at the same rate as energy demand, maintaining its share relatively constant. The potential for further growth of the share of renewable energy was considered to be limited. Altogether,

this was expected to result in an increase of emissions by the end of the first decade of the 21st century to levels comparable with or even higher than those existing before Croatia's independence.

9. The need for adjustment was also underlined by the lack of reliable energy data in Croatia for 1990 and 1991, before it gained its independence. This is especially true for energy exports to and imports from the other republics of the former Yugoslavia, as there was no formal system such as a customs service to register these exports and imports. These data had to be reconstructed, influencing the overall quality of the energy balance. Still, Croatia had good quality data related to the energy transformation part of the energy balances for 1990 and 1991.

10. The review team noted that it is beyond its mandate to express a view on the validity of the approach for adjustments of GHG emission estimates for 1990 and 1991. In the team's opinion, this issue is of a methodological nature and could possibly be considered by the SBSTA.
