



KYOTO PROTOCOL OBJECTIVES IN CROATIA ENERGY PLANNING: NUCLEAR SCENARIO

Neven Duić, Željko Bogdan

University of Zagreb
Faculty of Mechanical Engineering and Naval Architecture
Ivana Lučića, 1000 Zagreb, Croatia
Neven.Duic@fsb.hr, Zeljko.Bogdan@fsb.hr

Franjo Juretić

Imperial College, London, UK
f.juretic@ic.ac.uk

Mladen Zeljko

Energy Institute Hrvoje Požar
10000 Zagreb, Croatia
mzeljko@eihp.hr

Abstract

Croatia as an Annex I country of the United Nations Framework Convention on Climate Change (UNFCCC) and a country that has pledged in the Annex B of the Kyoto Protocol to reduce its greenhouse gases (GHG) emissions by 5% from the pre-transition level by the budget period 2008-12, will have to envisage a new energy strategy. Compared to the energy consumption collapse in some transitional countries like Russia and Ukraine, Croatia has passed through a relatively limited long term reduction of GHG emissions since 1990 because of higher efficiency of its pre-transition economy. It is expected that in case of business as usual scenario it will breach the Kyoto target in 2003 since the demand for energy will be high, especially as the income continues to rise, particularly in domestic use for heating, for transport and for electricity generation. Several scenarios of developing energy system are compared from the point of view of GHG emissions. The energy sector that will most probably be the most influenced by the UNFCCC objectives is electricity generation. Several scenarios are compared. The cost-effective scenario expects a mixture of coal and gas fired power plants to be built to satisfy the new demand and to replace the old power plants that are being decommissioned. More Kyoto friendly scenario envisages the construction of mostly nuclear power plants in the future, while decommissioning the old ones as planned, and is compared to the others from the GHG emissions point of view. The conclusion is that by measures tackling only electricity generation it will not be possible to keep GHG emission under the Kyoto target level, but that choosing the nuclear option might reduce significantly the cost of compliance.

Keywords

UNFCCC, GHG, Kyoto Protocol, nuclear energy