

*The Third World:* Since this category includes the Organization of Petroleum Exporting Countries (OPEC), Mexico, and other potential oil exporters, the costs of a carbon constraint calculated as negligible until 2020; by the end of the 21st century, an expected loss of approximately 5 percent of GDP.

*China:* Expected to be most heavily affected by the international carbon reduction agreement; annual GDP losses predicted to exceed 10 percent by the latter half of the 21st century.

Dr. Richels argued that any increase by developing countries would need to be offset by reductions in the industrialized countries. It was calculated that if China and the developing countries were allowed to double emissions, the industrialized countries would need to reduce emissions by nearly 70 percent below current levels in order to achieve a worldwide reduction of 20 percent. If China were permitted to quadruple its emissions, the industrialized countries would need to reduce theirs to zero!

In response to Dr. Richels's presentation, Jim MacNeill challenged the assumption that fuel efficiency is necessarily expensive. This has not been the experience of the "star performers" of the OECD world, such as Japan, Sweden, and West Germany. While reducing energy input per unit of Gross National product (GNP), they improved economic and trade performance, increasing GNP and per capita income. While agreeing that there will be costs in coping with global warming, Mr. MacNeill noted the need for further analysis.

Dr. Richels acknowledged that there are many factors to be considered; not only energy intensiveness, but also structural factors in the economies. He suspected that energy efficiency in those economies probably contributed to their success, and admitted the difficulty of extrapolating those numbers to predict the future.