



INTERNATIONAL NUCLEAR SOCIETIES COUNCIL - INSC

REDUCING GLOBAL CARBON DIOXIDE EMISSIONS

A statement by the International Nuclear Societies Council

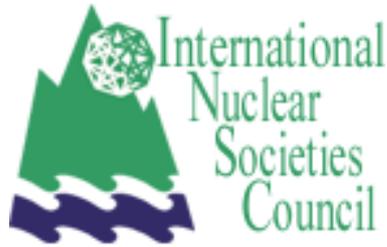
The International Nuclear Societies Council believes that the world's capacity for generating electricity from nuclear power must be increased substantially, if we are to meet the ambitious targets for reducing global emissions of carbon dioxide.

A central tenet of the Fourth Conference of the Parties (COP4), to be held in Buenos Aires, in November 1998, is that carbon dioxide from the combustion of fossil fuels may cause changes in the earth's climate. An objective of the Conference will be to reduce the emissions of carbon dioxide on a worldwide basis.

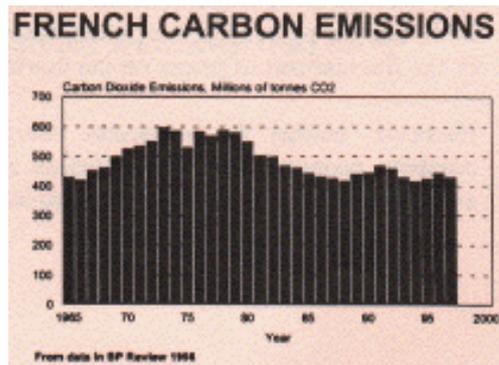
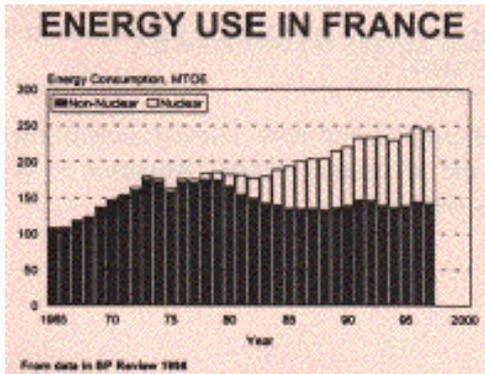
Little progress has been made in meeting the target of the Rio Accord of 1992 to reduce carbon dioxide emissions to 1990 levels. The Conference celebrated at KYOTO last year concluded with the accepted compromise of several developed countries to reduce the gases emissions between 2008 and 2012. Even that a good degree of flexibility has been incorporated in the program in order to facilitate the achievement of these objectives there are expected difficulties for some countries to properly react in due time. This makes evident the need to urgently complete, quantify and implement these objectives on a worldwide basis.

The trends over the last 30 years show that, while there have been increases in emissions from the US and other OECD countries, most of the increase has occurred in the developing world, as those countries strive to develop market economies and raise their standards of living (Table 1). Over the period 1990-1998 this large increase was offset by a reduction in emissions from the Former Soviet Union (FSU) and the Eastern European countries, because their economies slowed dramatically as they began to adapt to market-driven economies. With this phase ending, it is to be expected that there will be no further decreases in their emissions, and there may well be increases, as their economies start to grow again.

Today, about one quarter of the carbon dioxide emissions comes from the US, one quarter from the rest of the OECD, and half from the rest of the world. The only country with demonstrable program reducing CO₂ emissions is France. France, with 42% of its energy produced by nuclear plants is a clear example of the path that the world's nations should follow in order to reduce carbon emissions without impeding economic activity (Figures below):



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It is now generally accepted that the global energy demand will increase by two to three times by the middle of the next century. Energy demand in the developing countries is growing by over 4010 Per year and already accounts for over 30010 of the global total. Its growth is likely to continue at a much higher rate than in the OECD countries.

With these patterns of growth, reductions of 20010 in emissions from the OECD countries will not achieve a global reduction in carbon dioxide emissions. For example, if the OECD countries were to reduce emissions by 20010, and if the developing countries were to maintain their economic development with emissions following the trends of recent years, then the resulting global emissions in 2015 would be 30010 higher than in 1995.

Thus energy conservation programs in the countries of the Organization for Economic Co-operation and Development (OECD), while highly desirable, are by no means sufficient. Furthermore, the major gains in energy efficiency during the 1970s and 1980s have already attacked the easy targets; further gains will be more difficult and costly. To have any real impact on global carbon dioxide emissions, the principal emphasis must be on energy sources other than fossil fuels.

Renewable energy sources can contribute to the solution. The only commercial large scale renewable energy in use is hydroelectric power, which today contributes about 3010 Of the global energy supply. It could be expanded to replace about 3010 Of the additional energy demand, if all potential rivers were developed. However, this does not seem likely, given concern in many countries over the environmental impact of new hydroelectric development. In any event, the additional energy provided would have little influence on the total energy picture. No other renewable energies have yet demonstrated commercially economic and reliable energy production on a large scale, and today they have no measurable contribution



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to the global energy supply. Even with large government development and operating subsidies, it is doubtful that these could provide even 10% of the energy supply within two decades.

Nuclear power is the only sustainable energy option available today that can significantly reduce carbon dioxide emissions. After several decades of development by governments and investment by electric utilities, it currently provides about 70% of the world's energy supply. Nuclear power is a nearly zero-carbon energy source that is commercially proven, safe in operation, does not produce other greenhouse gases, and contains its waste products. The technology for permanent disposal of waste is already well advanced and needs firm political action to put it into operation. By using demonstrated technologies, nuclear fuel reserves in nature can be extended for centuries of operation. An important feature of nuclear power is that the cost of fuel and operation is relatively small compared with capital cost. Thus, once built, nuclear power plants produce electricity at a cost that is relatively insensitive to inflation or the fluctuations of prices on the world energy market.

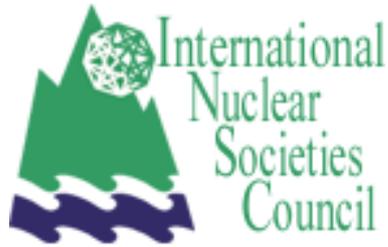
However, neither the renewable energy technologies nor new nuclear power plants can compete economically with pipeline natural gas at current prices, wherever it is readily available. In both cases, the initial capital cost is too high.

Thus, radical measures will be needed, if the objective truly is to reduce carbon dioxide emissions. These measures must be undertaken in the context that a moral priority for the coming century will be to help all countries achieve a reasonable standard of living. To do this, the developing countries must industrialize to generate enough wealth to support a higher standard of living, which in the long term will reduce their rate of population growth. This is the only solution that has been demonstrated to stabilize population growth.

Given all these factors, and the global thrust to market economies, the only practical strategies available to governments in their initiative to reduce carbon dioxide emissions are to impose taxes on the emissions, or to provide subsidies for energy produced from non-fossil resources, or a combination of these measures.

Thus, the International Nuclear Societies Council believes that governments should acknowledge the significant impact that nuclear power has played in limiting global carbon dioxide emissions. Furthermore, to minimize future emissions, governments should:

- continue to strive for increased efficiency of energy use
- encourage the use of renewable energies, where they can be shown to be economically beneficial and environmentally acceptable



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- strongly encourage the continued operation of existing nuclear power plants and facilitate the extension of their operating life
- support the development and deployment of new, optimized, cost competitive nuclear power plants
- consider taxes on carbon dioxide emissions, and subsidies to energy options that do not emit carbon dioxide.

| | 1965 | 1970 | 1975 | 1980 | 1985 | 1990 | 1995 | 1996 | 1997 |
|---------------|------|------|------|------|------|------|------|------|------|
| - | | | | | | | | | |
| OECD | 2.4 | 3.0 | 3.0 | 3.3 | 3.3 | 3.5 | 3.6 | 3.5 | 3.5 |
| FSU & Europe | 0.9 | 1.1 | 1.3 | 1.5 | 1.6 | 1.5 | 1.0 | 1.0 | 1.0 |
| Rest of World | 0.6 | 0.7 | 1.0 | 1.3 | 1.7 | 2.1 | 2.6 | 2.1 | 2.2 |
| TOTAL | 3.9 | 4.8 | 5.4 | 6.1 | 6.5 | 7.1 | 7.2 | 7.5 | 7.6 |

All numbers for carbon dioxide emissions are derived from the BP