



KIMO RESOLUTION 2/99

THE OCEAN DUMPING OF CO₂ PROGRAMME

Injection and storage of CO₂ in the deep ocean has been proposed as a possible way of achieving large reductions in emissions of CO₂ to the atmosphere to meet Kyoto (Climate Change) Convention commitments by the major industrialised nations.

These countries are now funding research into whether technologies to capture CO₂ from flue gases could achieve large reductions in CO₂ emissions to atmosphere arising from the use of fossil fuels. To help mitigate climate change, the captured CO₂ would have to be stored for a long time. Various studies have shown that there are a number of natural reservoirs with sufficient capacity to be potentially useful for CO₂ storage. Of the 3 main types of natural carbon reservoir, the atmospheric carbon reservoir is the smallest but is currently receiving all of the anthropogenic emissions of CO₂, which is what is giving rise to concern about climate change. Worldwide, the terrestrial carbon reservoir is larger than the atmospheric reservoir, and the ocean reservoir is considerably larger still.

It is suggested that there are several ways in which the natural reservoirs could be used to reduce the burden on the atmosphere. Methods of enhancing the terrestrial carbon sink, for example by increased afforestation, are already accepted. Methods of storing captured CO₂ underground are now being proven. The oceans have a considerable potential capacity for storing captured CO₂ but the processes that would be involved are more complex than with underground storage.

Ocean storage of CO₂ is at a relatively early stage of development and many questions need to be answered before it could be implemented. Dialogue has to take place with "stakeholders" in order to understand the main issues and concerns about this concept. It is suggested that research will be needed to address the current uncertainties about ocean storage of CO₂.

Development of mitigation technologies was boosted by support from the US Department of Environment in 1998 with the selection of 12 projects for an exploratory phase of research to define the opportunities. As a result of the knowledge gained in this initial phase of work, a second round of funding has just been announced. Of the 6 projects chosen for the second phase to cover ocean disposal:

- Evaluation of processes governing CO₂ storage in deep saline aquifers
- Examination of potential for large-scale CO₂ transportation and deep-ocean storage

A project will continue a programme of work aimed at demonstrating the technical and economic viability of large-scale CO₂ transportation and deep-ocean storage. The investigation will focus on extending the application of pipe-laying technology beyond the current depth limit, said to be 1300 metres. Emphasis will be placed on injection at depths of 3000 metres or more, to minimise ecological and environmental impact.

The project will address the major engineering challenges to oceanic transport and injection from a floating platform, identified in the first phase of work as the best method of delivering CO₂ to the deep ocean floor. Adaptability of existing floating platforms and transport vessels and pipeline installation techniques will all be investigated, through engineering and economic evaluations. If these experiments are successful the G7 countries see their experiments as a precursor to large-scale ocean sequestration of CO₂.

KIMO agrees that, in seeking solutions to the problem of anthropogenic CO₂:

- 1. the research emphasis should be towards alternative energy production technologies and energy-consumption reduction programmes;**
- 2. independent research should be conducted to predict the environmental impact of ocean dumping of large quantities of CO₂; and**
- 3. any decision on whether to proceed with large-scale ocean storage of CO₂ should be informed by this research, by the outcome of small-scale field trials and by an assessment of the relative ecological impact of ocean storage and the release of CO₂ to the atmosphere.**