

A strong warning that, since the global build-up of atmospheric carbon dioxide will have varying climatic effects on different parts of the world, it could lead to increased tension between rich and poor nations, has come from a special committee of the Academy of Sciences.

In a report prepared for President Carter's Science Adviser, Dr Frank Press, the committee says that such a build-up will only be minimised by international agreement to reduce the use of fossil fuels and develop alternative energy sources. And in view of the potential divisiveness of the CO₂ issue, it recommends that "in the near term emphasis should be on research, with as low a political profile as possible."

The committee, which was chaired by Dr Thomas C Schelling, professor of political economy at Harvard University, was asked by Dr Press to look at the social and economic consequences of increased concentrations of atmospheric CO₂. Accepting the scientific consensus that such an increase is likely to take place, the committee concentrates on what it considers the most serious consequences, namely the relative distribution of the

CO₂ could increase global tensions

resultant gains and losses throughout the world.

It points out, for example, that developed countries with temperate climates are not only the largest consumers of fossil fuels, but may also benefit from the climatic effects, with raised temperatures and rates of photosynthesis leading to increased agricultural yields. Both the US and the USSR could benefit in this way.

In contrast, countries in subtropical arid zones could suffer a decline in rainfall and possible droughts with decreased food production and resultant shifts in population distribution — as well as potential demands for international compensation.

"It seems that climate change might well tend to make the already poor still poorer and increase the difference between North and South, rich and poor, developed and developing" says the committee.

Research on adaptive and preventive measures are, it says, "apparent and urgent" to help mitigate the consequences. For example it recommends efforts to improve the resilience of agriculture to climatic change. And in particular suggests that ways should begin to be explored of protecting low-lying land areas from the possible elevation of ocean levels due to the disintegration of the West Antarctic ice sheet.

Finally, responding to two recent reports in the scientific literature which suggest that the rate of carbon dioxide build-up may be an order of magnitude less than most scientists now fear — reports which have become the centre of fierce controversy in the climate research community — the committee says it agrees with the views of experts it consulted that "these are based on incomplete assessments that unrealistically omit important feedback processes." □

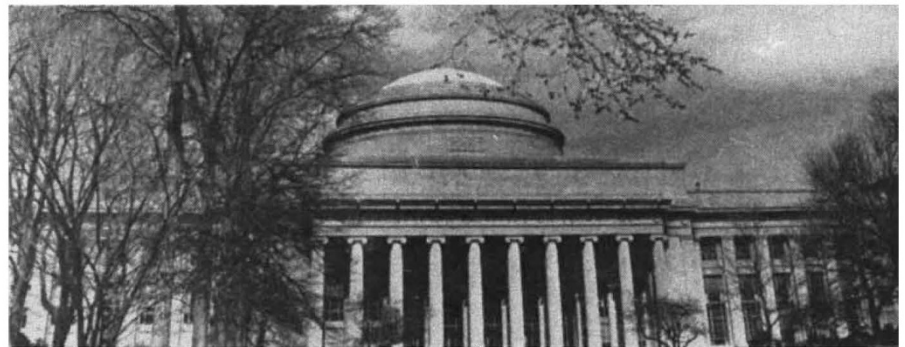
Exxon supports MIT research

BREAKING away from more conventional patterns of research funding, the Massachusetts Institute of Technology and Exxon Research and Engineering Company announced last week a ten-year agreement under which the company will provide up to \$8 million to support basic research at the institute into combustion processes.

In return, the company — the research arm of Exxon Corporation — will receive royalty-free, non-exclusive licenses to any patents which MIT obtains on technology arising from the research and will share any royalties on technology licensed to third parties.

Areas of research to be supported by Exxon include the burning of coal, coal liquids, shale oil and heavy crude petroleum. According to Dr Ed David, President of ER&E, a prime objective of the agreement is to "help generate the scientific base for more efficient and more environmentally acceptable burning of high sulphur, high nitrogen, hydrogen deficient fossil fuels" of particular interest to utilities and industrial companies.

Under the terms of the agreement, all results of the research can be published openly. ER&E will select the research projects it is prepared to finance from a list proposed by MIT. And in addition to this, an additional 20% of the total will be made



MIT: receiving industrial support for basic research

available by Exxon to MIT scientists to pursue their own combustion science research projects.

The two principal investigators at MIT will be Professor John P. Longwell, who joined the institute faculty in 1977 after a long research career with Exxon, and Professor Adel F. Sarofim. Initial research projects to be carried out under the agreement include studies of the relationship of flame hydrocarbon intermediates to surface deposits and hydrocarbon emissions; and the interaction of mineral matter with sulphur during coal combustion.

The agreement is, according to the university, "one of the largest and longest of its kind" and is the result of protracted negotiations between the two sides over terms. It cannot be terminated without two years notice from either side, and in the words of MIT president Dr Jerome Wiesner "provides the university with the certainty that these long-range research programmes will have the financial continuity and stability to ensure effective performance".

The novelty of the agreement lies in the

fact that whereas industrial support of applied research on university campuses is a common phenomenon, it is relatively unusual for a private company to sponsor more long-term, basic research.

This role has, at least in the post-war period, been conventionally assumed by the federal government, on the grounds that basic research is a common good. However, in recent months a number of industry executives — among which Ed David and other Exxon officials have been some of the more outspoken — have argued that the private sector should take on more responsibility for supporting 'goal-oriented' basic research carried out in universities, arguing that because of changing political, social and economic factors, government may not have the staying power or the style of management to meet industry's long-term needs.

Recently one Exxon official suggested that industry's share of support for basic university research should increase to 15% from its current level of about 3%. The MIT-Exxon agreement is one of the first steps in this direction.

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