

Meeting agrees on need for new targets for

Berlin. The nine-day-long climate conference in Berlin rescued itself from potential disaster last week by pulling off a last-minute compromise and agreeing that emissions of greenhouse gases should, in principle, be reduced after the year 2000.

In the closing session of the conference, signatories to the United Nations Climate Change Convention, drawn up in Rio de Janeiro in 1992, agreed to draw up a protocol setting targets for reductions of the gases, and a timetable for achieving such goals, within the next two years.

After the meeting, pressure groups and developing countries said they were disappointed that specific targets had not been agreed in Berlin. But they welcomed the conference's conclusions as a step forward that could lead to action in the near future.

The importance of the so-called Berlin mandate is that it admits that the convention, whose signatories agree to return greenhouse gas emissions to 1990 levels by the year 2000, does not go far enough. Scientists and pressure groups have long argued that this measure, which few countries are in any case on target to achieve, is inadequate to avert predicted climate disasters.

According to the International Panel on

Climate Change (IPCC), which assesses available scientific information and recommends response strategies (see below), scientific models suggest that a 60 to 80 per cent cut in emissions is necessary simply to stabilize current carbon dioxide levels in the atmosphere.

The major aim of the Berlin meeting, in the eyes of many signatories, was to reach agreement on how to reduce emissions after the year 2000. But it soon became bogged down in a stalemate between those countries that are heavily economically dependent on fossil fuels — such as the OPEC countries and the United States — and the small island states, which fear for their existence if global warming raises sea levels. The Alliance of Small Island States (AOSIS) had called for an immediate agreement to reduce carbon dioxide emissions by 20 per cent by the year 2005.

The conference also became polarized over the issue of 'joint implementation', a reference to projects designed to reduce global levels of greenhouse gases which are financed by one country but carried out in another.

The United States wants a credit system under which such an investment by an industrial country in a developing country — for

example, by providing clean energy technology or planting forests to act as carbon sinks — would count towards the former's efforts at reducing emissions.

But many developing countries see this as a way by which industrial countries could avoid domestic responsibility. They also argue that their own rate of development would be hindered by having to use fuel sources that are less efficient than the fossil fuel sources that the United States would be free to continue burning. As the major polluters, these countries argued, industrial countries should bear the full cost of lowering greenhouse emissions.

The issues seemed unlikely to be resolved. But the German Chancellor, Helmut Kohl, raised expectations when he opened the ministerial part of the meeting on 5 April with a speech reiterating Germany's commitment to a reduction in carbon dioxide emissions by 25 per cent by the year 2005.

Cynics pointed out that Germany has already succeeded in getting a considerable way towards this target already by closing down many of the inefficient and polluting factories in east Germany. "But we are still only half way to this target" says Stephan Singer from the German branch of the

Climate change panel to remain main source of advice

Berlin. The Intergovernmental Panel on Climate Change (IPCC), the body that collates data on global warming and analyses their social and economic implications, is to continue as the major scientific advisory body to governments that have signed the United Nations Climate Change Convention.

Last week, the so-called Conference of the Parties (COP) — made up of the 128 governments which have ratified the convention, drawn up in Rio de Janeiro in 1992 — agreed at their meeting in Berlin that the panel should be its main consultative body on scientific issues. It also resolved to provide 10 per cent of its planned budget of 4.0 million Swiss francs (US\$4.7 million) next year.

The rest of the money will be put up by the World Meteorological Office (WMO) and the United Nations Environmental Programme (UNEP), the two organizations that set up the IPCC in 1988 in an attempt to raise the awareness of politicians of the seriousness of climate change-related issues.

The panel, chaired since its inception by the Swedish climatologist Bert Bolin, has three working groups. The first looks solely at the scientific aspects of climate change; the second at the likely impact of such change — including the options for

mitigating its predicted effects — and the third at the economic implications, including an outline of future scenarios of energy use and social patterns.

The panel produced its first report in 1990, arguing for urgent steps to reduce the emission of greenhouse gases if the disastrous consequences of global warming are to be avoided. All three groups are working on a second full report. The report will be published in the autumn, having passed IPCC's complex refereeing system involving almost a thousand reviewers.

There is at least one representative from a developing country on the writing teams responsible for each of the report's 59 chapters. As with other IPCC documents, it will be presented to a plenary meeting, at which all signatory nations, as well as non-governmental groups, have a right to comment on its contents. The final document will be discussed by the next Conference of the Parties, due to be held in

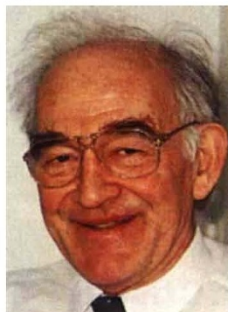
1996, probably in Montevideo.

Bolin defends the operation of the complex IPCC system against charges that it inevitably mixes science and politics. He argues that its commitment to consensus — an approach which some fear can water down its scientific message — is essential for an issue as sensitive as global warming, whose economic and political consequences are so potentially significant. "It is not the same as considering how to handle radioactive waste, for example, whose consequences are relatively localized and easy to control," he says.

Bolin also argues that the continuing build-up of greenhouse gases in the atmosphere makes it important to reduce emissions as soon as possible. The economic and political difficulties of such a step make consensus particularly important, he argues, in order to prevent individual countries from exploiting any dissent. "This is political reality."

The signatory states to the convention appear to endorse this view. The 10 per cent of the budget to be provided by the COP tacitly "is just about the right level of contribution to allow us to retain our independence", says IPCC general secretary Narasimhan Sundararaman.

Last week's meeting in Berlin also agreed to set up two subsidiary bodies to



Bolin: consensus remains 'essential'

greenhouse gas emissions

World Wide Fund for Nature.

"Now that Kohl has put climate protection high on the political agenda it will be hard for the finance ministry to block the wishes of the environment ministry, as has happened in the past," says Singer. Germany will now have to look seriously at measures which will reduce emissions in the west of the country, he says.

Intense and prolonged negotiations followed Kohl's speech, continuing until the small hours on 7 April. The resulting agreement, known as the Berlin mandate, states that the present commitment under the Rio climate convention is inadequate, and establishes a procedure that will set voluntary targets for reduction of all greenhouse gases after the year 2000.

A working group will be set up to design the protocol for approval in 1997. The group will consider quantified targets for limiting or reducing emissions within a time-frame that has still to be decided. The agreement mentions the dates 2005, 2010 and 2020, but makes no specific recommendation.

In addition to the Berlin mandate, delegates agreed to launch a pilot phase for joint implementation projects. But, initially, the investing country will not be able to claim credit for reduced emissions in

the full Conference of Parties. One, the **Subsidiary Body for Scientific and Technical Advice (SBSTA)**, will convey scientific information to the COP.

The **Subsidiary Body for Implementation (SBI)**, will advise the COP on national implementation of the convention. Both subsidiary bodies will be open to delegates — who need not be technical experts — nominated by each of the 128 signatory states, and will hold their first sessions in October.

The SBSTA will be chaired by Tibor Farago, head of environmental policy in Hungary's Environment Ministry, and will be able to seek advice from any qualified scientific or technological advisory body — though the only body explicitly mentioned in this regard, is the IPCC. Some see a danger in this. "SBSTA will be composed of delegates and not scientists," says Arjet Stevens from Greenpeace International. "There is a risk that it could choose to take advice from bodies that are not genuinely independent."

Farago, a geophysicist who has worked as a climatologist, concedes that governments cannot be forced to delegate technically qualified people onto the SBSTA committee, but he hopes that the governments "will be motivated to do so". He describes IPCC as "one of the most important bodies" with which he will be cooperating.

Greenpeace and other environmental

the pilot phase. The situation will be reviewed in 1999.

Another decision agreed by the delegates was to set up subsidiary bodies to assess scientific data on global warming and to review the way in which countries are meeting their commitments (see below). They also decided to locate the convention's permanent secretariat in Bonn.

Germany's former capital, which will have plenty of office space when the government moves to Berlin in 1997, offered rent-free premises and support of up to DM3.5 million (US\$2.5 million) a year. The secretariat will receive from the United Nations further support of just under US\$9 million over the next two years, during which time it will build up a staff of 50.

Matthew Spencer, a spokesman for the environmentalist group Greenpeace, said after the meeting that many such groups regretted that the Berlin conference did not agree a target of a 20 per cent cut in greenhouse gas emissions, as had been demanded by many developing countries.

"But governments have eighteen months to find ways of doing this," he says. "So we are still optimistic, and we believe that there has been a tentative step forward."

Alison Abbott

groups would have preferred IPCC to remain the only official scientific advisory body. But IPCC says it does not feel threatened. "We are very happy with the proposal," says Bolin, who feels it appropriate that IPCC itself is not too closely tied to COP.

Scientists who have helped prepare the IPCC reports say they are pleased that its future as a key advisory body is now secure. "It is the only body that can do a good job," says Klaus Hasselmann from the Max Planck Institute for Meteorology in Hamburg. "It reflects the [main] view of the whole scientific community, and also conveys the degree of variability around that average view."

Bruce Callander of the United Kingdom's Meteorological Office, head of the technical support unit for IPCC's first working group, says that if the COP had decided not to use the IPCC, it would have had to reinvent the panel under a different name. "It has the goodwill of the best scientists," he says.

But both Hasselmann and Callander agree that this goodwill needs to be nurtured, and that scientists could rebel if asked to write a third report too soon. They point out that nothing is likely to happen in the near future to substantially change the IPCC's conclusions — and that the most important task for politicians now is to implement its recommendations.

A.A.



Yucca Mountain: long-term danger?

Academy may probe waste 'explosion' risk

Washington. The US National Academy of Sciences may be asked to assess controversial claims by two physicists at the Los Alamos National Laboratory that nuclear waste stored in a planned underground repository at Yucca Mountain, Nevada, could spontaneously explode.

The authors of a paper suggesting this possibility — Charles Bowman and Francesco Venneri — are both particle physicists and leading proponents of the use of particle accelerators for disposing of nuclear waste by transmutating its fissile isotopes.

Their paper says that plutonium and other fissile material stored in barrels underground would eventually leak, and that, mixed with rock that would act as a moderator, they could reach criticality and explode (see *Nature* 374, 204;1995).

Hazel O'Leary, the energy secretary, told the Senate Armed Services Committee last week that the academy had offered to assess the theory. Asked for her own assessment, O'Leary said she gave it "the credibility I would give to anyone who didn't have the assignment and, quite frankly, had another interest".

But Bowman and Venneri were defended by Richard Bryan (Democrat, Nevada), a strong opponent of plans to store civil nuclear waste under Yucca Mountain. "They are respected physicists, not people who got their degrees at some degree mill," Bryan said.

Bryan compared the two physicists to Galileo, who, he pointed out, had been branded a heretic in his day. He also alleged that Bowman had been muzzled by the management at Los Alamos — a charge that O'Leary promised to investigate.

Bowman and Venneri are now searching for a peer-reviewed journal prepared to publish their work. Jerry Saltzman, an official at the energy department's office of nuclear waste management, says that the department is waiting to see whether external peer reviewers support publication of the work, which was summarily dismissed by internal reviewers at Los Alamos itself. If so, the department plans to ask the academy to resolve the dispute.

Colin Macilwain