

for the United States from present levels — and that emissions are continuing to rise.

In addition, US officials want ‘meaningful’ participation from major developing countries, including a willingness to participate in emissions trading and joint implementation. Observers believe that the United States may possibly relax its stance on targets slightly in the closing stages of the meeting if some of its other conditions are met.

● **Japan**

Japan has taken much flak for its proposal to reduce emissions by 5 per cent from between 2008 and 2012 for a three-gas basket of carbon dioxide, methane and nitrous oxide. But this proposal could well emerge as the only realistic outcome at Kyoto. If so, Japan’s

much-maligned ‘softly, softly’ consensual approach to the negotiations will have been vindicated, and its first foray as host of a major international agreement deemed a success.

As the host of the meeting, Japan has been pilloried by some for not showing more leadership. But Japanese officials are in close and constant touch with Washington and major European and G77 capitals. It is therefore little surprise that their proposal neatly falls between those backed by the first two, while incorporating some of the demands of the G77.

Japan’s proposal includes elements of other demands, such as lower targets for countries with low population growth and low incomes per head. The proposal also

calls on ‘advanced’ developing countries to assume voluntary commitments.

● **Developing countries**

The Group of 77 developing countries tried to scoop the US proposal last month by tabling their own proposal hours before Clinton’s announcement. The G77 proposal is a slightly modified version of that from the European Union: it suggests that targets be set for individual gases, not a basket of three, and achieved domestically, without emissions trading or joint implementation. The group also wants a 35 per cent reduction in emissions by 2020.

The G77 proposal includes a demand for a compensation fund for ‘economic impacts’ of climate change policies. This demand spans a variety of interests, from those of the oil-producing states, which want to be compensated for revenues from lost oil sales, to those of the small island states, which want compensation if they suffer because of delays in international action.

● **Brazil**

One of the most sophisticated proposals comes from Brazil. Largely the work of Gylvan Meira, head of the Brazilian Space Agency, it suggests that targets be based on historical emissions; in other words, that those countries that began to emit carbon dioxide from the beginning of the Industrial Revolution should reduce the most, and vice versa. It also includes penalties for countries which overshoot their targets, to be paid into a fund to finance clean technology projects in the developing world.

● **Australia**

Australia is one of the few countries to have publicly declared its opposition to legally binding targets, despite appearing to be brought into line last month at the Commonwealth Heads of Government meeting (see *Nature* 389, 893; 1997). Australia’s industry is dominated by companies that produce and export energy, and it is worried

Obstacles to an agreement

Success at Kyoto will need agreement on a method of calculating emissions reductions. The United States favours what has become known as the ‘net’ approach. According to this method, a country’s inventory of ‘man-made’ carbon emissions will include carbon released into the atmosphere from the clearing of forests. It will also take account of carbon removed from the atmosphere from, for example, the planting of trees. This is controversial, partly because it is not clear how this carbon will be calculated.

Another issue will be the ‘basket’ versus the ‘gas-by-gas’ method of calculating emissions. The European Union supports the idea that reductions should be made collectively to a basket of three gases: carbon dioxide, methane and nitrous oxide. But environmentalist groups oppose this on the grounds that it would allow countries to make disproportionate reductions to methane and nitrous oxide, in comparison to carbon dioxide, which constitutes 80 per cent of developed country greenhouse gas emissions.

Also at issue will be the period over which reductions can be made. Some countries — the United States again — would like five years to reduce emissions. Others want specific annual targets.

Finally there is the crucial question of which ‘legal instrument’ to use. If countries do agree on targets, the climate convention will need to be changed. The change could take the form of an amendment to the convention. This will require signatures from at least three-quarters — more than 120 — of the countries which have signed and ratified the convention. But the amendment will not enter into force — the point at which emissions targets become legally binding — until all these countries have ratified the change to the convention in their national parliaments. This is not

expected to happen before 2010.

The alternative method of changing the convention is through what is known as a ‘protocol’. The main advantage of a protocol over an amendment is that countries have more freedom to decide when it enters into force. They can, for example, decide entry into force after it has been ratified in the national parliaments of, for example, just 50 countries. But a protocol’s drawback is that it needs a consensus of all the parties. In other words, a single, dissenting country can veto the whole process.

European government lawyers anticipated this potential difficulty nearly a year ago, and have tabled an advance amendment to the convention which says that a protocol should be allowed to be adopted at Kyoto by a three-quarters majority vote. This is a high-risk strategy and bound to be opposed by countries such as Saudi Arabia and Australia. “When you’ve got 48 hours to go [at Kyoto], everyone’s dead tired, and one country is blocking progress, the chairman will need to pull a rabbit out of the bag,” says one government



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