How to make Kyoto a success

Sir — In Kyoto in December, the Framework Convention on Climate Change (FCCC) is expected to be strengthened. Negotiations have focused on commitments to cut carbon dioxide (CO_2), methane and nitrous oxide, the three main contributors to global warming.

Two other actions could make Kyoto more successful[1]. One would yield quick results with benefits for thousands of generations. The other will make it possible to implement deep cuts in emissions of the main greenhouse gases in the future, if that proves necessary.

First, delegates in Kyoto should adopt strict limits on emissions of long-lived industrial gases[1,2]. Particularly important are sulphur hexafluoride (SF_6), an insulator in heavy electrical equipment, and the perfluorocarbons (PFCs) tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6) released mainly during industrial production of aluminium and semiconductors.

Although CO_2 has caused 170 times as much global warming, the long lifetimes of SF_6 and the two PFCs — respectively perhaps 3,200, 50,000 and 10,000 years — make them a near-permanent legacy of the industrial era. Even as their concentrations rise at up to 7 per cent per year, the full range of their atmospheric effects remains poorly understood yet practically irreversible.

At best, the likely Kyoto agreement will include long-lived gases along with the three main greenhouse gases. Appealing in principle, this 'comprehensive' approach will probably encounter severe barriers — in reaching political agreement, establishing monitoring regimes and adopting global warming potentials — that would wrongly delay the regulation of SF_6 and PFCs.

A separate agreement to eliminate these gases would be better. Voluntary regulatory programmes in Germany, Norway and the United States show the large reductions that are possible — in those countries, aluminium producers are cutting PFC emissions by half in only a few years.

A stringent international agreement would cut emissions further and worldwide. Using the effective agreement to eliminate substances that deplete the ozone layer as a model, a ban on SF_6 and PFCs could include exemptions for 'essential' emissions so that regulation does not exceed the availability of substitute technologies and processes. Periodic expert reviews could ensure that exemptions are genuine.

Second, FCCC negotiations have been plagued by a large gap between proposals for new commitments and available information on what countries can actually implement. Kyoto can narrow the gap with a nonbinding agreement for countries to develop and review 'implementing legislation' — the laws, regulations and policies they must adopt to put international commitments into practice.

More attention to implementation would improve the capacity to negotiate realistic commitments in the future. Especially if the main greenhouse gases are cut steeply, countries will be reluctant to implement costly policies unless they can see their economic competitors preparing to impose similarly expensive measures.

Another benefit would be a shift in the style of negotiating FCCC commitments by requiring that implementation plans are the basis for negotiating new commitments. As an antidote to the plethora of unrealistic proposals that have marked FCCC negotiations so far, countries and interest groups that favour stricter controls would be expected to show how new limits can be put into practice.

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1. Victor, D. G. & MacDonald, G. J. *Linkages* (http://www.iisd/Linkages/Journal, forthcoming).
2. Cook, E. *Lifetime Commitments: Why Climate Policy-Makers Can't Afford to Overlook Fully Fluorinated Compounds* (World Resources Institute, Washington, 1995).

Sir — It is not so much mandatory targets for greenhouse gas emissions reduction that are the problem (*Nature* **389**, 429; 1997) but targets that are unrealistic within the timetables proposed (2005 and 2010).

This is partly because there is confusion between the technical potential for emissions reduction and what is socially and politically feasible, given the current attitudes and behaviour of most end-consumers of energy, and the lead times involved in providing non-fossil-fuel alternatives.

As the World Energy Council has indicated in its statement for the forthcoming Kyoto conference, there is huge potential for change over the next century. But we should not be unrealistic about what can be achieved in 8 or 13 years.

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All sorts of authorship

Sir — Christopher Stubbs[1] claims that science is best served by alphabetical ordering of authors. Is this really the only alternative? Why not rotating alphabetical authorship and reverse alphabetical order to alleviate 'alphabetic disorder'[2]?

The earlier letter on surnames by Mark Shevlin[3] reminds me of a well-known British professor's first encounter with the *Genetics Citation Index* in 1963. He could not comprehend why his name did not appear in it. Because he usually deferred to his junior colleagues by placing his name last on bylines, his name did not turn up. Later, when we launched the *Science Citation Index* in 1964, his name was included in the *Source Index* where all authors' names are included and cross-referenced to the first author.

First authorship is mistakenly considered essential if one is to be fully credited in the citation game. But any informed citation analyst relies on an author's full CV to determine the first author of the papers to be included in the citation count.

The first comprehensive 'all-author' study did not occur until 1978 (ref. 4). Previously, 'first-author' studies were the norm. Nevertheless, many administrators persist in using the first-author data found in the printed *Science Citation Index*, disregarding its potential bias towards second authors. *The Web of Science*, an expanded version of the *SCI*, overcomes this problem because all authors' names, thanks to hyperlinks, are displayed in the *Citation Index* section.

But what about the absurd 'no-author' policy for leading articles published in *Nature* and other journals? Is this fiction designed to impress readers with the journal's authority?[5] Are these editorials written by robots or people named 'anonymous'?

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5. Garfield, E. *Current Contents* **9**, 5–7 (1976).