

## Burning issues

**The Kyoto Protocol is just a small first step in restricting man's influence on climate. If we can't prevent fires in Indonesia, such international efforts to limit the effects of climate change could be in vain.**

**T**he engagement of society's upper echelons with the problems of climate change reached a peak last week, when Queen Elizabeth II, accompanied in Berlin by ministers from Britain and Germany, launched a bilateral collaboration of the two countries' climatologists, business and investment communities.

While recognizing the newly energized Kyoto Protocol as a crucial first step in international collaboration, the meeting that followed focused on its limitations (see [www.britischesbotschaft.de/statevisit/en/press/climate\\_change\\_conference.htm](http://www.britischesbotschaft.de/statevisit/en/press/climate_change_conference.htm)). As one participant said, the world cannot wait for a ponderous succession of interminably negotiated increments to treaties to be achieved: we have years, not decades, to take steps that might prevent the worst possible consequences of current trends in greenhouse-gas emissions later this century. As a UK House of Lords report emphasized this week, emissions trading needs to take aviation into account. Two other essential goals include protecting carbon sinks and integrating southern countries into the framework.

For a stark example of the latter challenges, consider the peatlands of Indonesia. Under the Kyoto Protocol, it is technically possible for investors to back projects that increase the capacity of ecosystems to absorb carbon dioxide from the atmosphere, and to sell the resulting 'carbon credits' to polluters who need more time to control their emissions — though no such projects have yet been approved by the United Nations. The idea, which will be explored in detail in a News Feature in *Nature* next week, is to harness market forces to help limit atmospheric levels of CO<sub>2</sub>. But success is far from guaranteed, and ecologists who study the world's peatlands are already pointing to a major gap in the Kyoto Protocol's carbon-trading provisions.

As soon as peat is drained, microbial activity previously held in

check by waterlogging causes it to start releasing CO<sub>2</sub>. If large expanses of drained swamp catch fire, the gas belches into the atmosphere in staggering quantities. Yet until 2012 at the earliest, no one can claim carbon credits under Kyoto for restoring the hydrology of a damaged peatland ecosystem — unless the project can somehow be shoe-horned under the headings of forestry or agriculture.

Anyone who doubts the seriousness of this oversight should consider what happened in 1997, when El Niño conditions brought months of drought to southeast Asia. Millions of hectares of drained Indonesian peat swamps went up in smoke, releasing perhaps as much CO<sub>2</sub> as Europe emits each year by burning fossil fuels. The next time a severe El Niño hits, this catastrophe will be repeated (see page 145).

Negotiators considering the shape of the Kyoto Protocol after 2012 clearly should include peatland restoration under its carbon-trading arrangements. But we can act before then. The onus lies with Indonesia itself and the nine other members of ASEAN, the Association of Southeast Asian Nations. They collectively lost billions of dollars in the choking haze that smothered the region in 1997, and have set up a task force to consider the issue. But ASEAN has been slow to turn its concern into practical projects designed to prevent fires in Indonesia's peatlands.

As for the rest of the international community, little action has been taken, save for some tiny pilot projects to block the drainage canals that created the tinderbox in the first place. There is a real opportunity here to spend development aid money in a way that will legitimately benefit both recipient and donor. This would be a highly cost-effective way to simultaneously fix an ecological disaster and limit global warming. ■

## The stem-cell state

**California's citizens have changed the landscape of a key area of biology — with intriguing implications for everyone else.**

**T**he dream has come true for biologists in California who want to work with human embryonic stem cells. A large sum of money (\$300 million annually for ten years), the promise of new buildings, a state research institute dedicated to the field and a constitutional guarantee of the right to do the work all sailed through in a referendum last week (see page 135).

The passage of Proposition 71, as the measure is called, reflects the faith of the public in science's potential to make life better. The infrastructure it creates will make California one of the most suitable places in the world for pushing the frontiers of human embryonic stem-cell research. We have signalled a need for caution (see *Nature* 431, 723; 2004), because Proposition 71 is an unusual experiment in science funding. Nevertheless, many leading researchers have staked their reputations on its success and deserve credit for their hard work to pass the measure.

There is still a chance that President George Bush and his allies in Congress who oppose the research could undermine Proposition 71 with a federal ban on essential techniques such as 'therapeutic cloning'.

But such a bill has failed twice in the Senate already, and the chances that it would pass are less now than some prominent conservatives have lent their support to embryonic stem-cell research.

Researchers outside California will be right to worry that Proposition 71 could weaken embryonic stem-cell research elsewhere. Strong privately funded US research centres exist outside California — at the University of Wisconsin and Harvard, for instance — but young researchers especially are likely to feel the pull westwards, and even senior people may find it hard to pass up the lure of new cash and more lab space.

Current limitations on federal funding for the research mean that there are relatively few groups already working with human embryonic stem-cell lines in California. The administrators of the institute, who are to be appointed within 40 days, and the grant review board they will nominate, must avoid merely enhancing existing programmes and recognize the potential of newcomers to stimulate innovation. At the same time, Californian stem-cell research should strive where possible to grow from within. ■