

"About 70% of women holding degrees in science, engineering or technology do not currently work in these fields." Asha Gopinathan, page 165

dioxide will be much greater.

Either way, projections of business-as-usual decarbonization from any country that are at rates three times higher than recent historical averages should be greeted with appropriate scepticism.

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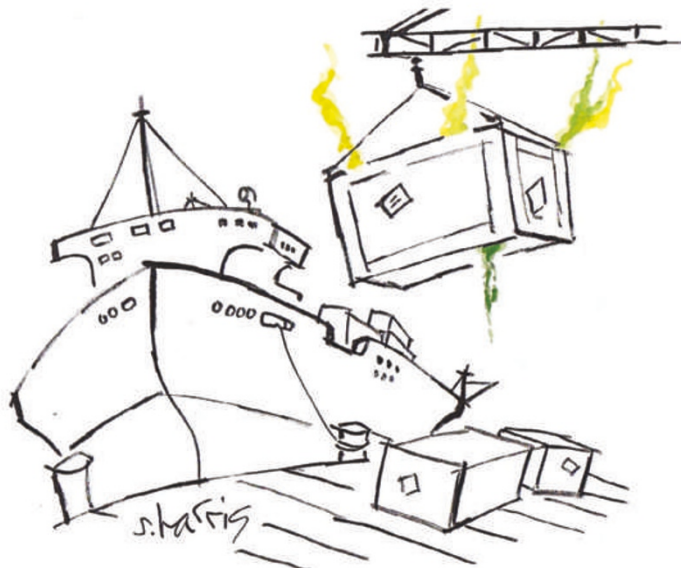
No special cases in efforts to stop immigration fraud

SIR — As a scientist working in a foreign laboratory, I can understand Colin Stoneking's frustration at the UK visa system for students (*Nature* **461**, 1053; 2009). However, there is a reason for the unwieldy processes he complains about.

They have been developed to combat the problem of colleges advertising questionable courses to overseas students. In some cases, these are merely fronts to allow economic migrants to circumvent UK border controls, or to defraud overseas students of their tuition fees. A report by the UK Parliament's Home Affairs Committee found that of roughly 4,000 establishments catering to overseas students, 2,200 had not been licensed to sponsor students under the new immigration points system (see go.nature.com/9LXmvd). The implication was that some of them may be, to quote immigration minister Phil Woolas, "doggy".

The progress of science has always been, and will continue to be, aided by the free exchange of ideas and people between nations. But in the present economic and political climate, we should not expect to be treated as a special case.

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Emissions affected by trade among developing countries

SIR — As the climate-change conference in Copenhagen approaches, attention is focused on the dialogue between developed and developing countries (see www.nature.com/roadtocopenhagen). But the impact of the growing links between developing countries should not be overlooked.

China is investing heavily in African countries, focusing mainly on improving their infrastructure, as shown by the *China Statistical Yearbook 2009* (National Bureau of Statistics of China, 2009). From 1991–2007, imports to China from Africa — chiefly raw materials and emission-intensive products — grew by a factor of 45, compared with just a sixfold increase in imports from the European Union.

Half of China's recent increase in carbon emissions has been driven by its production of goods for export, 60% of which went to wealthy Organisation for Economic Cooperation and Development (OECD) states (D. Guan *et al. Geophys. Res. Lett.* **36**, L04709; 2009). However, China's imports from Africa are responsible for rapidly increasing African carbon emissions from less than 400,000 tonnes to more

than 40 million tonnes between 1991 and 2008 (*China Statistical Yearbook 2009* and G. P. Peters *et al. Environ. Sci. Technol.* **42**, 5; 2008). These already account for 5% of Africa's total emissions.

Addressing global greenhouse-gas emissions requires action from developed countries, but also cooperation by developing countries. The more prosperous developing nations have a critical role: by linking resource providers and consumers they can funnel the spillovers of low-carbon technologies to the less developed. Success depends on large-scale financial and technological flow, initiated by OECD countries, with an effective mechanism for sustaining a strong increase in resources and in technology.

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Phosphorus decline could be good for water supplies

SIR — There is an upside to the potential future phosphorus shortage highlighted in your News Feature 'The disappearing nutrient' (*Nature* **461**, 716–718; 2009). Long before a global

phosphorus crisis occurs, declining supplies may present a windfall for water quality and sustainable agriculture.

As you point out, declining phosphorus supplies will encourage efficient recycling of phosphorus-rich livestock manure. The full potential of livestock manure fertilizers is not being achieved, owing to unfavourable economics and nutrient ratios that are incongruent with crop needs. The phosphorus-to-nitrogen ratio of livestock manure (roughly 1:3) greatly exceeds the phosphorus-to-nitrogen ratio required by common cereal crops such as maize and rice (roughly 1:6). And on multi-operation farms, manure is free.

As a result, manure fertilizer applications often exceed crop phosphorus requirements to meet crop nitrogen demands. The excess phosphorus can be transported to surface waters, fuelling eutrophication of freshwater lakes and low-salinity estuaries such as Lake Victoria and the Stockholm archipelago.

Declining phosphorus supplies coupled with increasing phosphorus demand will encourage sustainable agricultural practices that include more effective manure-fertilizer management. For example, livestock manure can be supplemented with synthetic nitrogen fertilizer to narrow the gap between manure and crop nutrient ratios. Better matching of available-nutrient supply with crop-nutrient demand promises to extend global phosphorus supplies and improve water quality throughout the world.

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