

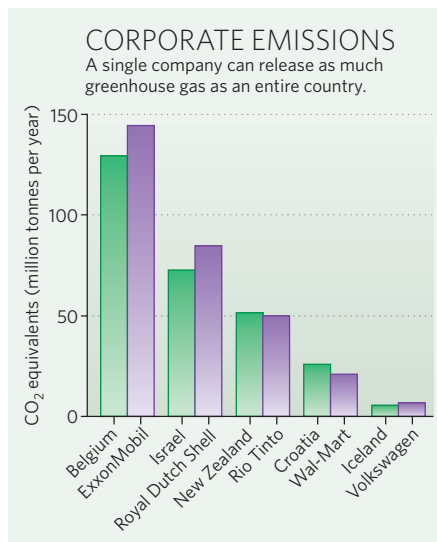
Climate class for business schools

Lessons on the risks and opportunities of climate change should be directed at future executives, given that many companies rival nations in greenhouse-gas emissions, says **Genevieve Patenaude**.

Businesses play a huge part in climate change. Direct greenhouse-gas emissions declared by 409 of 500 of the world's biggest companies in 2009 added up to 3.6 billion tonnes of carbon-dioxide equivalents¹ — about the same as annual emissions from the European Union². Direct and indirect emissions from individual companies often match those of small countries: the mining group Rio Tinto¹ rivals the emissions of New Zealand², for example, and Wal-Mart roughly matches those of Croatia (see 'Corporate emissions'). Delivering information about the opportunities and risks associated with climate change — as well as ideas for solutions — directly into the hands of future company leaders would do much to affect future emissions levels worldwide.

So far, the climate-science community's attempts at engaging with the wider world have yielded mixed results, to say the least. The distortion of the scientific consensus about climate change in the mass media, for example, has been widely documented³. In addition, although the media can be good at raising awareness, it is not as effective at spurring behavioural change. Work from social science (including the 'diffusion of innovations theory'⁴ and 'social contagion models') shows that a more effective way of transmitting new ideas is through discussions with near peers — a broad circle of colleagues. People in the public-health sector are widely aware of this; climate scientists are not. They need to realize that business scholars are an ideal audience. Business scholars have a social status and educational level similar to climate researchers, have a good understanding of abstract concepts such as uncertainty, and are well placed to tap into existing business expertise and to transmit knowledge to future corporate leaders or become leaders themselves. In 2008, 39% of chief executives from Standard & Poor's 500 companies (a frequently used index of leading US stocks) held an MBA⁵.

Today, there is a dearth of climate-change coverage within business scholarship. One study showed that of about 31,000 articles published in the top 30 peer-reviewed business and management journals between 1970 and 2006, only 9 mentioned 'climate change' or 'global warming' in the title, abstract or key words⁶, and one of these referred to the climate-control system in cars rather than the planet's climate. Of the world's top ten MBA programmes, as ranked by *The Economist* in 2009 (ref. 7), the Tuck



School of Business at Dartmouth, in Hanover, New Hampshire, is the only one to list a course with 'climate change' in the title on its website. Thousands of courses that focus on social and environmental stewardship, offered by MBA programmes around the world, are listed in the *Beyond Grey Pinstripes* survey⁸ from the Aspen Institute, which is headquartered in Washington DC and fosters leadership based on social values. Even among these, only 14 have 'climate change', 'global warming' or 'carbon' in their titles, and these are mainly electives that reach only a small fraction of students.

Building bridges

Addressing this shortfall will require both individual determination and institutional leadership. Climate researchers should extend their outreach activities to business schools by offering to contribute to seminars and courses, to co-supervise graduate students, and to develop jointly taught degrees, such as the MSc in Carbon Management at The University of Edinburgh, UK, and the MBA in Strategic Carbon Management at Norwich Business School, University of East Anglia, UK. Such efforts need to be helped along. At present, researchers are not rewarded meaningfully for building bridges with colleagues outside their discipline. This must change.

There are a few hubs where research, teaching and real-world expertise come together, including the Edinburgh Centre on Climate Change, which was launched in April. The Center for

Business and the Environment at Yale, in New Haven, Connecticut, is a longer-running effort aimed at advancing business solutions to global environmental problems. The Chevening Fellowship on Finance and Investment in a Low Carbon Economy, of which I am co-director, is another effort seeking to increase communication. Funding permitting, this programme awards a small number of professionals each year with a 12-week fellowship to undertake an intensive course and promote the sharing of knowledge between bankers, investors, government officials and climate researchers. The programme has had fellows from around the world, including such influential people as the assistant vice-president of the alternative energy and climate change group at HSBC Bank, and a climate trade and policy analyst from the World Bank. More such hubs and programmes are needed.

Many businesses, including Nokia, Siemens and Boeing, are recognizing the opportunities associated with climate change. Reinsurance companies, which insure insurers, were notable forerunners. For example, Munich Re established a unit of geoscientists in 1973 to assess the consequences of climate change on the insurance industry; that group now has some 40 scientific experts. Many more companies are today seeking solutions and advice, as is clear from the numerous consultancies that have sprung up to help companies 'go green'. Climate scientists can contribute by directing outreach efforts at future chief executives. Simple steps in this direction have the potential to make a big difference. ■

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See Editorial, page 7, and further reading at go.nature.com/X2QSp7.