It will take more than solar cookers to provide energy to the developing world.

CLIMATE CHANGE

Our emissions obsession

Daniel Greenberg scrutinizes Roger Pielke Jr's argument for a greater emphasis on adapting to climate change.

Roger Pielke Jr is a righteous scold at the intersection of politics and climate-change science. Prominent researchers and the organizations concerned with climate change are the object of his ire in *The Climate Fix*, in which he argues that they have presented a narrow scientific message to rouse politicians and the public to confront the dangers of global warming.

In pursuit of public support and government action, Pielke charges, mainstream researchers in the climate-change community have fudged the science, compromised the peer-review process and encouraged governments to pursue dubious remedies, while neglecting possibilities for averting climate-caused disasters. Unrealistic scenarios for reducing carbon emissions have been pushed by the Intergovernmental Panel on Climate Change (IPCC), he argues, and the leaked e-mails from the notorious 'Climategate' episode have emboldened sceptics and diminished public confidence in scientific integrity.

Pielke merits admiration for his staunch defence of scientific accuracy and integrity.

But his well-argued book ignores political reality. Neither politicians nor the public respond to nuanced, cautiously worded messages from the arcane world of science. Despite alarms being sounded about climate change on Capitol Hill as early as the mid-1970s, the response remains half-hearted and tangled in controversy.

The Climate Fix: What Scientists and Politicians Won't Tell You About Global Warming

ROGER PIELKE JR.
Basic Books: 2010.
288 pp. \$26, £18.99

combined scientific and policy studies with service as a staff member for the US Congress en route to his current academic post as professor of environmental studies at the University

of Colorado, Boulder. All this has made him wary of the misuse of scientific data in pursuit of social and political goals, the phenomenon he chastised in his first book, *The Honest Broker* (Cambridge University Press, 2007).

In *The Climate Fix*, Pielke argues that the importance of carbon dioxide has been over-hyped, noting that many other gases contribute to the greenhouse effect, including six cited in the Kyoto Protocol. The focus on CO₂, he explains, proceeds from the "hyper-politicized" world of climate politics, in which "nuanced but arguably more accurate scientific perspectives are difficult to advance". Fright sells, he points out, citing the late Stephen Schneider, the environmental scientist and political adviser who once wrote that, to rouse public support, "we have to offer up scary scenarios, make simplified dramatic statements, and make little mention of any doubts we might have". Schneider later stepped back from that piquant assertion, yet the approach remains widely used.

Although Pielke accepts that the evidence for human influence on the climate system is robust, he stresses that the goal of cutting global carbon emissions is incompatible with economic growth for the world's poorest 1.5 billion people. They desperately need energy, which inevitably will incur greater greenhouse-gas emissions, despite dreams of clean energy coming to the rescue. Meanwhile, he warns, our focus on CO₂ is diverting attention from adaptation — taking steps to avoid or alleviate the adverse impacts of climate change.

The obsession with controlling CO₂ is damaging, he contends, because it collides with an "iron law of climate policy". This holds that the public and policy-makers are unwilling to shoulder any great burden in costs or inconvenience to reach emissions-reduction goals. Confirmation of this dour conclusion can be seen in the failure of the 2009 Copenhagen climate-change conference to agree on international emissions limits, and the US Senate's refusal to enact even a stripped-down climate bill. "To think that politicians are going to willingly impose discomfort or pain on their constituents is fanciful at best," Pielke warns.

Existing emissions-reduction technologies are not up to the task of curbing climate change, Pielke reminds us, and much more research will be needed to develop them. "Throwing everything we can think of... at the problem is not nearly enough," he declares. The vaunted remedial prowess of cap-and-trade schemes is a delusion: "Putting a price on carbon causes economic pain and discomfort to energy consumers." And geoengineering is a distant hope, fraught with uncertainties.

Pielke is not an apostle of inaction but a pragmatist who repeatedly and deservedly portrays his diagnoses and remedies as common sense. He largely fails to recognize,

however, that common sense is frequently unwelcome in climate politics. Measures for countering the effects of climate should be implemented, he says, with emphasis on a massive increase in research and development (R&D) to spur innovation aimed at lowering greenhouse-gas emissions and expanding energy supply. Modest taxes on coal, perhaps US\$5 a tonne, he optimistically contends, could finance an R&D boom with little risk of public or business resistance. Anti-tax hysteria, a mainstay of contemporary US politics, suggests otherwise.

Even with these measures, high priority should be given to adaptation to extreme weather events, Pielke suggests. Greater attention should be focused on land-use policies, risk assessment, weather forecasts and warnings, insurance and structural engineering. Citing the difference in death tolls after the recent earthquakes in Haiti and Chile, he observes that “where, how, and what we build are the driving factors underlying trends in losses”.

Pielke illustrates with a personal anecdote how science in the public arena can be filtered and shaped for political convenience. Invited to take part in a climate-change briefing for US senators and the treasury secretary, he relates being counselled by several colleagues to downplay his conclusion that some of the worst impacts of climate change were closely related to land-use patterns and other non-climate factors. The inference, he feels, was clear: don't divert attention from the menace of CO₂.

As many researchers would, Pielke gagged on this invitation to dissemble, regarding it as a betrayal of the ethos of scientific enquiry. However, this is naive. When summoned to advise Congress, politically sentient scientists do not innocently assume that the legislators seek enlightenment for wise policy-making. Instead they recognize that legislators seek support for their preconceived positions, which in turn reflect the preferences of constituents and the money-laden lobbies that help finance election campaigns. Contrary messages can be delivered from the congressional committee witness chair, but it is best to slip them in as addenda. Otherwise, scientists can go overboard with the alarmist, dumbed-down messages that Pielke deplors.

The Climate Fix illustrates the dilemma confronting scientists who seek to influence politics. Telling it like it is does not thrive on Capitol Hill. But shaping the message to suit the politics often involves a betrayal of scientific truth and a distortion of public and political understanding. ■

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Books in brief

Life in the World's Oceans: Diversity, Distribution, and Abundance
Edited by Alasdair McIntyre WILEY-BLACKWELL 384 pp. £120 (2010)

This collection of review papers synthesizes the findings of the Census of Marine Life, a decade-long international programme to document species within the seas. The ambitious project involved thousands of scientists and led to the discovery of novel creatures such as the hairy yeti crab. The volume addresses the biodiversity of oceans past, present and future, including microorganisms and zooplankton. Regions from the fishing grounds of the Gulf of Maine to mid-ocean ridges, seamounts and polar waters are examined, and the Census database is explained.

How to Catch a Robot Rat: When Biology Inspires Innovation

Agnès Guillot & Jean-Arcady Meyer MIT PRESS 232 pp. £29.95 (2010)

Nature inspires much technology: from Velcro, which mimics the sticky burrs of burdock seeds, to self-sharpening blades modelled on rats' teeth. In a wide overview of biology-influenced design, Guillot and Meyer describe how natural structures, materials and behaviours are being adapted for nanotechnology and electronics. From an aerial drone that flies like an albatross to a robot salamander, they examine machines with animal traits and look ahead to hybrid systems, such as neuroprostheses that translate the thoughts of people with quadriplegia into mechanical motion.

Designer Genes: A New Era in the Evolution of Man

Steven Potter RANDOM HOUSE 208 pp. \$25 (2010).

How will humans evolve when we can select the genes of our offspring? In his examination of the science and ethics of genetic modification, stem cells, DNA sequencing and embryo manipulation, biologist Steven Potter suggests that we will diversify as a species. Future parents will choose their childrens' genes, defining intelligence, appearance, athletic ability and health. The choices are not simple — the mutant haemoglobin gene that causes sickle-cell trait, for example, confers some protection against malaria — but the ramifications for future generations will be huge.

Much Ado About (Practically) Nothing: A History of the Noble Gases

David E. Fisher OXFORD UNIV. PRESS 288 pp. \$24.95, £15.99 (2010).

Noble gases are so called because, like nobility, they do no work. Helium, neon, argon, krypton, xenon and radon are colourless, odourless and unreactive. But they are crucial in unravelling the history of the Universe, the Sun's power and our planet's origin. In the first popular book to focus solely on these elements, chemist David Fisher interweaves his own research with historical accounts, from the nineteenth-century discovery of helium to determinations of the age of the Earth and Solar System from noble-gas isotopes.

The World in 2050: Four Forces Shaping Civilization's Northern Future

Laurence C. Smith DUTTON ADULT 336 pp. \$26.95 (2010)

In 40 years' time, many cities will look a lot like those in Nevada, argues geographer Laurence Smith. He identifies four trends that together will push civilization north into ecologically fragile lands in regions such as Canada and Siberia: rising population, competition for natural resources, the interdependent global economy and a warming climate. His model-based predictions offer few surprises, but he reminds us that we have the choice to shape our future.