

# Correspondence

## More ways to govern geoengineering

You call for stronger governance of climate-mitigation strategies that reflect the Sun's energy away from Earth (*Nature* **485**, 415; 2012). We see the scientists' cancellation of a controversial field trial for the UK Stratospheric Particle Injection for Climate Engineering (SPICE) project (*Nature* **485**, 429; 2012) as responsible self-governance in the absence of the governmental oversight that is needed for solar geoengineering research.

The decision to cancel the SPICE balloon experiment can advance norms for research priorities and conditions of research. The underlying governance principles have been articulated by the Bipartisan Policy Center's Task Force on Climate Remediation Research and the Solar Radiation Management Governance Initiative (SRMGI), sponsored by the UK Royal Society, the Environmental Defense Fund and the Academy of Sciences for the Developing World (TWAS).

On the basis of the SPICE example, scientists can now decide — through projects, workshops and professional societies — that there should be no immediate research into deployment methods for geoengineering technologies, and that they will not engage in research that has intellectual-property implications. They can also learn from SPICE about public engagement and ways to make research transparent.

Eventually, legitimate governance must grow out of consultations with diverse constituencies (such as those sponsored by the SRMGI) and needs to come from governmental institutions that are fully accountable to society.

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## Use fast reactors to burn plutonium

Frank von Hippel and colleagues review some disposal options for radioactive plutonium waste (*Nature* **485**, 167–168; 2012). Another option is the profitable consumption of plutonium from thermal nuclear plants in a fast-spectrum breeder reactor with fuel recycling.

A prototype Integral Fast Reactor was operated at the Argonne West National Laboratory in Idaho for 30 years until 1994. 'Burning' spent nuclear fuel produces a fraction of the waste of current reactors, and it has low radiotoxicity (W.H. Hannum (ed.) *Prog. Nucl. Energy* **31**, 1–217; 1997).

The reactor's metal fuel (mainly uranium, plutonium and zirconium) and liquid-sodium coolant provide passive safety. An unpressurized pool vessel disperses decay heat by natural convection, even when cooling pumps are inoperable and the heat sink is lost.

The fuel-recycling system generates vast amounts of clean electricity, extending uranium supplies 150-fold — unlike today's once-through-and-throw-away cycle. Its proliferation risk is low because the products are unsuitable for use in fissile weapons.

The company GE Hitachi has designed an integral fast reactor, the 311-megawatt electric Power Reactor Innovative Small Module (PRISM), that is intended for commercial use.

A prototype plant is already being considered in the United States, and the company has recommended these plants to the UK government for plutonium disposal (see [go.nature.com/dwiqvq](http://go.nature.com/dwiqvq)).

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## Spread the risk of antibiotic research

There are commercial as well as scientific barriers to seeking out new antibiotics (*Nature* **485**, 439–440; 2012). These discourage the pharmaceutical industry from investing in further research and clinical development, particularly as current antibiotics are cheap, usually work satisfactorily and generate profits for their manufacturers and distributors.

Producing new antibiotics is costly, particularly at the clinical-trial stage because of concerns over safety and resistance. Intellectual property is an issue in developing new drugs based on established antibiotic classes.

We could wait until the clinical situation becomes severe enough for the private sector to step in with substantial investment, but that would be risky. A mix of private and public investment might work, particularly if the public sector were to take on some of the commercial risk in clinical trials (see *Nature* **472**, 32; 2011). A pragmatic strategy would be to define the clinical profiles of desirable new antibiotics and then to devise commercially viable routes for delivering them to the clinic.  
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## Monitor sea pollution to stop strandings

Hundreds of small cetaceans were stranded along Peru's northern coast earlier this year. While the event is under investigation, Peru's government should be setting up programmes to monitor marine

pollution and taking precautions to protect the coastal ecosystem.

The dead animals comprised mainly long-beaked common dolphins (*Delphinus capensis*) and Burmeister's porpoises (*Phocoena spinipinnis*). They had internal trauma and lesions that could have been caused by underwater noise effects (see [go.nature.com/tbfi7n](http://go.nature.com/tbfi7n)). Although military sonar is known to induce cetacean strandings, no naval exercises had been reported in the area. Neither had there been any seismic testing associated with gas and oil exploration, which can also be a contributor.

Persistent pollutants that accumulate in cetaceans could be a factor. These weaken cetacean immune systems, making them more susceptible to infection (P. Ross *Hum. Ecol. Risk Assess.* **8**, 277–292; 2002), exacerbated by food shortages during El Niño episodes and harmful algal blooms.

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## China must provide education on HIV

Cultural factors spanning 5,000 years force homosexual men in China to endure huge psychological and social pressures (H. Shang *et al. Nature* **485**, 576–577; 2012). Government authorities need to face up to reality and promote HIV research and public education about transmission of the virus to curb its spread.

Alongside the promotion campaigns of World AIDS Day, China should provide more ways to access up-to-date information on prevention and treatment of HIV infection. Infected people also need proper medical assistance, legal safeguards and humane care.

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