

Indian voices

Good policy decisions on science and the environment require sound contributions from official bodies, pressure groups, the media — and scientists themselves.

As India emerges as a global power, one of its greatest assets is its democracy. An important component of democracy, in India as elsewhere, is the thorough public discussion of scientific and environmental issues, as a requisite for the laws, regulations and agencies that will win broad public support and serve national needs.

One of the few points on which most students of politics agree is that the emergence of powerful players who are not aligned to business or to government — commonly known as non-governmental organizations — has broadened and strengthened these debates over the past 20 years or so. Nowhere is this truer than in India.

It is inevitable that some of these voices will be louder than others and in India, no one speaks louder than the Centre for Science and Environment (CSE). The centre, based in New Delhi and founded in 1980 by the journalist Anil Agarwal, has established itself as a significant voice over a wide range of issues (see page 706). Indeed, in many cases, it is the first place Indian media go for a non-official viewpoint on environmental matters.

Stir it up

In some areas, the CSE's work has been laudable and not particularly contentious. It has contributed, for example, to overdue efforts to confront air pollution in urban areas. Sometimes, the centre's role has been more controversial. It played a prominent role in creating a major international fracas over the pesticide levels in Coke and Pepsi in India, for example, chiefly on the basis of comparing the purity of these products with their equivalents in Europe. But some have taken issue with the methodology used, and since these products are bottled in India from local water supplies, others argue that the comparison was unfair.

So although the CSE is an admirably energetic and effective outfit, its perspectives are not universally shared. Some scientists privately complain that the group's influence is out of all proportion to the thoroughness and reliability of its work. There is obviously something in this last contention, as the outfit's public profile is so disproportionate to its tiny scientific staff.

Yet Indian scientists who resent either the CSE's positions or its influence do themselves no favours by carping about either the activities of the Delhi think-tank, or about the media outlets that lap up its output. They should instead look at themselves, and ask if their public influence is commensurate with their own expertise, and with the ever-expanding scope and scale of scientific and environmental policy debates in India.

According to CSE director Sunita Narain, and many journalists, India's scientists too often remain old-fashionedly aloof from the discussions that accompany policymaking. Seeking status and advancement chiefly among their peers, and suspicious of the media's tendency to simplify and exaggerate, scientists who could assist the messy democratic process are inclined, instead, to look down on it. This approach by scientists to science policy is, of course, a global phenomenon. But it is particularly pervasive in India — and particularly inappropriate, given India's vast and pressing need for more public, more thorough, more detailed policy preparation, in areas such as environmental regulation.

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Around the world, the scientific community speaks with many voices. In the United States, for example, it has official societies (such as the American Chemical Society), quasi-official leadership (the National Academy of Sciences), unofficial, multi-issue interest groups with large memberships (the Union of Concerned Scientists), voluble individuals (E. O. Wilson), as well as agenda-driven outfits broadly comparable to the CSE (the Center for Science in the Public Interest).

All of them jostle for attention, and all make their voices heard — sometimes even when it matters. In a true democracy, the workings of science and environmental policy more closely resemble an Indian bazaar than a hushed committee room. The sooner Indian scientists join in the fray, the better. ■

Food for thought

Science needs to be better applied to the US food-safety system.

Food-safety oversight in the United States has been in disarray for many years. Responsibility for it is split, on historical grounds, between 15 different agencies in the federal government, operating under at least 30 different statutes. It is past time for Congress to legislate to modernize the entire system.

Late last month, the Government Accountability Office (GAO) added food safety to its list of 'high-risk' federal policies and programmes most in need of reform. The non-partisan GAO is recommending that Congress ask the National Academies to examine new ways of organizing the federal food-safety system. As part of that project, the academies would certainly examine the state of federally funded food-safety research.

“The current fragmented federal system has caused inconsistent oversight, ineffective coordination, and inefficient use of resources,” the GAO said in a statement accompanying its updated list, adding

that Congress should “consider a fundamental re-examination of the system”.

The alarm sounded by the GAO is likely to resonate with the public, after a three-month stretch last autumn in which outbreaks of food-borne disease killed three people and made more than 500 others sick. The culprits ranged from spinach contaminated with the bacterium *Escherichia coli*, to salmonella-bearing tomatoes, to lettuce that probably infected scores of people with *E. coli* after they ate at Taco Bell and Taco John’s restaurants.

These well-publicized incidents stand out against a far larger, latent problem. According to the Centers for Disease Control and Prevention in Atlanta, 76 million Americans contract food-borne illnesses each year, and 5,000 of them die.

A science-backed regulatory system is needed to address an issue on this scale. What has evolved instead over the past century is an irrational and expensive arrangement, whereby officials examine every carcass at every slaughterhouse in the United States every day, but a major food processing plant may escape inspection for a decade.

At the same time, the government research programmes supporting food-safety regulation are neither comprehensive nor coordinated. Research is scattered between often-obscure subdivisions of several departments, from the Environmental Protection Agency to the US Department of Agriculture (USDA). The result is a patchwork of research that, according to a 1998 Institute of Medicine report that reads uncannily like the GAO’s latest assessment, “raises serious concerns about duplication of effort and about the linkage of science to attempt to solve food safety problems of the highest priority”.

For historical reasons, the USDA is responsible for the safety of meat, poultry and processed egg products, whereas most of the rest — 80% of the food supply — rests with the Food and Drug Administration (FDA).

But the FDA’s Center for Food Safety and Applied Nutrition in Col-

lege Park, Maryland, which bears the primary responsibility for the research that supports food safety at the agency, has seen its budget and staff cut over the past decade. This year, its operating budget will fall to \$25 million — a little over half of what it was in 2003. The centre has far less funding for its own science, and next to none for extramural research in areas it needs to learn more about, from microbial ecology to detection methodologies for pathogens in food.

The recent outbreaks caused by bacteria in fresh fruit and vegetables illustrate the paucity of research.

Nine years ago, after a string of comparable outbreaks, the FDA issued a set of general recommendations on managing manure, irrigation water and farmworker hygiene to minimize contamination of fruit and vegetables. But it has not done the research to get the data needed to convert these general guidelines into firm, quantified regulations to be implemented on farms, and during food processing and transportation.

In the meantime, Democrats in Congress have repeatedly introduced legislation to establish a single US food-safety agency. It is tempting to believe that this approach would produce the necessary coherence in food safety. But past experience of amalgamating parts of the US federal government, from the Department of Energy to the Department of Homeland Security, does not give cause for optimism that such a consolidation would be either efficient or effective.

The best approach may instead involve three more modest steps: an inter-agency panel to properly coordinate food safety; a comprehensive revision of the antiquated and fragmented legislation now governing it, to better reflect today’s risks and today’s science; and a properly supported, coordinated research programme to inform food safety policy and practice. ■

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Methods in full

From now on, *Nature* authors will be able to include more experimental details in their papers.

When in 1960 Theodor Maiman reported the creation of the laser, he did so in about 300 words. Most of these were about the principles. The experiment was described in two sentences (see *Nature* **187**, 493–494; 1960).

Until now, *Nature*’s style of research papers — although more generous in the space allowed than it once was — has been grounded in this telegraphic tradition, allowing comparatively little space for experimental detail. Consequently, with the advent of the Internet, the supplementary material published online has grown voluminous, and nearly ubiquitous — appended to every Article and Letter in this week’s issue, for example. And some of it isn’t supplementary at all — it is essential for anyone trying to replicate the work.

We have now taken steps to do better justice to what authors have to say, by letting them present full experimental methods as an integral part of their paper. It is clear that more and more people read papers

only in their online versions. So we are expanding the online versions of our Articles and Letters, while condensing some of the technical detail in the printed version.

To be specific: in those papers requiring a separate methods section, the online version of the paper will allow authors to include enough detail to satisfy their peers. This is not a ‘supplementary’ methods file, but a component of the paper, with all the virtues of full-text linking and functionality. It will appear in all online versions, including the authors’ versions of papers that can be loaded into PubMed Central and other open-access repositories six months after publication.

But *Nature* also rejoices in being a print publication. We have no wish to leave print readers lacking sufficient understanding of what was done to appreciate the authors’ achievements. Accordingly, the print version will include a 300-word summary of the methods. This will also appear in the online version.

Norman Lockyer, the founding editor of *Nature*, might well deplore the loss of brevity in today’s scientific reports. But our authors should bear in mind that readers still value succinctness — and that *Nature*’s editors and copy-editors will continue to insist on it. ■