



LETTERS

edited by Jennifer Sills

China's Environmental Civilian Activism

IN THE POLICY FORUM "CHINA'S ROAD TO SUSTAINABILITY" (2 APRIL, P. 50), J. LIU OVERLOOKS AN important cultural force. China's worsening environmental conditions have catalyzed a spirit of environmental civilian activism.

For example, in 2003, a consortium proposed erecting 13 dams on the Nujiang River. China's environmental nongovernmental organizations and scholars launched a protest campaign through the Internet and newspapers. The critics argued that as reservoirs behind the dams filled up, flooding and landslides would imperil habitats. In response, Premier Wen Jiabao suspended the dam project pending an environmental review in 2004 (1).

The landmark of environmental civilian activism occurred in Xiamen City in 2007. The local government supported construction of a \$1.4-billion paraxylene plant near the center of the city. Information about the environmental impact of this project was not made available to the local residents. The people of Xiamen City were outraged when—through cell phone messages and the Internet—they learned of the plant's environmental risks. A phone text message was circulated among Xiamen citizens in late May calling for a "collective walk" (demonstration). On 1 June 2007, more than 1000 citizens gathered in front of the municipal building to protest. The demonstration forced the local government to cancel the largest industrial project in the history of Xiamen (2).



Protests. Chinese citizens protest against the planned Guangzhou trash incinerator in 2009. Their banners read, "Oppose the trash incinerator."

by the authorities. (In earlier years, standard practice was to obey Beijing-based experts in environmental protection.) In addition, the self-organized middle class forced the local government to open discussion by Internet. By seizing the opportunity for an open discussion, the newly empowered locals took to the streets to protect their environmental rights (4).

Recent years have witnessed an impressive growth in environmental protests in China. The number of petitions and mass public protests related to environmental issues has increased by 30% per year in the past few years, although the number of petitions lodged with the Chinese government has dropped (5).

The current environmental civilian activism movements have several common characteristics: (i) They are confined to one specific geographical space. (ii) Their goal is protecting the environment, rather than political rights or commercial interests. (iii) They focus on a specific pollutant, rather than general environmental degradation. The local nature of the movement enables the organization of a large number of citizens with little effort in a very short time. Given more open social and political conditions and the increasing size of the middle class in

China, environmental civilian activism will certainly be a key driver in China's transition to sustainability.

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6. The views expressed in this paper are the author's own and not necessarily those of QIBEBT-CAS, GIG-CAS.

I thank B. Jong for comments and linguistic support.

Effects of China's Economic Growth

IN A RECENT POLICY FORUM, J. LIU REVIEWED "China's road to sustainability" (2 April, p. 50). Liu focused on population growth and an increase in the number of households, but he failed to adequately address the most important socioeconomic driver behind environmental degradation in China: rapid economic growth that is not offset by efficiency improvements (1, 2).

In China, exports and capital investments contribute significantly more to gross domestic product (GDP) than household and government consumption combined (3), and this also holds true for emissions (1, 2). From 2002 to 2005, the production of exports was responsible for 50% of the growth in carbon dioxide emissions and capital formation was responsible for 35%;



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household and government consumption contributed 15% (4, 5).

Liu discusses population control and household size, but a more dominant issue in terms of population dynamics is the migration from rural to urban areas (6). From 1990 to 2007, the urban population increased by 292 million, whereas the rural population decreased by 116 million (3). Urban dwellers, even if migrants from rural areas, have a higher income (3) and hence higher energy use and environmental impacts (2, 6).

A key challenge for China is to continue strong economic growth while minimizing environmental impacts. Reductions in emis-

sions per unit of GDP are unlikely to reduce total emissions if economic growth continues (1). China will need to combine aggressive domestic policies with international support to reverse the current growth in coal-dominated energy use and emissions.

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Risks of Immune System Treatments

WE WISH TO ADD SEVERAL POINTS TO THE News Focus story “Replacing an immune system gone haywire” (J. Couzin-Frankel, 12 February, p. 772).

First, a great deal of research had already been done before the 1996 Basel meeting mentioned in the story. Stem cell transplants had been studied in animal models of autoimmune disease (1–5). Patient stem cell transplant protocols had been written, and a few human patients had already been treated specifically for autoimmune disease (6–10).

Second, we would like to stress the varying levels of risk in the treatment strategies described in the story. The immune system originates from hematopoietic stem cells (HSCs). Before receiving a transplant, patients with autoimmune diseases receive “conditioning” chemotherapy or radiation that destroys lymphocytes, inducing an immediate immune cease-fire. Subsequently, HSCs are infused to regenerate a new self-tolerant immune system. Sullivan and Nash advocate conditioning regimens with high doses of radiation. These extreme regimens cause irreversible bone marrow failure, thus requiring mandatory HSC reinfusion. The rationale for this high-dose strategy is that maximal ablation of the immune system will translate into longer and more durable disease remission. In contrast, we advocate less extreme regimens of chemotherapy, which can halt inflammation without altering the bone marrow’s ability to recover. The News Focus article also comments on the risk of infertility when patients are pretreated with chemotherapy. We emphasize that the risk of infertility is higher for the more extreme regimens.

TECHNICAL COMMENT ABSTRACTS

COMMENT ON “Detection of an Infectious Retrovirus, XMRV, in Blood Cells of Patients with Chronic Fatigue Syndrome”

Cathie Sudlow, Malcolm Macleod, Rustam Al-Shahi Salman, Jon Stone

Lombardi *et al.* (Reports, 23 October 2009, p. 585) reported an association between the human gammaretrovirus XMRV and chronic fatigue syndrome. However, their results may be misleading because of various potential sources of bias and confounding. If real, the association may lack generalizability because of the specific characteristics of the cases studied and could be due to reverse causality.

Full text at www.sciencemag.org/cgi/content/full/328/5980/825-a

COMMENT ON “Detection of an Infectious Retrovirus, XMRV, in Blood Cells of Patients with Chronic Fatigue Syndrome”

Andrew Lloyd, Peter White, Simon Wessely, Michael Sharpe, Dedra Buchwald

Lombardi *et al.* (Reports, 23 October 2009, p. 585) reported a significant association between the human retrovirus XMRV and chronic fatigue syndrome (CFS). However, the cases with CFS and the control subjects in their study are poorly described and unlikely to be representative. Independent replication is a critical first step before accepting the validity of this finding.

Full text at www.sciencemag.org/cgi/content/full/328/5980/825-b

COMMENT ON “Detection of an Infectious Retrovirus, XMRV, in Blood Cells of Patients with Chronic Fatigue Syndrome”

Jos W. M. van der Meer, Mihai G. Netea, Jochem M. D. Galama, Frank J. M. van Kuppeveld

Lombardi *et al.* (Reports, 23 October 2009, p. 585) reported detection of the human gammaretrovirus XMRV in the blood cells of patients with chronic fatigue syndrome (CFS). However, the patient description provided was incomplete. The inclusion of patients from a “CFS outbreak” previously linked with a viral infection, without confirmation in sporadic CFS cases, casts doubt on the role of XMRV in the pathogenesis of CFS.

Full text at www.sciencemag.org/cgi/content/full/328/5980/825-c

RESPONSE TO COMMENTS ON “Detection of an Infectious Retrovirus, XMRV, in Blood Cells of Patients with Chronic Fatigue Syndrome”

Judy A. Mikovits and Francis W. Ruscetti

We reported the detection of the human gammaretrovirus XMRV in 67% of 101 patients with chronic fatigue syndrome (CFS) and in 3.7% of 218 healthy controls, but we did not claim that XMRV causes CFS. Here, we explain why the criticisms of Sudlow *et al.*, Lloyd *et al.*, and van der Meer *et al.* regarding the selection of patients and controls in our study are unwarranted.

Full text at www.sciencemag.org/cgi/content/full/328/5980/825-d

Finally, although the News Focus story comments on problems obtaining insurance approval in the United States, medical funding is a worldwide issue, including in countries with government-funded health services. In addition to patient safety benefits, less toxic regimens also cost any health care system less money, because patients are less likely to suffer complications such as secondary cancers.

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CORRECTIONS AND CLARIFICATIONS

Letters: "Climate change and the integrity of science" by P. H. Gleick *et al.* (7 May, p. 689). Due to an editorial error, the original image was not a photograph but a collage. It was a mistake to have used it. The image (link available at www.sciencemag.org/cgi/content/full/328/5979/689/DC2) has been replaced in the HTML version and in the online PDF by an unaltered photograph from National Geographic (CREDIT: Paul Nicklen/National Geographic/Getty Images) of two polar bears on an ice floe.

News Focus: "Meeting briefs: The ins and outs of HIV" by J. Cohen (5 March, p. 1196). The earliest report of HIV predominantly entering cells through endocytosis appeared in C. D. Pauza, T. M. Price, *J. Cell Biol.* **107**, 959 (1988).

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