► Union, by comparison, pledged 40% cuts from 1990. “I think that the government understands and acknowledges the climate goal and tries to make its target consistent with it, but industrial and economic criteria such as lowering electricity costs are given higher priority,” says Seita Emori, who heads a climate risk-assessment team at Japan’s National Institute for Environmental Studies in Tsukuba. The 2030 emissions target “doesn’t look really sufficient for the climate goal”.

The government sees an especially modest role for wind, projected to contribute only 1.7% of electricity generation by 2030. (Germany, by comparison, already derives around 8–9% of its power from wind.) Iida says there is an “irrational bias” against wind that is deep-rooted in Japan’s energy industry.

Moreover, the way Japan’s energy market

is structured, with a few de facto regional monopolies, is stacked against wind, favouring instead sources that are established, such as nuclear and fossil fuels. “Power companies control both the grid and existing power plants,” says Tomas Kåberger, head of the Tokyo-based Japan Renewable Energy Foundation. Wind would take a share of the market away from the utilities’ power plants, but the same utilities could deny wind-power companies access to the grid, says Ali Izadi-Najafabadi, who heads the Tokyo office of the consulting company Bloomberg New Energy Finance. The utilities must cite “technical grounds” for such a refusal, but “there is no independent grid operator, so it’s hard to judge those technical grounds,” he says.

To switch back on, the Sendai plant had to satisfy increased scrutiny from regulators and

the courts. Following the 2011 meltdowns, the Japanese government overhauled its nuclear safety policy, reviewed its atomic-energy infrastructure and created the independent Nuclear Regulation Authority (NRA). Izadi-Najafabadi says that the NRA showed that it can bite as well as bark when it forced utilities to decommission some of their more troublesome reactors. Still, anti-nuclear advocates complain that reforms have not gone far enough, in particular on evaluating seismic and volcanic risks and preparing evacuation plans, and that the NRA has bowed to political pressure to speed up its reviews.

Nuclear-safety culture has made progress since Fukushima, says Amory Lovins, co-founder of the Rocky Mountain Institute, an energy think tank in Snowmass, Colorado. But, he adds, “there is still a troublesome and pervasive lack of transparency”. ■

DEVELOPMENT

Flagship aid programme up for evaluation

The Millennium Villages Project in Africa begins analysis of first ten years to test impact.

BY JEFF TOLLEFSON

The Millennium Villages Project (MVP) stands out among development efforts in Africa. Since its launch in 2004, it has attracted generous donations and high-wattage supporters — including Hollywood actor Angelina Jolie and United Nations secretary-general Ban Ki-moon — for its work on alleviating poverty in rural Africa. The programme has delivered aid to at least 500,000 people in 10 countries, and has been emulated in others.

But its effectiveness has never been thoroughly tested. With the publication of a research plan in *The Lancet* last month (see go.nature.com/3eidfr), the MVP has now embarked on its first comprehensive evaluation in the hope of addressing long-standing questions about its impact.

Led jointly by the Earth Institute at Columbia University and the non-profit organization Millennium Promise, both in New York, the MVP aims to lift clusters of villages out of poverty through interventions ranging from building health centres, roads and schools to improving agriculture and sanitation. It began in Kenya in 2004, and as of 2013 had an annual budget of about US\$25 million.

“We will, I believe, be able to gain very useful insights about costs, processes, technologies, information systems, local and national

Building water-delivery systems is one measure used by the Millennium Villages Project in Africa.

governance, among other issues,” says Jeffrey Sachs, who runs the Earth Institute and who conceived the programme.

As economists increasingly advocate randomized controlled trials of international aid programmes (see page 150), Sachs has faced criticism for not setting up the MVP as a rigorous experiment. MVP researchers are now trying retroactively to compare villages that received the full intervention with similar ones

that did not, but the research protocol readily acknowledges challenges in collecting data and producing statistically significant results.

“I expect that the authors will conclude that, although we cannot prove that MVP works, we also cannot rule out that it works,” says Annette Brown, who heads the Washington DC office of the International Initiative for Impact Evaluation, a non-profit organization that funds and analyses such evaluations.

GUILLAUME BONNI/CORBIS

BIOTECHNOLOGY

Anti-GM group expands probe into industry ties

Activists seek release of records from 40 researchers at US public universities.

BY KEITH KLOOR

Michelle McGuire, a nutrition scientist at Washington State University in Pullman, was stunned last month when activists who oppose the use of genetically modified (GM) organisms asked to read her e-mail.

US Right to Know of Oakland, California, filed a request under Washington's freedom-of-information law to see her correspondence with, or about, 36 organizations and companies. McGuire is one of 40 US researchers who have now been targeted by the group, which is probing what it sees as collusion between the agricultural biotechnology industry and academics who study science, economics and communication.

That investigation, which began in February, has just started to yield documents. These include roughly 4,600 pages of e-mails and other records from Kevin Folta, a plant scientist at the University of Florida in Gainesville and a well-known advocate of GM organisms. The records, which the university gave to US Right to Know last month, do not suggest scientific misconduct or wrongdoing by Folta. But they do reveal his close ties to the agriculture giant Monsanto, of St Louis, Missouri, and other biotechnology-industry interests.

The documents show that Monsanto reimbursed Folta for trips he took to speak to US students, farmers, politicians and the media. Other industry contacts occasionally sent him suggested responses to common questions about GM organisms.

"Nobody ever told me what to say," says Folta, who considers public outreach to be a key part of his job. "There's nothing I have ever said or done that is not consistent with the science."

He adds that he has never accepted honoraria for outreach work, and that the University of Florida does not require him to disclose travel reimbursements. But the e-mails show that Folta did receive an unrestricted US\$25,000 grant last year from Monsanto, which noted that the money "may be

used at your discretion in support of your research and outreach projects". Folta says that the funds are earmarked for a proposed University of Florida programme on communicating biotechnology.

Monsanto spokeswoman Charla Lord says that the company was "happy to support Dr Folta's proposal for an outreach programme to increase understanding of biotechnology", and that the \$25,000 grant "predominately covered travel expenses". Lord adds that Monsanto considers public-private collaborations to be "essential to the advancement of science".

Such explanations do not satisfy Gary Ruskin, executive director of US Right to Know. "I think it's important for professors who take money from industry to disclose it," he says. "And if they're not disclosing it, that's a problem. And if they say they aren't taking money, and they are, then that's a problem."

Ruskin's group, which was founded in 2014, calls for mandatory labelling of food that contains GM ingredients — even though numerous scientific bodies, including the US National Academy of Sciences, have found no evidence that such food harms human health.

US Right to Know launched its investigation of academic researchers after it noticed that several had fielded questions about crop biotechnology on a website called GMO Answers, which is funded by members of the biotech industry. The group considers the site, which is aimed at consumers and managed by public-relations firm Ketchum of New York, to be a "straight-up marketing tool to spin GMOs in a positive light". It is now seeking the records of public-sector researchers — who are subject to state freedom-of-information laws — to confirm its suspicions.

Ruskin says that the group has received responses to about 10% of its records requests. At least one institution, the University of Nebraska, has refused to provide documents requested by the group.

US Right to Know argues that its requests are reasonable, because the researchers who are under scrutiny are public employees. "Part of democracy is that we get to know what our public employees do," says Ruskin.

McGuire is not sure why the group is seeking her records, because she has not contributed to the GMO Answers website. Some ►

In March, preliminary results from a study commissioned by the UK Department for International Development (DFID) in 2011 found little benefit from an £11.5-million (\$18-million) expansion of the Millennium Villages project in northern Ghana. Sachs asserts that effects are hard to see at the Ghana site because it is in its early stages; his critics see the analysis as further evidence that the Millennium Villages approach may not work as advertised. "The trumpeting of the project as a model is just indescribably disproportionate to the deafening silence about its actual results," says Michael Clemens, a senior fellow at the Center for Global Development, a non-profit think tank in Washington DC.

Clemens has long been an outspoken critic of the MVP and was among researchers who challenged¹ a 2012 study in *The Lancet*² that reported that child mortality had dropped in Millennium Villages three times faster than elsewhere in the host nations. The challenge ultimately led to a retraction of that claim by the paper's lead author. Clemens argues that aid money should be spent either on projects that generate useful knowledge or on things that have been shown to work, noting that malaria bednets, which have a demonstrated benefit and are part of the MVP's suite of interventions, cost \$15–20 per household.

The MVP typically budgets \$120 per capita annually, according to its website, although Sachs says that outside contributions can reduce MVP's investment to half that. At the Ghana site funded by DFID, the total investment by all parties was projected to be \$27.1 million over 5 years for 30,000 people. That is \$181 per person annually, or about \$4,500 per household over the course of the project — less than the \$5,408 per household calculated by a randomized controlled trial in Ghana testing a two-year package of interventions that included food, cash, health services and training³.

The MVP hopes to release its analysis by the end of 2016, and Sachs says that his team will be in a better position to talk about cost-effectiveness and other considerations once the analysis is out.

Dean Karlan, an economist at Yale University in New Haven, Connecticut, says that it is probably too late for the project itself to advance the science of global development in a significant way, but he credits Sachs with raising awareness about global poverty issues. "I do see it as a missed opportunity," Karlan says, "but in the grand scheme of things there are tons of missed opportunities." ■ **SEE EDITORIAL P.135**

1. Bumpa, J. B., Clemens, M. A., Demombynes, G. & Haddadd, L. *Lancet* **379**, 1945 (2012).
2. Pronyk, P. M. *et al. Lancet* **379**, 2179–2188 (2012).
3. Banerjee, A. *et al. Science* <http://dx.doi.org/10.1126/science.1260799> (2015).