

# AFTER JAPAN, WHERE'S THE NEXT NUCLEAR WEAK LINK?

Corruption, poor infrastructure and weak oversight pose dangers for developing countries planning to build atomic power plants.



REUTERS/KIM KYUNG-HOON (

BY NICK CAREY, MARGARITA ANTIDZE  
AND JOHN RUWITCH  
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**I**MAGINE A COUNTRY WHERE corruption is rampant, infrastructure is very poor, or the quality of security is in question. Now what if that country built a nuclear power plant?

It may sound alarming but that is what could happen in many developing countries which are either building nuclear power plants or considering doing so -- a prospect that raises serious questions after Japan's experience handling a nuclear crisis.

A trove of U.S. diplomatic cables obtained by WikiLeaks and provided to Reuters by a third party provide colorful and sometimes

scary commentary on the conditions in developing nations with nuclear power aspirations.

In a cable from the U.S. embassy in Hanoi in February 2007, concerns are raised about storing radioactive waste in Vietnam, which has very ambitious plans to build nuclear power plants. Le Dinh Tien, the vice minister of science and technology, is



**INDIAN SUMMER:** A woman shouts slogans during an anti-nuclear protest in Mumbai April 26, 2011. **REUTERS/VIVEK PRAKASH**

quoted as saying the country's track record of handling such waste was "not so good" and its inventory of radioactive materials "not adequate."

In Azerbaijan, a cable written in November 2008 describes the man who would have the responsibility for regulation of a proposed nuclear program, Kamaladdin Heydarov, as "ubiquitous, with his hands in everything from construction to customs."

"He is rumored to have made his fortune while heading up the State Customs Service, and is now heavily invested in Baku's rampant construction boom," says the cable, which followed a meeting in Baku between Heydarov, the minister of emergency situations, and then U.S. Special Envoy Frank Mermoud.

Even in India, which already has a well developed nuclear industry and plans to build 58 more reactors, eyebrows can be raised. The security at one nuclear facility visited by a U.S. delegation in November 2008 is described in one cable as only "moderate" with security officers performing bag and vehicle checks that weren't thorough, a lack of cameras in key areas, and some parts having very little security at all.



**WITH A LITTLE HELP:** Vietnam's Vice Minister of Science and Technology Le Dinh Tien (L) chats with U.S. Ambassador to Vietnam Michael Michalak after a signing ceremony in Hanoi for a Memorandum of Understanding regarding cooperation in the nuclear energy field which could allow U.S. companies to provide equipment and technology for Vietnam, March 30, 2010. **REUTERS/KHAM**

In response to the disclosures, a Vietnam government official said that the quotes attributed to Tien were "completely ungrounded" and that the country manages radioactive waste in compliance with

local laws and recommendations from the International Atomic Energy Agency.

An Azeri official said the government had not taken a decision to construct a nuclear reactor but instead had a plan to conduct

## “THE KNIFE BLADE DOESN'T CUT ITS HANDLE.”

a feasibility study into the construction of a nuclear research reactor, which was the subject of talks with the IAEA and had been put off until 2012 from this year. Heydarov could not be reached for comment.

A senior official at India's atomic energy department, A.P. Joshi, said it hadn't previously heard of the security doubts and therefore couldn't comment on them.

The anecdotes illustrate risks ranging from corruption to poor oversight and bad infrastructure. The dangers have been thrown into stark relief by two shattering events half a world apart - the Fukushima nuclear disaster in Japan and the popular unrest that has brought unprecedented political turmoil to the Middle East.

This helps to explain why leaders of the Group of Eight nations late last month sought more stringent international rules on nuclear safety.

The speed with which the operator of the Japanese nuclear plant lost control, and the subsequent meltdowns of three reactors, ensuing explosions and overheating of fuel rod storage pools, were a wake-up call for nuclear regulators.

If in a modern, stable democracy, there could be apparently lax regulatory oversight, failure of infrastructure, and a slow response to a crisis from authorities, then it begs the question of how others would handle a similar situation.

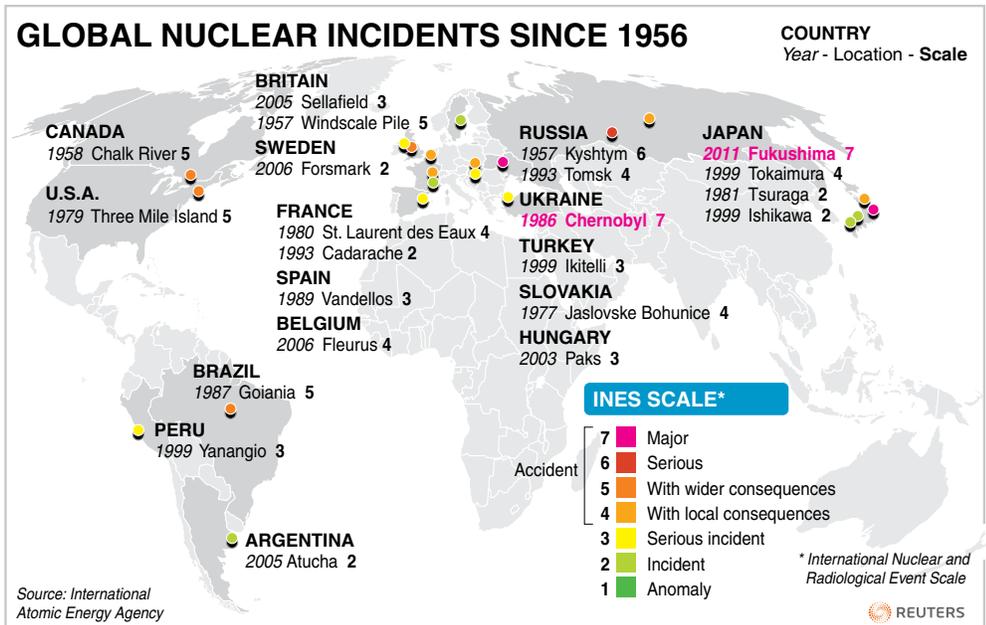
"If Japan can't cope with the implications of a disaster like this," said Andrew Neff, a senior energy analyst at economic analysis and market intelligence group IHS Global Insight, "then in some ways I think it's a legitimate exercise to question whether other less-developed countries could cope."

### REGULATION AND CORRUPTION

FOR MANY, RULE NO.1 for a safe nuclear program is a regulator with at least some semblance of independence from government or corporate influence.

Critics worry that authoritarian governments will not tolerate an authority with even pretensions to partial independence or transparency of decision-making. While nuclear authorities in the West have also faced criticism for being too close to the industry they regulate, they are at least open to media and lawmaker scrutiny.

Rampant corruption in some developing countries could also lead to corners being



cut in everything from plant construction to security, critics say.

For Najmedin Meshkati, a professor at the University of Southern California, the dilemma for regulators in authoritarian countries can be summed up by a saying in his native Persian: "the knife blade doesn't cut its handle."

"If you have a government regulator overseeing the building of a plant by a government utility," said the nuclear expert, "then there is no way the knife will ever cut its handle."

Samuel Ciszuk, a senior analyst at IHS Energy, cited the example of Saudi Arabia, which was reported this month to be planning to build 16 nuclear power reactors by 2020 at a cost of more than \$100 billion.

"In countries where you have an authoritarian, personalized power system in place, the very idea of a completely independent oversight body is anathema," he said.

A spokesman for King Abdullah City for Atomic and Renewable Energy, the Saudi center for nuclear research and policy, did not respond to phone and email requests seeking comment.

Led by the increasingly hardline President Ilham Aliyev, Azerbaijan is an interesting case where poor regulation and corruption meet. It ranked joint 134th out of 178 countries in Transparency International's 2010 Corruption Perceptions Index. In the meeting

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with Mermoud, Heydarov said his ministry had been given the task of researching the regulations needed for possible future nuclear energy plants in Azerbaijan and that the government was considering a move to nuclear power in the next 20-30 years, according to the cable.

When asked about its nuclear plans, an Azeri official sought to play down its nuclear ambitions, saying that the nation does not need additional energy resources.

"There is a plan to conduct a feasibility study on construction of a nuclear research reactor in Azerbaijan," said Siyavush Azakov, the head of the state agency on nuclear and radiological activity regulation. "Initial plan was to conduct a feasibility study together with IAEA experts by the end of this year, but then it was extended till next year," he said.

### INFRASTRUCTURE AND POWER

WHILE THERE IS GENERAL agreement that modern reactors are far safer than the older ones like those at the Fukushima plant, there are always going to be dangers.

The critical problem in Japan, for example, was the loss of the main power at the plant



**NOT IN MY BACKYARD:** Anti-nuclear activists hold placards during a protest outside the Vietnamese embassy in Bangkok April 26, 2011. **REUTERS/CHAIWAT SUBPRASOM**

and then the failure, probably because of the tsunami, of back-up generators.

With brown-outs still a problem in many developing countries, power could be a very big issue.

Vietnam would rely on a 500 kv transmission line that transmits electricity from the southern to the northern parts of the country as an offsite-power source, Vietnam Atomic Energy Commission Vice Chairman Le Van Hong said in response to a query from then U.S. Nuclear Regulatory Commissioner Jeffrey Merrifield, according to the 2007 cable. However, Hong acknowledged that "power redundancy issues were important" to address with nuclear power plant designers.

Poor roads would be a problem if a nuclear plant was crippled and urgently needed emergency support.

Vietnam, which has one small research reactor in operation currently but plans to bring eight nuclear power plants online between 2020 and 2030, has one main



**LONGTERM LEGACY:** A child's gas mask and a shoe are seen at a kindergarten in the abandoned city of Prypiat near the Chernobyl nuclear power plant, April 4, 2011. **REUTERS/GLEB GARANICH**

north-south highway and a decent network of provincial roads.

But the scene on the roads consists of a mixed procession of trucks, buses, cars, motorbikes, bicycles, water buffalo, stray

dogs, ducks, children going to and from school and the occasional horse-drawn cart -- and that's on a normal day. In an emergency it could, of course, be more chaotic. There is a north-south train, but it's slow, old and narrow gauge.

"Do you plan on bringing an emergency generator by truck?" asked Jordi Roglans-Ribas, deputy head of the nuclear engineering division at Argonne National Laboratory in Illinois. "Or do you need to account for damage to infrastructure? And what is the condition of your infrastructure to begin with?"

"If the roads are not very well developed to begin with, then I would presume that the emergency response plan would have to account for that," he added.

**KNOWLEDGE GAP**

**STORAGE OF RADIOACTIVE** materials, whether from hospital medical waste, industrial processes, or from spent fuel rods

*"WE DON'T HAVE THE MANPOWER, WE DON'T HAVE THE KNOWLEDGE, WE DON'T HAVE THE EXPERIENCE."*

at nuclear plants remains a problem around the world.

The Vietnamese vice minister Tien was quoted in the U.S. diplomatic cable saying the country must create a nuclear waste storage site and "improve controls over the imports and exports of radioactive materials."

Nathan Sage, the Pacific Disaster Center's Southeast Asia program adviser, says he is concerned about how Vietnam will handle its spent nuclear fuel. "Where are they going to store the used fuel?" he asked. "More advanced countries can't even get that right, so how's Vietnam going to?"

However, the Vietnamese official, Tan Hau Ngoc, told Reuters that nuclear fuel at its current research facility at Dalat is being used in accordance with a safeguards agreement the country has with the IAEA.

Ngoc, who is deputy head of the department of international cooperation at the Ministry of Science and Technology, said the country has a radioactive waste storage plan for the years to 2030 and a vision until 2050, including locations for the storage and burial of the waste in a way that "must ensure the safety of people and the environment."

Ngoc also said that the feasibility study for the first of the nuclear power plants has yet to be completed. "Vietnam is presently in the process of putting together the report with the criteria that maximum safety requirements for a nuclear power plant with modern technology and controls must be met."

A lack of knowledge and nuclear engineering skills presents its own risks in many parts of the world.

"Many people now believe that so-called third generation of nuclear power will be more safe. It's wrong," said Pham Duy Hien, one of Vietnam's leading nuclear scientists and a former director of the Dalat Nuclear Institute. "The safety of a nuclear power plant does not depend on the equipment, the technical aspects or the design, but mostly on the people who are running the plant."

When asked about Vietnam's plans for eight reactors in a decade, Hien said: "This is

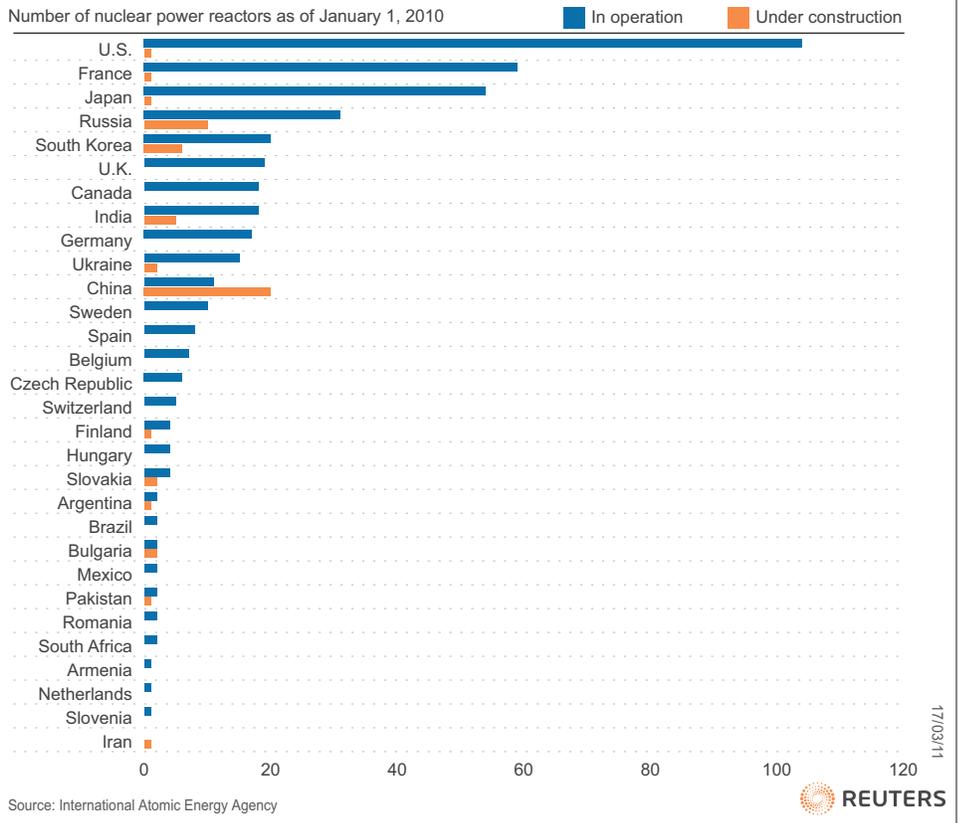
**REUTERS INSIDER**

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**NAJ MESHKATI**  
PROFESSOR, UNIVERSITY OF SOUTHERN CALIFORNIA

**Nuclear power reactors in the world**



mad."

"We don't have the manpower, we don't have the knowledge, we don't have the experience," he said.

**"THE FEAR IS REAL"**

AFTER DECADES OF inertia following the accidents at Three Mile Island in 1979 and Chernobyl in 1986, industry representatives say the needs of an energy-hungry world



**SPECIAL REPORT**

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have made a massive expansion of nuclear power inevitable.

According to World Nuclear Association data from just before Fukushima, there were 62 reactors under construction, mainly in Russia, India and China, with 158 more on order or planned and another 324 proposed. To put those numbers into context, in 2008 there were only 438 reactors in operation globally, unchanged from 1996.

The main tool to ensure safe adoption of nuclear power by new countries is the IAEA, whose mission is to "promote safe, secure and peaceful nuclear technologies."

But the IAEA's main drawback is it is not a regulator and can only provide advice and guidance to aspiring nuclear powers, not halt projects or enforce sanctions. Its apparent impotence at Fukushima underlined the weakness.

Officials at the IAEA declined to comment for this story, but in a June 1 report the agency said Japan had underestimated the risk of tsunamis, adding that "nuclear regulatory systems should address extreme events adequately... and should ensure that regulatory independence and clarity of roles are preserved."

Those in the business of nuclear power insist that Fukushima changes nothing.

At the World Nuclear Fuel Cycle conference



**WRECKAGE:** The crippled Fukushima Daiichi Nuclear Power plant is seen in Fukushima Prefecture in this undated handout photo released by Tokyo Electric Power Co. (TEPCO) April 14, 2011. **REUTERS/TOKYO ELECTRIC POWER CO. (TEPCO)/HANDOUT**

in Chicago in April, industry representatives spent time acknowledging the public concerns raised by Fukushima, but also blaming the media for blowing the disaster out of proportion.

*"I DON'T THINK FUKUSHIMA RAISES ANY NEW ISSUES. IT JUST HIGHLIGHTS WHAT'S ALREADY HAPPENING."*

"We must acknowledge the fear is real and deal with it," said Richard Myers of the Nuclear Energy Institute, before going on to attack the "toxic misinformation that we've been exposed to by some of the media."

Ian Hore-Lacy, director of public communications at the World Nuclear Association, rejected suggestions of improper behavior by the regulator in Japan and said he did not see any new questions being raised as a result of the disaster, for

developing countries or those that already have nuclear power.

"I don't think Fukushima raises any new issues," he said. "It just highlights what's already happening."

While technical issues are a challenge in many countries, for some the black swan could be geopolitical.

Turmoil of the kind sweeping north Africa and the Middle East could affect the security of power plants and nuclear fuel -- which some fear could be turned into weapons in case of a coup or if they fell into the hands of terrorists.

"It's fair to say that political risk will likely be scrutinized much more harshly in the future," said Ian Maciulis, a Paris-based nuclear risk management consultant for the JLT Global Nuclear Practice Group. "To be honest, it's not the technological issue that scares me."

(Margarita Antidze reported from Tbilisi and John Ruwitch reported from Hanoi; Additional reporting by Roberta Rampton, C.J. Kuncheria, Reed Stevenson, and Cho Mee-young; Editing by Martin Howell and Claudia Parsons)

**COVER PHOTO:** A protester shouts slogans at an anti-nuclear rally in front of the headquarters of Tokyo Electric Power Co (TEPCO), the operator of the tsunami-crippled Fukushima Daiichi nuclear power plant, in Tokyo May 14, 2011. **REUTERS/KIM KYUNG-HOON**

**FOR MORE INFORMATION CONTACT:**

**MICHAEL WILLIAMS,**  
**ENTERPRISE EDITOR**  
 +1 646 223 5462  
[michael.j.williams@thomsonreuters.com](mailto:michael.j.williams@thomsonreuters.com)

**CLAUDIA PARSONS,**  
**DEPUTY ENTERPRISE EDITOR**  
 +1 646 223 6282  
[claudia.parsons@thomsonreuters.com](mailto:claudia.parsons@thomsonreuters.com)

**NICK CAREY**  
 +1 312 408 8756  
[nick.carey@thomsonreuters.com](mailto:nick.carey@thomsonreuters.com)