

# NUCLEAR ENERGY FUTURES

## Research Project Publication

### GNEP Watch: Developments in the Global Nuclear Energy Partnership

*A monthly report prepared by Miles Pomper in Washington DC for the CIGI Nuclear Energy Futures Project*

Number 5, March 2008

#### Bush Administration Seeks More Money for GNEP; Senegal and the UK Become Members

US President George W. Bush's fiscal year 2009 budget request, unveiled 4 February 2008, seeks to boost funding significantly for the controversial Global Nuclear Energy Partnership. The administration has taken this course despite Congress significantly cutting funds for GNEP last year and key lawmakers continuing to express skepticism about the initiative.

Administration officials have claimed that GNEP, which seeks to develop new nuclear technologies and new international nuclear fuel arrangements, will cut nuclear waste and decrease the risk that an anticipated growth in the use of nuclear energy worldwide could spur nuclear proliferation. Critics assert that the administration's course would exacerbate the proliferation risks posed by the spread of reprocessing technology, be prohibitively expensive, and fail to significantly ease waste disposal challenges without any certainty that the claimed technologies will ever be developed.

Many of these concerns have been echoed in Congress, but the administration has continued to sign up international partners: Senegal on 1 February and the United Kingdom on 26 February, becoming the 20th and 21st members of GNEP respectively. Most of the major nuclear energy consumers now belong to the group.

Britain's participation is noteworthy in that a UK government white paper in January (UK BERR, 2008) said that nuclear power plant operators when constructing any new facilities should "proceed on the basis that spent fuel will not be reprocessed." Britain has been reprocessing most of its spent fuel, but, according to an International Panel on Fissile Materials report, plans to shut down its Sellafield reprocessing facility around 2012 (IPFM, 2007).

Yet one of the hallmarks of GNEP is research on new spent fuel reprocessing technologies. US officials say these new technologies will not yield pure separated plutonium but a mixture that includes plutonium and is less applicable to making bombs. GNEP calls for new advanced burner reactors to be constructed to make use of the reprocessed fuel. These "fast reactors" take their name from the "fast neutrons" they rely on to fission plutonium and other elements in the spent fuel. These neutrons differ from the "thermal neutrons" that have been slowed down by a moderator in a reactor, such as the water used in many North American nuclear plants that are fueled by uranium. The US government claims that using such facilities will reduce the volume of spent nuclear fuel currently stored at nuclear reactors so that the United States will not have to build another permanent repository beyond one slated for Yucca Mountain, Nevada.

In an initial draft programmatic environmental impact statement (PEIS) last year (GNEP, 2007), the US Energy Department had called for construction of a "Nuclear Fuel Recycling Center," for reprocessing and fuel

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fabrication (estimated to cost up to US\$35 billion to build), and an "Advanced Recycling Reactor" as a prototype for 40-75 fast burner reactors (some say a US\$40-150 billion federal subsidy would be needed for its construction).

The proposal has drawn criticism, in part because facilities that reprocess spent fuel for plutonium-based fuels might also be used to harvest plutonium for nuclear bombs. The establishment of such facilities by the United States, critics say, might encourage other countries to do so as well, perhaps leading to nuclear weapons proliferation. Because of such concerns, the United States has shied away from spent fuel reprocessing for nearly three decades until GNEP was launched in 2006.

Responding to President Bush's budget proposal for expanded 2009 funding, Rep. John D. Dingell (D-Mich.), chairman of the Committee on Energy and Commerce, called GNEP "ill-conceived" and said the proposed budget "raises serious concerns" (Dingell, 2008).

### More Money, Less Scope

While the Bush administration is calling for more funding for GNEP, it is scaling back the scope of its effort in other ways.

In his request for FY 2009 (which begins 1 October this year), President Bush asked Congress to provide US\$302 million for the Advanced Fuel Cycle Initiative (AFCI), the technology development arm of GNEP. He also requested US\$20 million for the development of smaller-scale reactors aimed at developing countries with "smaller and less developed power grids." Most of the US\$20 million is intended to be the first installment in a five-year, US\$100 million public-private partnership for

winning Nuclear Regulatory Commission design safety approval of a plan for a light-water reactor of less than 500 megawatts (DOE, 2008).

For the 2008 fiscal year, the president requested US\$395 million for AFCI but lawmakers allocated only US\$179 million, less than half the amount sought. Congress also limited the program to research, blocking any expenditures for constructing commercial facilities or technology demonstration projects. The legislators reached that decision after a National Research Council report concluded that the Energy Department should return to a "less aggressive research program" (see GNEP Watch, No. 3).

A subsequent PEIS no longer called for "project specific proposals" for the "Nuclear Fuel Recycling Center," for reprocessing and fuel fabrication or an "Advanced Recycling Reactor" (GNEP, 2008).

Now the PEIS would pertain only to an "advanced fuel cycle facility," including an option to move forward with this facility in the future. It calls for the construction of a pilot-scale facility at a national laboratory to study reprocessing techniques (GNEP, 2008). In interviews, analysts in Washington viewed this as a tactical retreat, but saw little change in GNEP's long-term strategic vision.

### New Financing Mechanism?

Indeed, in remarks delivered at a nuclear energy industry forum on 5 February 2008, Assistant Secretary of Energy Dennis Spurgeon gave little indication that the administration had abandoned its plans to move forward quickly with demonstration projects or commercial facilities (GNEP, 2008).

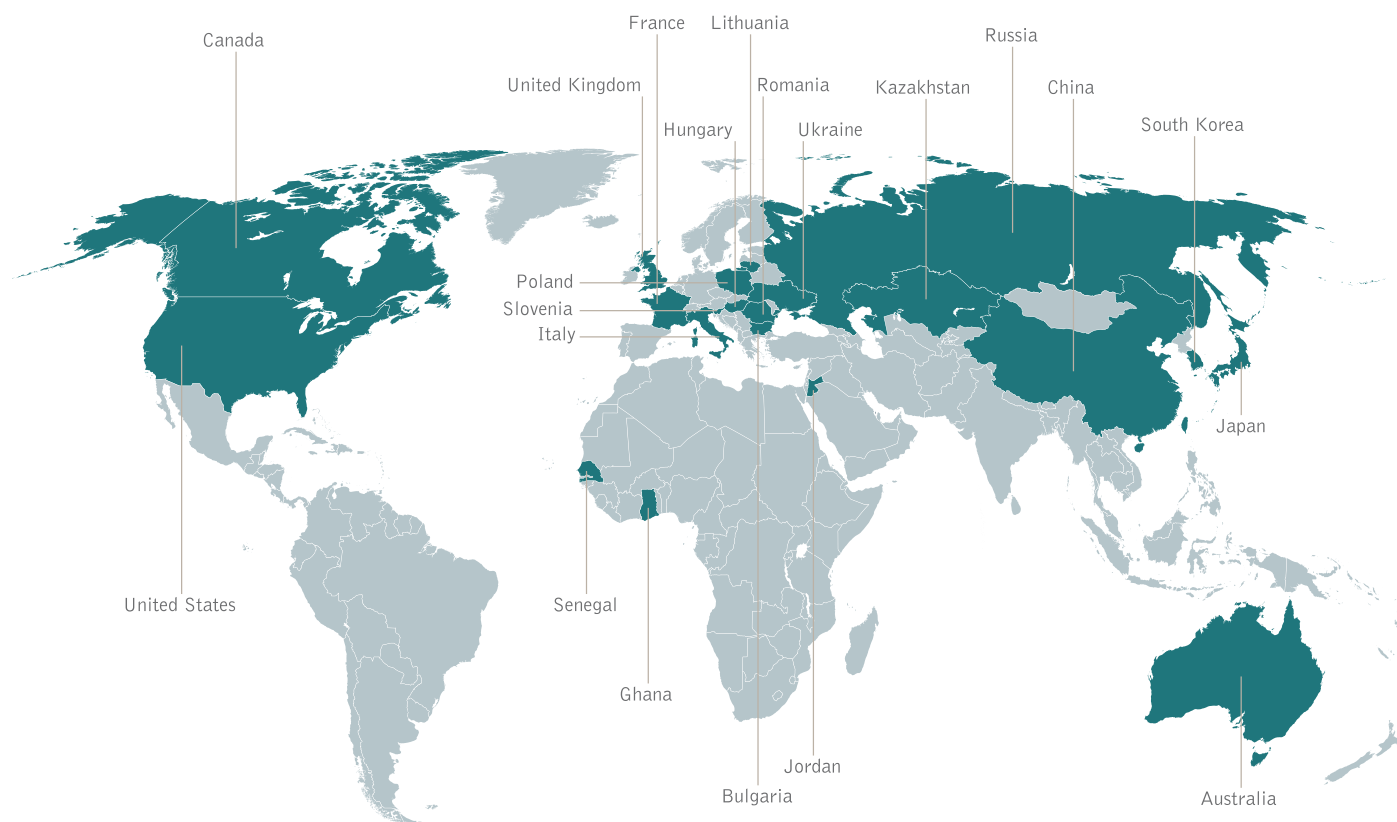
### About GNEP Watch

GNEP Watch reports on current developments in the Global Nuclear Energy Partnership (GNEP). GNEP is a US government-led international initiative aimed at encouraging the expansion of domestic and international nuclear energy production while working toward the reduction of proliferation and environmental risks.

### CIGI Nuclear Energy Futures Project

The Nuclear Energy Futures project investigates the implications of the purported nuclear energy revival for nuclear safety, security and nonproliferation over the coming two decades and will propose recommendations for consideration by the international community, particularly in the area of global governance.

## GNEP Members as of March 2008



Since its inception two years ago, the Bush administration's Global Nuclear Energy Partnership (GNEP) has grown to include 21 countries, including Senegal and the United Kingdom, both of which joined in February 2008. Countries join GNEP by agreeing to a statement of principles that outlines a vision of expanding the use of nuclear energy worldwide by developing new technologies, some of which are controversial.

Citing four industry studies commissioned by the Energy Department in September, Spurgeon said "there are sound economic cases for deployment of near term recycling [reprocessing] technology, but changes in current waste strategies are needed."

Spurgeon also suggested that the studies backed a proposal he raised for discussion before Congress in November. That proposal would sidestep annual budget battles with Congress by allowing GNEP to dip into a pool of money that has accumulated from a fee that Congress has imposed on nuclear power plant operators to pay for disposing of spent fuel. Last year, Spurgeon said that the US government had accumulated close to US\$20 billion from this fee, funds that are yet to be spent because of continued political wrangling over a planned permanent repository at Yucca Mountain. Waste is currently piling up at nuclear power plants.

In a briefing to Congress explaining the Energy Department's nuclear energy budget request, Spurgeon suggested the creation of a "new government entity," a non-profit corporation that would be empowered to sell recycled fuels and uranium to utilities and collect waste fees. He indicated that the current US\$1 per megawatt-hour waste fee on nuclear power would be increased to sustain this new entity (Spurgeon, 2008).

Spurgeon told the nuclear industry forum that "Although these actions require significant changes to legislation and regulations, addressing the waste issue is paramount to a successful nuclear renaissance."

Spurgeon said that Secretary of Energy Samuel Bodman planned to move ahead in 2008 with a decision on a "technology path forward" for GNEP. He said the industry studies favour different technological

approaches to reprocessing. Some favour COEX, a process that extracts and precipitates uranium and plutonium (and possibly neptunium) together so that plutonium is never separated on its own. Other studies favor a pyroprocessing technology similar to that being studied by South Korea. Critics, however, have said that neither technology would provide sufficient protection against conversion into nuclear weapons (See GNEP Watch, No. 4).

The scale and expense of the proposed reprocessing facilities and of fast reactors vary substantially, Spurgeon said. He said that the industry studies proposed that the reprocessing facilities should begin operation between 2018 and 2028 and that prototype fast reactors be deployed between 2018 and 2025.

### Sodium-Cooled Reactor Research

In another development, on 1 February 2008, the United States, France, and Japan signed a memorandum of understanding to cooperate in the development of prototype sodium-cooled fast reactors.

The Department of Energy said in a 1 February 2008 press release that the three countries will work together to establish design goals and high-level requirements, as well as to identify common safety principles and key technical innovations in order to save money. The countries may also share facilities used for component or safety testing, fuel development, or irradiation and evaluation of materials. Other countries could also participate in the cooperation, the release said (GNEP, 2008).

France has an existing prototype sodium-cooled fast reactor called the Phenix which is used to manage nuclear waste by transmuting longer-lived isotopes into shorter-lived varieties. However, France used to operate a similar commercial-scale facility to generate electricity and breed additional plutonium. But Superphenix shut down a decade ago, plagued by safety failures, runaway costs (nearly 10 billion euros), and a failure to serve as a net generator of electricity.

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Chaired by CIGI Distinguished Fellow Louise Fréchette, the project is a partnership between CIGI and the Canadian Centre for Treaty Compliance (CCTC) at the Norman Paterson School of International Affairs, Carleton University, Ottawa. The project is directed by CIGI Senior Fellow and CCTC Director Trevor Findlay.

The Centre for International Governance Innovation was founded in 2002 by Jim Balsillie, co-CEO of RIM (Research In Motion), and collaborates with and gratefully acknowledges support from a number of strategic partners, in particular the Government of Canada and the Government of Ontario. CIGI gratefully acknowledges the contribution of the Government of Canada to its endowment Fund. / Le Centre pour l'innovation dans la gouvernance internationale a été fondé en 2002 par Jim Balsillie, co-chef de la direction de RIM (Research In Motion). Il collabore avec de nombreux partenaires stratégiques et exprime sa reconnaissance du soutien reçu de ceux-ci, notamment de l'appui reçu du gouvernement du Canada et de celui du gouvernement de l'Ontario. Le CIGI exprime sa reconnaissance envers le gouvernement du Canada pour sa contribution à son Fonds de dotation.



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