RESOLVED: "The U.S. should aggressivley pursue development and expansion of its nuclear power facilities."

The ghostly flickers of a new dawn

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A shift in Australia's stance is a sign of the times: all over the world governments are rethinking the politics and economics of nuclear power

FOR much of its 26-year life the Ranger uranium mine in north Australia has seen protests from ecologists who oppose digging for nuclear fuel on the edge of a world heritage park. But by 2008, as the mine's riches run out, Australia may be marching towards a new nuclear era, prompted in part by fear of climate change, the biggest ecological issue of all.

On November 21st a government report said Australia should do more than sell uranium to other countries: it should use the material to fuel its own nuclear-power industry, and hence curb its greenhouse gas emissions. That is what John Howard, the prime minister, wanted to hear. Long a sceptic over global warming, he amazed everyone by saying during a trip to Canada in May that nuclear power was an "inevitable" choice for Australia.

In many parts of the world the mood is shifting in favour of nuclear energy—often because other responses to climate change seem harder (see article). That in turn is creating new worries over the diversion of nuclear fuel to make bombs and making the distant dream of nuclear fusion even more attractive.

Among rich countries Australia stands out as a place whose geography and geology pull its energy planners in different directions. It has 38% of the world's low-cost uranium reserves, but has never made its own nuclear power. Cheap coal fuels 80% of its electricity, gas the rest. But Mr Howard, having dropped his bombshell, ordered a policy review from Ziggy Switkowski, a scientifically inclined businessman.

His conclusions? Australia could quadruple its 2005 revenue from exporting uranium oxide (mainly to America, France and Japan) if it enriched and fabricated the fuel first. He also says Australia should consider installing its first nuclear reactor by 2020, building up to 25 reactors by 2050; such a grid could supply one-third of the country's electricity and cut greenhouse gases by almost one-fifth.

The report is already dividing the country. Not even Mr Howard liked it all: it acknowledges that nuclear power would be up to 50% dearer than electricity from coal. It would be competitive "only where the costs of greenhouse-gas emissions are explicitly recognised", in other words by imposing carbon taxes, something Mr Howard has

With nuclear power now set to dominate next year's general election, Mr Switkowski has certainly given those worried about global warming something to think about: he notes that Australia's uranium exports alone (a record 12,000 tonnes last year) are enough to supply more than twice its annual electricity needs.

How the nuclear calculus varies

	No. of reactors	% of electric power	Future plans	Politics
France	59	79	Stack 'em high	Even the communists are keen
United States	103	19	18 new reactors mooted	Subsidies galore
India	16	3	Gradual increase	Point of national pride
Germany	17	31	Phase out	Leftists anti-nuke; rightists less so
Britain	23	20	Phase back in	Leftists pro-nuke; rightists less so
Lithuania	1	70	Phase out, then in	Scared of Russia
South Korea	20	45	8 more reactors in the works	No arguments

Sources: World Nuclear Association; *The Economist*

Elsewhere in the world so many nations are either building new plants, or thinking about it, that energy analysts are speaking of a nuclear renaissance. New reactors are being built in 13 countries. Governments in others, like Britain and America, want to make it easier to start new plants. Several European states are slowing down plans to phase out nuclear power. Asian ones, whose nuclear appetite never faded, plan ever more reactors.

In most places the nuclear debate hinges on safety, cost, the environment and security of supply. Atomic energy lost favour after a near disaster at Three Mile Island in America in 1979 and a real one at Chernobyl in the Soviet Union in 1986. But engineering firms say their latest designs are safer. Several claim to build "passively safe" plants that need no human or mechanical intervention to close after a fault, but rely on the laws of physics to contain runaway reactions. Regulators are tougher too: Finland has told Areva, a French firm making a new reactor, that it must be able to withstand a crashing plane. A consensus is emerging about where to put nuclear waste: most countries want to bury it underground, though only Finland and America have chosen sites.

As for economics, study after study rates nuclear fission one of the cheapest ways to make power. In practice, however, nuclear plants have often disappointed because of delays, cost overruns and breakdowns. But utilities seem to be getting better at maintenance; some keep their reactors going more than 90% of the time. In democracies, politics is the biggest cause of delay and financial upset. Nuclear policies can be as fickle as government coalitions. Public opinion and local planners are often more sceptical than national authorities—so getting permits is a nail-biting business. Utilities like to skirt such problems by putting new reactors near existing ones, where locals accept nuclear power. Many operators in America and Europe have quietly raised their nuclear output by upgrading existing plants.

Britain plans to encourage new reactors by amending its planning laws. Design will be approved by the national government, leaving local authorities to deal with narrower issues. America is offering utilities up to $2 billion in insurance against planning delays. Authoritarian countries like China, and even democratic ones with tough bureaucrats,

Planning aside, nuclear plants can be hard to finance, since they cost more and take longer to build than coal- or gas-fired units. In countries with state power firms, like China, the government can stump up the money or use its clout to reduce borrowing costs. A handful of firms, such as Electricité de France, are big and profitable enough to pay for new reactors out of regular income. Other solutions show more imagination: a Finnish consortium that is buying a new reactor consists of utilities and power users committed to buying the plant's output at cost.

The Finnish and British governments say they will not subsidise nuclear power. America's has no such qualms; in addition to the insurance against delays, it is helping to bear the cost of the permitting process and offering tax breaks on power produced by new plants. Such enthusiasm reflects the hope that nuclear power can wean America off imported fossil fuels. Elsewhere, countries that fear foreign control of their energy supply tend to be pro-nuclear. Ukraine, site of the Chernobyl catastrophe, is busily making more nuclear plants to cut its reliance on Russian gas.

In most of western Europe, feelings are more ambivalent. Many countries have cut nuclear output, or made plans to do so, and are only reluctantly reviewing that stance in the light of global warming. Indeed, some ecologists, such as Mike Townsley of Greenpeace, a lobby group, say talk of a renaissance is overdone. If there is a rebirth, it may lie in the mere fact that nuclear power is being discussed, not in any consensus about its merits.

MSNBC.com

New nuclear power 'wave' — or just a ripple?

How millions for lobbying, campaigns helped fuel U.S. industry's big plans

By Mike Stuckey
Senior news editor

Buoyed by billions of dollars in subsidies pushed through Congress by the Bush administration, the U.S. nuclear power industry says 2007 is the year its plans for a "renaissance" will reach critical mass.

"We see a wave," said Steve Kerekes, a spokesman with the Nuclear Energy Institute, the industry's chief lobbying arm, pointing to letters of intent by a dozen firms to seek licenses for as many as 31 new nuclear power reactors. "We definitely believe it's going to be a whole new era of new plant construction in this country."

Kerekes credits improvements in plant design and efficiency and the ability to operate without spewing carbon into the air — a key advantage amid mounting concern about global warming — as chief reasons for the resurgence.

But critics say the real catalyst has been well-funded lobbying by the industry. They believe tax dollars spent to jump-start the dormant industry would be better devoted to alternative energy sources like wind and solar power.

"If this were a renaissance, you wouldn't need to be enticing giant corporations with subsidies in order to get them to build reactors they claim are economically viable," said Jim Riccio, nuclear policy analyst for the environmental group Greenpeace, a staunch foe of nuclear energy.

A remarkable turnaround

Regardless of which side is eventually proved correct, the mere discussion of building dozens of new reactors is a remarkable turnaround for an industry that less than 10 years ago was widely viewed as the energy sector's unsafe and expensive also-ran. And it's a textbook case of how the wheels of government can change direction quickly when enough money, influence and political will are applied.

Nuclear power proponents say the interest in new plants is just one sign that the technology may finally be on the verge of achieving the widespread acceptance and use they have long envisioned. Among them:

- The relicensing of four dozen U.S. commercial reactors.
- The emergence of well-known environmentalists as supporters of nuclear technology.
- Groundbreaking for a new uranium enrichment plant in New Mexico.
- A breathtakingly ambitious Bush administration plan for a global nuclear fuel cartel to light up the developing world with electricity while avoiding the threat of nuclear proliferation.

Ardent foes of nuclear energy like Paul Gunter of the Nuclear Information and Resources Service respond that these actions all are the result of pro-nuclear work by industry supporters in Congress and the Bush administration, not a genuine watershed in how investors and the public view nuclear power.

"There's a big difference between a letter of intent and the filing of an application," he said of the new plants, predicting that problems with waste disposal, safety and security will ultimately stall what he refers to as a nuclear power "relapse."

And while key committee chairmanships will remain in the hands of strong pro-nuclear lawmakers, the retaking of Congress by the Democrats could also present some roadblocks, especially on the central issue of waste, he

That lawmakers are once more considering such issues shows how far the nuclear energy needle has moved since the mid-1990s.

Three Mile Island: The last straw

After its birth as an outgrowth of weapons programs in World War II, the nuclear energy industry battled design problems, cost overruns, safety issues and environmental foes for years to wind up with the 103 U.S. reactors that remain in commercial operation today from California to New Hampshire.

As construction delays and costs escalated, the meltdown at Pennsylvania's Three Mile Island nuclear plant in the spring of 1979 was the last straw for those who held the purse strings to new reactor construction. No new commercial reactors have been ordered since, although previously ordered plants continued to be built and come online until 1996.

The 1986 accident at the Chernobyl nuclear plant in the Soviet Union, which is blamed for about 60 deaths by the World Health Organization, further tarnished the technology's image. At that point, "any talk about a new plant (in the U.S.) would have been dismissed as childish optimism," admits nuclear power's chief congressional cheerleader, Sen. Pete Domenici, R-N.M.

While accidents and economics halted nuclear expansion in the U.S., they did not have the same impact elsewhere. Of the 322 operating electricity-generating reactors currently in operation outside the United States, 171 began operating in the 1980s, 48 in the 1990s and 28 so far this century, according to the NEI. Twenty-nine more reactors are under construction outside the country, and 10 nations get more than 40 percent of their electricity from nuclear reactors, led by France at 78.5 percent.

In the U.S., chastened nuclear operators focused on improving safety and efficiency at existing plants. They were successful: There have been no notable U.S. accidents since Three Mile Island and the U.S. reactor fleet has produced at about 90 percent of licensed capacity since 2001, up considerably from efficiency figures of the early 1980s. Nuclear plants today produce about 20 percent of the electricity used in the United States.

Industry improvements are "an outgrowth, in all honesty, of the Three Mile Island accident," NEI's Kerekes said, "because the steps that were taken after that do a better job of sharing information in our industry and applying best practices."

Billions pour into 'renaissance'

Nuclear industry perks in the Energy Policy Act of 2005 were spotlighted when President Bush signed the bill at Sandia National Lab in Domenici's home state of New Mexico. With his signature, billions in federal assistance flowed from Bush's pen into the nuclear "renaissance," including:

- $3 billion in research subsidies.
- More than $3 billion in construction subsidies for new nuclear power plants.
- Nearly $6 billion in operating tax credits.
- More than $1 billion in subsidies to decommission old plants.
- A 20-year extension of liability caps for accidents at nuclear plants.
- Federal loan guarantees for the construction of new power plants.

Critics say the energy bill amply rewarded the industry for years of investment in campaign contributions and lobbying.

"There no question that the utility industry lobbying and campaign contributions has had a huge influence," said Tyson Slocum of the anti-nuclear group Public Citizen. "... These are business people and business people do not part with money easily unless they are making investments. Politics is not a charity, it's not tax deductible. The

But NEI's Kerekes said the legislation reflects the energy realities of the new century.

"That would be a wonderful myth to peddle," he said, arguing that nuclear power found new favor on Wall Street and in Congress on its own merits. "Unless they're going to accuse us of stoking concerns about global climate change over the past 15 or 20 years, I think that argument becomes pretty hollow pretty quickly."

Patrick Moore, a co-founder of the vehemently anti-nuclear group Greenpeace and one of a number of well-known environmentalists who now back nuclear power, agrees that nuclear energy earned a second look.

Greenpeace founder embraces nuclear energy

"I honestly believe that the concern for emissions is why people are saying, 'Hey we should be building more nuclear,'" said Moore, whose Vancouver, B.C.-based, consulting firm is now retained by the nuclear industry to improve its image.

Waste disposal remains key issue

All parties agree that any large-scale nuclear renaissance will depend on answering the thorny political and technical questions surrounding the handling of spent fuel. The industry and administration's current bid to get the Yucca Mountain repository in Nevada licensed are seen as dead by many observers because the new Senate majority leader, Democrat Harry Reid of Nevada, has always firmly opposed the facility.

But new initiatives are afoot to break the Yucca deadlock. And given long lead times for licensing and construction, "that doesn't have to happen next year or even in the next Congress," said Scott Peterson, another NEI spokesman.

Still the prediction that one or more new nuclear reactors will be operating "early in the next decade," as envisioned by the Bush administration, remains open to question. And some experts are betting against the house.

Matthew Bunn, a senior researcher on nuclear issues at Harvard and a supporter of nuclear power, doubts it. Certainly, he said, "The fast pace of growth just ain't going to happen for some number of years."

He recalls a bet he made with a friend a couple years back that work would not begin on a single new nuclear power plant in the United States within 10 years.

"We're now down to eight years, so I'm a little more nervous, but I still think I'll win," he said.