For sale: One discredited nuclear industry. Will ship anywhere. Finance available

By Regine Richter in Berlin

Nuclear power is not only the most controversial and dangerous method of generating energy, it is also one of the most expensive. The technology would never have achieved the geographical penetration it has today without massive public funding. While, in the 1960s, enthusiasts predicted that electricity from nuclear power would be too cheap to meter, in fact, to survive, the industry has always depended upon manifold forms of public subsidy. Greenpeace Germany documented all the subsidies for German nuclear technology. In their report of October 2010, they revealed that, between 1950 and 2010, nuclear technology in Germany benefited from at least €283 billion of support. This figure comprises: research funding; the running costs of the unstable and problematic waste disposal sites at Asse and Morsleben; the decommissioning of East German nuclear power plants; and contributions to Euratom and other international nuclear organisations. Another form that subsidy takes is tax breaks: accruals (the money companies have to set aside for decommissioning) are not liable for tax; the company can nevertheless use the funds in the meantime for enterprise purposes. Finally, until 2006, unlike other energy sources, nuclear fuel was not taxed, meaning that energy companies did not have to pay taxes on the fuel rods they used.1 These subsidies have been essential to the growth of the industry, as enormous cost overruns have been the rule, not the exception, for the construction of nuclear power plants, in all countries and every decade. A 1986 study by the US Department of Energy looking into 75 of the country’s 104 reactors found that they had a total predicted cost of US$45 billion, while the actual cost turned out to be US$145 billion — three times higher than the initial estimates.2 Two decades later, in 2005, an assessment of the Indian nuclear programme showed that the completion costs for their last 10 reactors have been, on average, 300 per cent over budget.3

New Nuclear – Economics Say No

Nor does the future look bright: Citi-group Global Markets published a paper in November 2009 entitled “New Nuclear – The Economics Say No”. The paper examines the situation in the UK, where the government wants to build several new NPPs and has announced a fast-track planning process for these new stations. However, Citi-group identified five big risks: planning; construction; power price; operational; and decommissioning. Of these they identify three “corporate killers”: construction; power price and operational risks. Each of them, they predict, could “bring even the largest utility company to its knees financially”. The authors stress that nowhere in the world have nuclear power stations been built on the basis that the private sector will shoulder the three main risks (construction, power price and operational) unaided. Their conclusion is that new nuclear power plants will only be commissioned in the UK if public funding is provided. As they put it: “Financing guarantees, minimum power prices, and/or government-backed power off-take agreements may all be needed if stations are to be built.” However, even with this kind of state support, it is a moot point whether the projects are financially viable, as the US experience illustrates: “The proposed nuke plants in our country are promised billions of dollars in loan guarantees from the government, and additional support from the export credit agencies (ECAs) of Japan and France. And yet still they cannot manage to finance them — it’s just too risky, therefore too un-economic.” explains Doug Norlen of the US environmental organisation Pacific Environment. One has to bear in mind that the profitability will only become worse as, post-Fukushima, safety requirements become more stringent.

Nuclear export promotion

State aid has not only underpinned national nuclear programs. Governmental subsidies for a dangerous and expensive technology, which obstructs and distracts from the desperately needed learning curve to foster a sustainable and renewable energy system, are promised billions of dollars in loan guarantees from the government, and additional support from the export credit agencies (ECAs) of Japan and France. However, even with this kind of state support, it is a moot point whether the projects are financially viable.

Export Credit Agencies

Export Credit Agencies, commonly known as ECAs, are public agencies and entities that provide government-backed loans, guarantees and insurance to companies from their home country seeking to do business overseas in developing countries and emerging markets. Export guarantees work like any other form of insurance, only in this case is being insured the risk that a company will not be paid for the goods that it has exported. In return for a premium, the ECA undertakes to ensure that the exporter gets paid should the buyer default. Because exporting to many developing countries is considered to be high-risk business, private sector insurers are often unwilling to cover exporters — or charge premiums that would make the export deal unprofitable. In such circumstances, and only in such circumstances, official ECAs are allowed to offer support from the public purse.

Export guarantees are critical to financing trade with the developing world. A recent report estimates the top ECAs-backed more than $260 billion of business in 2008. Without ECA support, many deals would not go forward — or would be lost to competitors. ECA business increased by a third in the immediate aftermath of the credit crunch, saving many exporters.

ECAs are collectively the largest source of official financing for developing countries. They are implicated in environmental, social and economic problems ranging from climate change, unsustainable debt, corruption and other problems plaguing countries where they do business.

Noriko Shimizu, Page 8

**Notes**

1 “Subventionen der Atomenergie”, Greenpeace, Oktober 2010
2 “The economics of nuclear power”, Greenpeace, November 2007, p.3
3 “Nuclear Banks, no thanks”, Banktrack, Greenpeace,segwol, CRBB et al, May 2010, p.8

**Sources**

1 Arrangement on officially supported export credits, OECD, July 2009 revision, p.5

**World Destroying Guarantees**
**Gift RAPP: Canada’s support for nuclear power and proliferation in India and Pakistan**

By Deborah Lambert-Perez in Brussels

From very early in Canada’s nuclear programme, their technology was exported to the Indian subcontinent, supported by state loans, aid packages, and export credit guarantees. It was this access to Canadian nuclear technology that allowed both India and Pakistan to subsequently develop their nuclear weapons programmes.

The Douglas Point Nuclear Generating Station was Canada’s first full-scale nuclear power plant and the second CANDU Deuterium Uranium (CANDU) pressurized heavy water reactor, a design first developed in the late 1950s. Built and owned by Atomic Energy of Canada Limited (AECL) and operated by Ontario Hydro, the station was in service from 1968 to 1984. Douglas Point put Canada on the world nuclear map and, when a duplicate station was commissioned, it put them in the international export field too.

Canadian first reactor sale was to India in 1963. The Rajasthan Atomic Power Plant-1 (RAPP-1) was a 200-megawatt Candu built at Rawatbata, in Rajasthan, modelled on the Douglas Point reactor. AECL reported that finance was provided by the Export Credit Insurance Corporation (ECIC) – predecessor of the Export Development Corporation – “for the purchase of services, material and equipment from Canada up to a value of US$37 million out of the total estimated cost of US$76 million for the station.”

Another estimate of the total cost put it at US$79 million, of which US$35 million was to be spent in and financed by Canada. The plant’s first criticality accident (an accidental increase of nuclear chain reactions) was in August 1972, when drums of radioactive heavy water were dumped into the river by mistake.

A second deal between AECL and the Indian Department of Atomic Energy (DAE) provided free exchange of information on heavy water reactors for a period of eight years. This gave India the design and specifications of the Douglas Point reactor, allowing its full commercial use. This information was valued at US$55 million by India, but was provided freely by Canada as part of an aid programme.1

The Douglas Point reactor design would subsequently become the basis of most of India’s nuclear capacity. Unlike RAPP-1 and RAPP-2, these so-called Candu clones would not be subject to IAEA safeguards. In 1966, another agreement was signed by Canada and India for construction of a second 200-megawatt reactor (RAPP-2), with some improvements, at the same site as RAPP-1. AECL suggested that ECIC would provide US$38.5 million financing for the project’s Canadian services and equipment.2 It has also been suggested that the Canadian government financed half of the US$140 million cost of RAPP-1 and RAPP-2 payable over fifteen years at 6 per cent interest with about six years’ grace.3 The DAE was involved with the construction and commissioning of the two RAPP reactors, and also fabricated some fuel.

In 1974 India exploded a nuclear bomb fuelled with plutonium made in the CIRUS reactor. CIRUS was not financed by export credits, but was given to India as direct aid and was controversial because the Canadian government did not require a guarantee that it would not be used for plutonium production for nuclear weapons. Motivated by the opportunity to establish a commercial nuclear beachhead in the developing world, Canada chose to ignore the nuclear proliferation risk. After the explosion, Canadian personnel stopped work on RAPP-2. Canada’s nuclear non-proliferation safeguards were subsequently strengthened, and after the failure of negotiations, Canada ended nuclear assistance to India, delaying commercial operation of RAPP-2 until 1981. The second RAPP reactor was completed by India with no Canadian assistance.

Meanwhile, in Pakistan in 1964, an agreement was made between Canadian General Electric and Pakistan to build a 157-megawatt CANDU reactor near Karachi. The reactor, known as the KANUPP (Karachi Nuclear Power Project) cost US$83 million, US$51 million of which was financed by Canada. Half came as external aid at 0.75 per cent interest over 40 years, with 10 years’ grace; the other half at 6 per cent over 15 years with five years’ grace.4 The ECIC provided the 6 per cent financing, and the concessional financing came from the External Aid Organisation (EAO), Wallace described the terms of the EAO loan somewhat differently: “Between 1966 and 1978 a total of US$34.2 million was provided in export credits, and US$29.4 million was loaned through the EAO.”

The loans were to be repaid in 30 semi-annual repayments over 15 years, starting no later than six months after the commissioning of the reactor, which took place in November 1982. The interest rate on the loans has never been revealed.5 The Wolsong-1 deal was odd in two ways: first, Korea had not issued a call for international bidding; second, it was a dramatic shift in nuclear technology for Korea. The reason for this surprising change in approach is that AECL influenced the decision through bribery. AECL President Lorne Gray had agreed to pay an ‘agent’ (Shaul Eisenberg of Tel Aviv) a fee of US$17 million plus another US$30 million at a rate of US$5,000,000 a year for six years.6

Despite the public outcry over this blatant corruption, Eisenberg’s ‘commission’ was only reduced to US$1.85 million, and AECL retained him to negotiate the sale of a second reactor.

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5 Robert Morrison & Edward Wonder, ibid., p. 312.
6 T.W. Wallace, ibid., p. 312.
Ex-Im Bank and Nuclear Tourism

By Maris dela Cruz in Philippines and Doug Norien in USA

The mothballed Bataan Nuclear Power Plant (BNPP) should be converted into a novel tourist attraction, and adjacent beaches and coastal areas transformed into an ecotourism destination, says Hermina Roman, a representative from the district of Bataan where the nuclear power station is located. The proposal represents a reversal of Roman's earlier proposed legislation for the rehabilitation and commercial operation of BNPP. Ronald Tiotuico, Regional Director of the Department of Tourism, was the unanimous view to project BNPP could provide a “learning experience,” and educate visitors on the causes of accidents like the Fukushima nuclear disaster in Japan and how to avoid them.

The tourist attraction would likely strengthen Philippine public opposition to nuclear power, yet there is still a “slim chance” that the industry’s supp- orters will continue to try to revive the country’s nuclear programme, according to Amicie Obusan, Climate and Energy Campaigner at Greenpeace. Despite the catastrophe at Fukushima, Daichi nuclear plant, the government has not yet shown firm action to lay to rest plans of reviving BNPP as officials continue to have differing positions. For instance, the President has been quoted as saying that he does not support the revival of the BNPP project. However, the Secretary of Department of Science and Technology still believes BNPP is safe and should go online, and this view is shared by others such as former representative Mark Cojuangco who opposes the total abandonment of BNPP.

Perhaps the BNPP museum should include an exhibit on ECAs’ marked lack of accountability on environmental, economic and corruption issues. The US Export-Import (Ex-Im) Bank provided loans worth $367 million for BNPP, and guaranteed worth US$367 million for BNPP, supporting the participation of US construction firm Westinghouse in a project, known as a white elephant because of technical, environmental and corruption problems. Built between 1977 and 1984, the 640-megawatt BNPP is located between major earthquake faults and near the Mount Naiah volcano. The nation-wide Nuclear Free Philippines Coalition, established in 1981, grew out of organised opposition to BNPP. The nuclear power plant was originally approved by then-President Ferdinand Marcos, but the project was subsequently scrapped by President Corazon Aquino, due to safety concerns and an earlier investigation that revealed 4,000 safety defects.

The damage from a nuclear disaster at Bataan could be extensive—similar in scale to Fukushima. A study by Roberto Verzola of the Philippine Greens shows that if a 10-kilometre evacuation zone was declared around the BNPP similar to the one the US Nuclear Regulatory Commission put in place in Japan, it would cover six provinces (Zambales, Tarlac, Panggan- ban, Bulacan, Cavite, and Batangas) and the National Capital Region in Luzon. In 2004, Philippine officials revived corruption charges against a Marcos associate amidst charges that he received US$11 million in bribes to help Westinghouse secure engineering and design contracts for the project. BNPP’s questionable financing arrangements resulted in massive debt for the Philippines, and in fact, the project is one of the country’s largest sources of foreign debt, according to the Freedom from Debt Coalition. In its position paper submitted to the Congress in February 2009, the coalition denounced BNPP as a “glaring representation of the country’s fraud- ulent, wasteful, and useless debts... a sym- bol of the Philippines’ struggle against a debt-driven development strategy” — often peppered with rent seeking and cronyism — that different administrations, including the current disposition, have espoused,“...a crass rejects of demagoguery and over-pricing of energy have worsened the debt load.

Ex-Im Bank should shoulder responsi- bility for the negative impacts of the project on the Philippine government and the Filipino people. The debt from costs of building the plant has been partly to blame for the impoverishment of millions of Filipinos. The government is spending US$16 million a year to maintain it, says Engi- neer Mauro Marcelo Jr, head of the group maintaining the BNPP.

From a distance, the monument is ready to spend $2 million to help the local community. It is still litter the floor of the Chernobyl site. Most of it is made stable by a counter guarantee from the exporting country. When the monument is completed, the exporting country seeks a counter guarantee from the purchasing country, it is likely that Hermina will have re- quired compensation from the Brazilian government.

In January 2010, in response to a question asked in parliament, the government stated that compensatory damages de-manded for the Angra 2 guarantee amounted to $1.4 billion. Argentine: Atucha: Generating maximum debt, minimum energy

Project for the Bataan site was an international one, and that the exporting country seeks a counter guarantee from the purchasing country, it is likely that Hermina will have re- quired compensation from the Brazilian government.

In January 2010, in response to a question asked in parliament, the government stated that compensatory damages de-}
No power to the people despite attempted Russian revolution in India's nuclear industry

By Regine Richter in Berlin

Driven by ambitions to become a global player, in 1984 India made plans to boost its nuclear programme. The Department of Atomic Energy announced their intention to create 10,000 megawatts of extra capacity by the year 2000. However, India was not a signatory to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), making it difficult for Western nuclear companies to trade with them. Perhaps as a result of this, the long history of cooperation between India and the USSR in the scientific, military, and economic fields was now extended to the nuclear sector.

In November 1988, an agreement was signed for the construction of Kudankulam nuclear power plant, containing two VVER-1000 nuclear reactors (the standard Soviet VVER-1000/300 pressurised water reactor having been adapted for Indian requirements). To facilitate the deal, the Russian state-owned Vnesheconombank agreed to provide export credit loans to the Indian government covering approximately 50 per cent of the construction costs.1

1 Vneshecombank, a Russian state-owned bank "acts to establish efficient governmental mechanisms to promote Russian exports. Based on the world's nuclear industry in the 1990s the Comptroller and Auditor General of India produced a highly critical report on the progress achieved by the Department of Atomic Energy, which had responsibility for India's nuclear programme. The Comptroller noted that in the 15 years since the plan for 10,000 extra megawatts had been agreed, not one megawatt of capacity had been delivered, despite over US$4.5 billion having been spent.2

Problems in Kudankulam

In the meantime, in Tamil Nadu, progress at the Kudankulam nuclear plant was no better. Very little is known about any of the environmental, social or technical licences provided for the project. Since nuclear plants are treated as issues of national security, none of the studies for the project have been released to the public. Concerns have been expressed that the thermal pollution may destroy marine life along the coast from Kanyakumari to Ramanathapuram and have an impact on Sri Lan ka.3

Even before construction

The Hindu, November 12, 2001 8 The Russian Connection, rediff.com, November, 2000 9 Indira Gandhi, 1917-1991 was not electricity, but nuclear bombs, rediff.com, November, 2000

A Brief Overview of Export Credit Agencies in the Asia-Pacific Region: 'Framatome – An Industrial and Business Success Story', 1995 2 4 November 1977, resolution 418

Exports credits for Apartheid

GLOBAL INSIGHT

For a quarter century, the French nuclear industry was happy to do business with the South African apartheid state; meanwhile the French state was prepared to flout UN resolutions and lend export credits with public money, in order to facilitate this trade. In 1964 France and South Africa signed an agreement for the long-term supply of natural uranium. In 1976 the two countries agreed on the construction of the two 900 megawatts commercial light water reactors in Koeberg. Construction started the same year. The French government and the construction company Framatome showed no reluctance to deal with the apartheid regime. The French administration counted on the driving effect the market attribution would have on French export. Framatome's official history records: "Lady Luck smiled at the company: the consortium that was in the first place, headed by General Electric, soon ran into insurmountable political difficulties. So Framatome was called to the negotiating table, and finally won the contract." The contract was signed only two weeks before the Soviet uprising of 1976. France found itself under pressure from a growing international anti-apartheid movement to apply sanctions against South Africa. Although the UN Security Council passed a resolution calling for a compulsory embargo of military material, nuclear equipment and oil products,4 the European Foreign Affairs Ministry ruled these out in favour of a voluntary code of conduct for European companies trading in South Africa. Unsurprisingly, the French Foreign Economic Affairs Department opposed the embargo,5 as to break the terms of the contract could have meant that CECHE having to pay very high levels of compensation. The potential risk to the public purse was, in 1977, an estimated F.11.5 billion.6

By Rediff.com interview with S P SBI

Credit Agencies in the Asia-Pacific Region, p. 109


Vigersky campaign against Kudankulam project planned, started, public groups protested against the project, which is located in an earthquake zone. Other concerns have been raised by reports that the loan package for the reactors was to be linked to defence deals with Russia: the purchase of T-90 tanks, SU-30 fighter aircraft, the Russian aircraft carrier Admiral Gorshkov, and the possible purchase of a nuclear submarine.7 The compensation paid to the communities for the land on which the reactors will be built, which was often the sole asset held by families, was approximately US$43 per acre with a payment of US$2 per cashew tree.8 Given Kudankulam's location in an earthquake zone and by the coast, one might expect the tragedy at the similarly-positioned Fukushima power plant to give cause for concern. However, when Sergej Kirjenko, the head of Russia's state-held nuclear energy corporation, Rosatom, visited India in April 2011 he was quoted as saying that Kudankulam would meet not only the safety requirements of today but also of tomorrow; and that he was confident that the facility would go online as planned, with initial tests starting in March 2011. The 3,000 megawatts this will add to Indian nuclear capacity falls a long way short of the 1984 target of an additional 10,000 megawatts by the year 2000. However, it may contribute to the new target of 40,000 megawatts by 2020, which the Ministry of Power hopes will be the fruit of a new US-Indian nuclear deal.7

Book Review

New Worldwatch Institute Report, shows nuclear industry was in decline even before Fukushima

"Amid the hype and PR, the smoke and mirrors, of the 'nuclear renaissance', the Status Report offers a hard-edged reality check." Walt Patterson, Associated Press, Chatham House, London

The nuclear power sector faces a rapid decline with spiralling costs that will only be exacerbated by a Fukushima backlash, claims a study funded by the Worldwatch Insti tute. Despite promises by the United States and elsewhere of a nuclear "renaissance", the report concludes that the role of nuclear power was in steady decline even before the Fukushima crisis. The disaster will make the construction of new nuclear plants and extensions to the lifetime of current plants even more unrealistic. Its findings, backed by Green MEPs, show that cost estimates have increased six-fold in the past decade. Renewable energy is a more attractive investment because it is cheaper and can be more quickly deployed and decommissioned. Annual renewable capacity additions have been outpacing nuclear start-ups for 15 years. However the study also laments the "large direct and indirect subsidies for nuclear which make it harder for renewables to compete."

1 FRBLM, CE1, sous dossier Afrique du sud, DREE/IV-B, Politique de crédit sur l'Afrique du sud, Mars 1978

2 4 November 1977, resolution 418


4 PFPBM, CE1, sous dossier Afrique du sud, DREE/IV-B, Politique de crédit sur l'Afrique du sud, Mars 1978

5 WWF, "Apartheid"... the Status Report offers a hard-edged reality check.
**Cernavoda: Ceaucescu’s poisonous legacy**

*From Antonio Tricarico in Italy*

When Romanian dictator Nicolae Ceaucescu was deposed in 1989, his nuclear ambitions survived him, thanks to ECA support for his long-term plan to construct five reactors at the Cernavoda nuclear power plant. Work continued under the new regime, which halted construction of reactors 2, 3, 4, and 5 in 1991, in order to concentrate on reactor 1. Ever since the fall of the communist regime, ECA-underwritten financing has been crucial to the development of Cernavoda. In September 1991, the Canadian government announced a new agreement to form the AECL-Ansaldo Consortium, a joint venture located in Italy. The consortium was responsible for finding the financing. The salvage package included a loan of CANS315 million through the Canadian EDC, the takeover of project management by AECL and Nuclear Construction Managers, and the provision of services and components from other Canadian companies. The other partners in the consortium included Ansaldo of Italy (balance of plant), and the then Romanian Electricity Authority, RENEL (now CONEL). The Iranians came up with US$135 million in funding through the Mediocredito Centrale – at the time, an Italian public export credit agency. Reactor 1 was finally commissioned in 1996 almost 20 years after negotiations first started, costing the state US$2.2 billion. Cernavoda 2, commissioned in October 2007, is the latest nuclear power station to begin operating in Europe. Cernavoda 2 is not being used to supply electricity to Romanian consumers. It instead primarily exports electricity to neighbouring countries. Again, ECA support has been crucial to the development of this plant. In April 1998 a consortium headed by the Canadian company AECL in partnership with Ansaldo, was awarded a contract worth US$142 million by RENEL to continue work on Cernavoda 2. The contract was to be financed by RENEL funds (US$400 million), bank loans, and loans from ECAs. Furthermore, Eurocredit lent €235 million to the Romanian government in 2003. ECA support has helped to deliver a dubious legacy for Romania. The Cernavoda 1 and 2 reactors, already built with ECA support, and the planned 3 and 4 reactors, are all based on the Canadian CANDU6 design. Cernavoda is the first example of a Western-designed nuclear power plant being exported to an Eastern European country. AECL, who developed, design and market CANDU power reactors, have always portrayed this technology as innovative compared to others. However, serious doubts remain about the safety of the reactor, the design of which, according to the Western European Nuclear Regulators Association, has not changed since 1979, and which shares the same design flaw as the reactor which caused the Chernobyl disaster in 1986. Cernavoda — a small town of fewer than 20,000 residents — is located in southeastern Romania, Black Sea. The plant has had a negative effect on public safety and quality of life. Water from the Danube is used for cooling the reactor. Traces of tritium, a radioactive isotope of hydrogen, have been found in the water that is released back into the river from the reactor. Recommendations have been made to relocate pregnant women and mothers with very young children, and local residents have been advised not to eat produce grown in local gardens. On average, 60 per cent of tritium releases occur in the Danube and 75 per cent in the atmosphere. This risk of exposure will become even higher should the two new planned reactors come on stream. Furthermore, the power station is located in an area of seismic activity (the ‘Yranza Breach’) which has recently seen heavy earthquakes, causing damage in the area surrounding Cernavoda. The CANDU 6 reactor also lacks sufficient protection against terrorist attack. Cernavoda 2 financing was approved despite clearly inadequate public consultation in the affected areas by the Romanian government. They did not release a full Environmental Impact Assessment and related project assessment studies. They did not properly consider the alternatives to nuclear, including energy-efficiency projects. Recent public consultations about the construction of planned reactors 3 and 4 took place in a climate of intimidation for those, including environmental groups, who opposed the project.

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**Dirty Old Towns: Full of Eastern Promise for Western Companies**

*Regine Richter*

When the Berlin Wall came down, the old and unsafe nuclear reactors of Russian design, in Slovakia, Czech Republic, Lithuania and Bulgaria, became a headache for the policy makers of the West – but a golden opportunity for Western firms to make a profit, supported as ever by the deep pockets of their ECAs. In the course of negotiations for EU enlargement, some applicants for membership had to agree to shut down their old reactors, like Lithuania’s Chernobyl-type Ignalina NPP and Bulgaria’s old Kosloduj 1-4 reactors. Other reactors (existing and planned) had to undergo upgrading procedures that effectively prolonged their life and provided a new opportunity for Western nuclear power companies like Siemens (Germany), Framatom (France) or Westinghouse (USA).

**Temelin**

A good example is Temelin in the Czech Republic: in the late 1970s to early 1980s the government drew up plans to build a power plant consisting of four pressurised water reactors of the VVER 1000/320 type, a Russian design. They started building in 1987, but after the Velvet Revolution of 1989, they dropped plans for two of the reactors, and had to accept that the Soviet design would not meet Western standards. Thus some components had to be re-designed, for which the the government went to international tender. The American company Westinghouse was chosen, ‘convincing the Czech government that it could effectively take an unfinished Soviet reactor, improve its safety margins, and bring it in at budget. Westinghouse could not and did not’ says Michael Mariotte of the US Nuclear Information and Resource Service. The plant was finished years late and some US$1 billion over budget and the reactors experienced several technical problems after going online (Temelin 1 in 2000 and Temelin 2 in 2002). Westinghouse’s bid was supported by a finance package from the US ECA Ex-Im, worth US$317 million.1

**Kosloduj**

Westinghouse was also involved in upgrading the Bulgarian nuclear complex at Kosloduj. Decommissioning four of the reactors was a pre-requisite to EU membership, but they were allowed to keep the two newest reactors online, with safety upgrades. Modernisation and Western technology was supposed to improve the safety of the reactors. Their bid was supported by Ex-Im in 2000 with a US$77 million loan.2 However, Kosloduj became infamous in 2006, when after a loss of coolant, the emergency shutdown function failed, and it took operators over six hours to close down the reactor. Under different circumstances, i.e. a loss of coolant in one of the reactor’s vital parts, this failure of the central safety system would have led to a catastrophic melt-down of the reactor core. The Bulgarian authorities, however, did not deem this incident important enough to register it with the International Atomic Energy Agency in Vienna, until Georgii Katschiev, the former head of the Bulgarian nuclear safety authority, made it public.3 Sofia then saw itself forced to upgrade the incident to INES (International Nuclear Event Scale) Level Two, indicating an incident with consequences for plant safety.

**Ignalina**

Having been part of the Soviet Union, Lithuania was the only EU member-in-waiting to have a Chernobyl-type NPP, being the two RBMK reactors in Ignalina. As a condition of EU membership, reactors 1 and 2 had to be switched off by the end of 2004 and 2009, respectively. In the preceding years, however, Western companies were contracted to provide safety upgrades. New computers were installed in the nuclear complex in 1999, a deal supported by Ex-Im with nearly US$20 million.4 In 2000, Siemens provided a new concrete facility for liquid waste, supported by a Hermes guarantee of over 14 million DM (67 million) in 2000.5

**Mohovce**

In the early 1990s the Slovakian government planned to finish the partially-built Mohovce 1 and 2 reactors, both of the VVER 440/213 design. The original design was agreed in 1972, but halted after running into financial difficulties. The government turned to the European Bank for Reconstruction and Development (EBRD) for refinancing. However, the EBRD loan offer was conditional on certain criteria, including an assessment that the nuclear power plant would be the least-cost option; international safety standards being met; and closure of the aging Bohunice NPP once Mohovce became operational. As the Slovakian government would not agree to these conditions, negotiations ended unsuccessfully. In 1996 Siemens signed a contract for the completion of Mohovce and obtained a Hermes guarantee of over 153 million DM (76.5 million) for a contract to provide instrumentation and master controls.6 Unlike the EBRD, Hermes attached no conditions to the guarantee. Siemens was not the only business to win contracts for Mohovce: the French nuclear company Framatom also secured contracts worth estimated 495 million FF (around € 80 Euro) with support from the French ECA, Coface.7

Ironically, Mohovce is of the same design as reactors that had been operating in Eastern Germany and were shut down after reunification – due to safety concerns. It seems that what Western Europe will not tolerate in its own backyard, it will happily build in the East - for a profit.8

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2 ibid
3 “Financing Disaster”, Amis de la Terre, CRBB, EU Enlargement Watch, urgewald et al 2001, chapter on Germany, p. 74
Nuclear News: the new millennium

2001: Germany decommissions its nuclear exports programme

The late nineties brought a wind of change to Ger-
many and after 16 years of conservative-liberal rule, a
red-green government took power in 1998, rais-
ning hopes for changes in environmental and devel-
opment policy. The Greens won with a manifesto com-
mmitting to phasing out Ger-
many’s nuclear power plants, and soon after the elec-
tions, began negotia-
tions to make this a reality. At the time, a broad coa-
lition of more than 100 organisations working on
issues around debt, develop-
ment and the environ-
ment called for a reform of the way guarantees were
issued by the German Export Credit Agency, Hermes. Their demands included: improved trans-
parency; clear environ-
mental standards; an end to guarantees to countries that could not bear the costs of their debt burden through export credit guarantees; and exclusion of support for certain types of proj-
ect, including nuclear. As Germany is a coun-
try very much depend-
ent on exports, industrial and commercial inter-
tests could be threatened, and the debt burden for
themselves could be increased. In 1999, commit-
mments were made to explicitly exclude nuclear projects from guarantees.

However, the Hermes guid-
ing principles, published in April 2001, delivered on one important NGO o-
mand: they explicitly ex-
cluded support for export
projects: “Exports of nu-
clear technology designed
for the building of new or
conversion of existing nu-
clear power plants are ex-
cluded from support under
the Federal Government.” The logic behind this was that it would make no sense to
phase out nuclear power in Germany because of the serious dangers nuclear power still poses. These projects were still promoting its export to other countries. How-
ever, the guiding principles left some room for ECA support, thus not completely killing off all nuclear exports. The export credit agency (ECA) decided to focus on backing export credit guarantees for nuclear exports.

For sale: One discredited nu-
clear industry. Will ship any-
where. Finance available.

For Niko Shimizu in Japan

This year all eyes have been on Japan as it struggles to overcome a
national tragedy in the wake of March’s devastating earthquake and
tsunami. The drama unfolding at the damaged and leaking
Fukushima plant has re-opened debate about the safety of Ja-
pan’s domestic nuclear power programme, but behind the scenes and
virtually unreported, another controversial nuclear policy has been
pursued by the government — using ECAs to finance the export of Japanese nuclear technology around the world. The 1990s

Between 1991 and 2000, the Japan Bank for International Co-
operation (JBIC) supported six nuclear projects in three coun-
tries (China, Indonesia and Mexico) and one international
institution, the Korean Peninsula Energy Development Organi-
ization (KEDO), with loans and guarantees to a total of almost
€4.5 billion.

In China, JBIC gave support to three projects; in 1991 a loan agree-
ment with the Mitsubishi Corporation (up to 0.3 billion
yen for purchase of an electric transformer for a plant at Guang-
dong); and in 1997, financing for the Qinshan II and III reactors.

In Indonesia, in 1993, a 700 million yen loan was provided to
NEWJEC Inc, a subsidiary of Kansas Electric Power Co Inc, for
an initial feasibility study for the 4 million-kilowatt Muria Nu-
clear Power Plant. Initially slated to begin operating in 2016/17,
as of May 2011 the project remains at the planning stage, de-
tial par with Asian economic crisis of 1997 and opposition from
local communities who cite the lack of public participation;
the location of the plant in a quake zone; and increasing for-
eign debt (particularly to Japan) as reasons the project should be
halted. Nevertheless, the project remains on the cards.

In Mexico, JBIC provided support between 1997 and
2006 to the Comision Federal de Electricidad for turbine genera-
tor components at the Laguna Verde Nuclear Power Plant. Thir-
teen loan agreements were made, amounting to 480 million yen.

In 2000, JBIC underwrote a guarantee for a second-biggest guarantee
issue the guarantee. In the mean-
time however, plans for the sale of a German plutonium plant to China
were revealed. The plan met with a public outcry. The plant, designed for repro-
ucing used nuclear fuel, was built but never switched on, and an earlier attempt to sell it to Russia failed due to con-
perspectives on the possibil-
ity that it could be used to produce plutonium for nu-
clear weapons. In a very logic, both exports (the Finnish
to China) were linked, putting the reputa-
tion of the red-green gov-
ernment at risk. For the
Greens, the sincerity of their anti-nuclear stance
was thrown into doubt. This gave those members of parliament who had previously
voted against guarantees for Olkiluoto 3, enough clout to force
them to accept Siemens’ argu-
ments about who will foot the bill. The question is, will the French state honour the guarantee and cover AREVA NP’s losses? Strangely not: in 2006, to reply a question asked by member of Parlia-
ment Dominique Voynet, the
French economic minister said that the cost of the delays at
Olkiluoto 3 were not covered by the Coface guarantee, but must be
borne by the industrial consortium. The irony is that due to “commercial confiden-
tiality”, the details of Cofacé’s guarantees are unknown. Even if the French government were to pay the €570 million, no one would be as any the wiser.
German nuclear exports 2009-2011: Back to square one!

In September 2009, a conservative liberal government came to power in Germany, with a policy of overturning the nuclear phase-out negotiated in 2000. In the face of a vocal anti-nuclear movement, the federal states, they waited a whole year until announcing that the lifetime of existing nuclear plants would be extended. But they were much quicker off the mark with another pro-nuclear initiative: supporting German nuclear exports via Hermes export credit guarantees.

Only a month after the federal elections, AREVA NP (then a joint venture, in which Siemens had 34% and Nippon Steel and Sumitomo 26%) requested a guarantee for the Brazilian nuclear power plant Angra 3. This was impossible under the 2001 Hermes guidelines as they explicitly excluded guarantees for nuclear exports. Therefore, in December 2009, the new government removed the Hermes guidelines, replacing them with the “OECD common approaches on the environment and officially supported export credits.” The OECD standards do not refer to nuclear projects, and certainly do not exclude them in the manner that the Hermes guiding principals had done. This left the government entirely free to go ahead with the Angra 3 project, despite vociferous opposition in parliament, lead by the Greens, who pointed out Angra 3 has long been a subject of fierce criticism in both Germany and Brazil.

Ongoing problems for Angra...

Angra 3 is a project with inherent weaknesses. Its technology is already outdated before construction even starts. The plant is of a second-generation design, as the plans and contracts for the Angra 2 (online since 2000) and Angra 3 plants were drawn up back in the 1970s, but this is only one of many problems identified. The plans for the storage of radioactive waste are poor, provisional and inadequately advanced. The Brazilian nuclear regulator is not an independent body, but has direct commercial interests in the Angra 3 project.1 The emergency-management plans have been strongly criticised, as there is only one road for evacuation, which is threatened by landslides. The environment minister awarded the plant a licence with the proviso of over 40 additional requirements; but experts doubt whether Electro nuclear, (the utility managing the plant) is capable of fulfilling these requirements. The plant is not sufficiently well protected against plane crashes — a failing which was highlighted in an “independent” study, specially prepared for AREVA NP, ironically for the purpose of calming opposition to the project within Germany. “The study, which we obtained only through a freedom of information request, is quite poor and clearly written to give the project a rubber stamp”, explains Barbara Happe of the environmental organisation urgewald. “However, even this poor study mentions quite a few problems and underlines the lack of protection against plane crashes. Their conclusion is outrageous though, as they say, since there are already two other nuclear plants (Angra 1 and 2) that have no protection against plane crashes, one could easily build a third one under the same conditions at the site.”

1 Financing the Brazilian nuclear programme: a risky investment

For sale: One discredited nuclear industry. Will ship anywhere. 

For sale: One discredited nuclear industry. Will ship anywhere.

The motivation was political: in return for the financing and construction of the reactors, the government of North Korea agreed to freeze and ultimately dismantle its nuclear weapons programme. However, the deal collapsed in 2005 as it became apparent that North Korea did not intend to comply. As well as JBIC, there is another Japanese ECA: Nippon Export and Investment Insurance (NEXI). NEXI’s involvement in the nuclear sector during the 1990s is undocumented, mainly because it retains its contract information for only three years after the insurance period ends.

The 2000s

From 2001 to 2008, the export of nuclear technology was not a prominent part of Japanese policy. JBIC continued to support Laguna Verde in Mexico, and the limited information available from NEXI indicates a total loan value of $5.73 billion yen, to countries in Asia, Europe North America and Central America. Since the Democratic Party took office in 2009 however, the policy has changed. In June 2010, the government announced that nuclear energy was a key plank of its ‘New Growth Strategy’ of ‘green innovations’ to combat climate change.

The Ministry of Economy, Trade and Industry (METI) has calculated that each new nuclear power plant built is equivalent to a reduction of six million tons of CO2 emissions. They hope to use bilateral carbon credits for nuclear new-build as part of their Kyoto carbon-reduction targets. METI has already conducted feasibility studies of two nuclear power plants in the Ha Tinh and Quan Ngai Provinces of Vietnam, followed by an agreement that Japanese businesses will be awarded the contracts to build two nuclear power reactors there. In implementing the new pro-nuclear policies, the government has made good use of JBIC and NEXI to promote nuclear exports. Japanese NGOs have argued that the current process followed by ECAs when financing nuclear-related projects is flawed. The predominant role of JBIC and NEXI, focusing on issues particular to nuclear power. The NGOs argue that METI’s review is not adequate or appropriate, and the government has responded by agreeing to establish new guidelines for ECA funding of nuclear projects. The guidelines will stipulate that “JBIC will not finance a nuclear project, if the information regarding safety, measures of nuclear accident and nuclear waste are not disclosed to local people.” In January 2011, before the process of establishing these guidelines had begun, the JBIC website, announced the commencement of environmental and social screening process for two new plants at the South Texas Project Nuclear Power Station. More than 170 organisations from the US, Japan and other countries united in urging the Japanese government and JBIC not to support this project — citing cost overruns and the high potential in Texas for renewable energy alternatives. But the debate was to be overtaken by events. In the wake of Fukushima, everything has changed. With new nuclear development in the US looking uncertain, one of the backers, NRG Energy decided to write off its investment in the project. Then another potential investor, the Tokyo Electric Power Company, Inc. (TEPCO), the owner of the Fukushima facility, stated that it would be difficult for them to be involved in nuclear exports given the situation. The Texas project remains on the list of those ‘under consideration’ by JBIC, but it now looks increasingly unlikely that finance will be made available.

It goes without saying that, against the backdrop of the stricken reactors at Fukushima, Japan’s enthusiasm for nuclear power has been utterly thrown into doubt. The government says it will comprehensively review Japan’s domestic energy policy. But will Japan’s ECAs be asked to stop their support for nuclear exports to other countries? This remains unanswered.
ECA’s: stuck in a nuclear rut and deaf to the alternatives
Noriko Shimizu
Friends of the Earth, Japan

On 11th March, all the old assumptions about the future of nuclear energy evaporated, as hard on the heels of the Japanese earthquake and tsunami came the world’s worst nuclear accident for a generation.

Two months later, the reactors have not yet been brought back under control, radioactive material is still escaping, albeit at a lower level than before. Fukushima has collapsed all the old myths about nuclear power: that it was a safe, low cost, and environmentally-friendly technology — myths which many believed, at least in part. Perhaps the most shocking thing about Fukushima is that it took a Level Seven accident to make us wake up and pay attention to the true costs of nuclear power.

The damage caused by the nuclear accident is socially, economically and environmentally immense. More than 200,000 people live within 30 km of the leaking reactor, many of whom have been ordered to evacuate their homes. Agriculture, fisheries and many economic activities were also massively disrupted in Fukushima and the surrounding region. The level and scope of compensation for such losses are immeasurable and far beyond what Tokyo Electric Power Company (TEPCO) can afford, forcing the Japanese government to step in with public funds.

Despite this tragic accident, and although enthusiasm for their domestic nuclear policies has taken a nose-dive, no national government, not even Japan, has yet announced the cancellation of their ECA-subsidised nuclear export programmes. The nuclear poison that their own electorate will no longer stomach is apparently still good enough for the impoverished populations of Eastern Europe and the developing world.

Worse still, some have already trivialised the catastrophe at Fukushima as being about mere “safety issues”; conveniently dodging the bigger question: where does nuclear sit in the energy mix, if at all? What new high-tech precautions we take, there is no denying that inevitably accidents will happen. When they happen, the damage is irreparable.

The Intergovernmental Panel on Climate Change recently published a report stating that, under the most optimistic scenarios, we could achieve 77 per cent of our global energy from renewables by 2050. If this is true, then the continued support by ECAs for nuclear development, to the detriment of the long-term health and sustainability of our environment and economies, can only be seen as self-defeating, foolhardy and ultimately perplexing. Each successful nuclear deal made possible by an ECA is a pyrrhic victory we will regret for generations.

Will France ignore safety warnings and fund the “next Fukushima” at Jaitapur?
By Sophia Majnoni d’Intignano in Paris

In 2008, the USA and India agreed a deal making possible, for the first time in three decades, civilian trade for nuclear technologies between the two countries. While the European market is closed for new reactors, India’s energy needs are growing fast, creating a large market for American, Russian and French nuclear exporters.

Despite the fact that India has not signed the Nuclear Proliferation Treaty, and has developed a significant military programme, nuclear countries such as France are now at liberty to sell their civilian reactors there. America and France did not hesitate to exploit this new market. Indeed, India already plans to build, at Jaitapur in Maharashtra, what it boasts will be the biggest nuclear power plant in the world, importing from France six European Pressurised Reactors (EPR). Negotiations between the Indian electricity company, NPCIL, and Areva, for the first two EPR, began in 2009. This deal is expected to cost at least €5.4 billion — a surprisingly low estimate given the cost of the two EPRs currently under construction in Europe.1 India expects the contract to be signed by mid 2011. Meanwhile the negotiators occupy themselves with the logistics of financing the deal: the toko of the Olkiluoto 3 project in Finland has highlighted to private investors the very real risk they take when entering into these contracts.2 Increasingly, private banks will not invest in nuclear reactors without significant underwriting from public funds; the public guarantee demanded for China’s Taishan EPR project was three times higher than for Olkiluoto 3, despite comparable project costs for the two. Despite all official claims to the contrary,3 financing is a crucial part of the contract negotiations, and discussions between ECAs, banks, buyers and sellers, start long before the point of signature. In 2010, the French bank BNP Paribas was mandated to be the financial advisor for the Jaitapur deal and several private banks (such as HSBC or Credit Agricole and Societe Generale) were asked to be part of the future syndicated loan. Meanwhile, the plant will be sited in the only high-seismic-risk area of the west coast. Does Coface have the authority — and if so, is it willing — to demand a relocation to a safer site? Furthermore, the Indian regulator has a poor track record when it comes to safety issues. Does Coface have the power to ask for an international team of safety experts to oversee the construction of the reactors, to ensure that the highest standards are adhered to? If necessary, are the French government and Coface prepared to reject this deal, if environmental and safety short-comings are not addressed? Or will the profits of the French nuclear export industry always override all other concerns? Coface has given assurances that ECAs can and do improve the safety of the projects they fund. But given the enormous commercial interests at play and the lack of transparency in their decision-making processes, fundamental doubts persist about their real priorities, and therefore the safety of French nuclear exports.

1 The Finnish EPR will cost at least €5.9 billion instead of the 5.2 billion announced, the French project has barely reached €3.5 billion (budget: €3.3 billion), and only four years since construction began. 2 These risks are detailed in a 2009 Citi group report “New nuclear the

WEATHER

Nuclear capacity under construction and order of reactors.

Source: International Nuclear Safety Center at ANL, Aug 2011

World Nuclear Power Plants as of May 2005


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