

Nuclear
Banks,

NO

www.nuclearbanks.org

Thanks!

INTRODUCTION



Nuclear power is not only the most controversial and dangerous form of energy generation, it is also one of the most expensive. To raise the many billions of euros needed to build even a single nuclear reactor, utility companies therefore rely heavily on banks and other financial players.

Until now, little was known about banks' contributions to the nuclear sector. While most large commercial banks provide figures on their annual investments into renewable energy, they prefer to keep the billions of euros they pour into the nuclear industry secret. As much of this financing is indirect – delivered through corporate loans and bonds - banks have for the most part been successful in keeping these investments hidden from public scrutiny.

In order to lift this veil of secrecy, BankTrack, Greenpeace International and public advocacy organizations from Germany (urgewald), France (Les Amis de la Terre), Austria (Antiatom Szene), the Netherlands (WISE) and Italy (Campagna per la Riforma della Banca Mondiale) commissioned research to uncover the details of nuclear banking. This briefing summarizes the results and sets the cornerstone for a broad international campaign to stop nuclear financing.

Nuclear Banks, No Thanks! highlights the nuclear investments of over 100 commercial banks worldwide and provides a 'who's who' list of the top 20 financial institutions bankrolling the nuclear industry.

Together with the accompanying website www.nuclearbanks.org, it enables citizens, NGOs, investors and companies to assess how 'radioactive' the portfolios of their banks are and to make informed choices about where they want to bank in the future.

Methodology and Scope of Research

We commissioned Profundo, an independent consultancy company based in the Netherlands, to carry out this research. The research covers nuclear financing during the period 2000 – 2009.

Because banks do not make information about funding of specific projects or companies publicly available, we had to work backwards, identifying them from the end recipients. We selected a representative sample of 80 companies from the nuclear energy sector (extending from uranium mining and fuel fabrication to reactor construction, operation and waste management) on six continents. ¹

Profundo reviewed the annual reports of these companies, their stock exchange filings and other publications, such as archives of trade magazines and the financial press ² as well as specialised financial databases (Thomson ONE and Bloomberg) to trace financial transactions between the companies and commercial banks.

Identified financial transactions include: issuing bonds and shares; holding bonds and shares; corporate loans; project financing; revolving credits and other financial products.

When we found syndicated loans or bond issues where several banks participated in a single transaction and no information was available about each bank's specific contribution, Profundo divided the sum between the arranging and participating banks. We then assumed an even distribution within each group. Although this may not reflect the actual division of funding, it gives at least a reasonable estimate of individual banks' involvement.

Another consideration was how to handle cases where companies (such as utilities) are not exclusively involved in the nuclear sector. Here, our methodology is based on a calculation of the company's nuclear assets in relation to its total assets. This 'nuclear value,' of course, also depends on the official purpose of the financing (project-related or general). When the financing is for a nuclear project, the nuclear value is set at 100%. When the financing is for general corporate purposes, the nuclear value corresponds to the relative importance of nuclear activities in the recipient company's portfolio.

It should be noted that our research only shows part of the real picture. It does not cover all of the world's nuclear companies and even for the 80 companies included, it is likely that some transactions were missed. In reality, all of the identified banks probably provide much larger sums to the nuclear sector, and it is likely that some additional 'nuclear' banks were not identified.

This being said, our findings nonetheless provide the first quantitative and representative analysis of banks' support for the nuclear sector. They disclose which banks play a key role in financing the nuclear industry and enable citizens and consumers to make relative comparisons between individual banks. They also send a signal to banks that public advocacy organizations are closely monitoring their activities in this field. The full research results, including a detailed list of individual nuclear transactions, can be found at www.nuclearbanks.org.



1| Full details about the research, including companies that were mapped, is available online at www.nuclearbanks.org or can be provided upon request.

2| These archives include: Euromoney, Euroweek, Moscow Times, Financial Times, Wall Street Journal, Reuters, Dialog, Factiva, LexisNexis, Highbeam, Goliath, Northern Light, Project Finance Magazine and Project Finance International.

Main Findings

In total, 867 individual transactions were identified, involving 124 different commercial banks. The total 'nuclear value' of financing supplied by these banks between 2000 and 2009 amounts to over €175 billion.

Type	number of transactions	Nuclear value (€ millions)
Bond issue	595	92 188
Corporate Loans	134	66 281
Share Issue	45	6 763
Shareholder	29	435 000
Project Loan	15	2 189
Revolving Credit	6	1 278
Bondholder	16	401 000
Others	27	3 044
Total	867	176 492

Table: Breakdown by type and sum of the identified transactions between banks and nuclear companies

The results show that project financing plays a very marginal role for the nuclear industry, as such loans represent only 1% of the identified total. With the exception of the Cernavoda 2 nuclear reactor in Romania, this type of financing is almost exclusively linked to smaller projects (mainly uranium mining and processing).

The bulk of nuclear financing takes place in form of bond issues and corporate loans. Taken together, these cover 90% of the mapped investments.

While it is true that general corporate loans or bonds cannot be directly linked to specific projects, they are nonetheless the main avenue through which the nuclear industry raises capital for its investments. Public advocacy organizations believe that it is time for banks to be held accountable for these financial services.

If financing is provided to a company with significant operations in the nuclear sector, a significant portion of the money is likely to be invested in this sector. Sometimes, when the future investment plans of a given company are published – as in the case of the Slovakian utility Slovenske Elektrarne - it is even possible to estimate what portion of money will end up in nuclear construction.

In the case of corporate loans, a banks' own capital is potentially at stake if a company's major investments fail. With bond and share issues, however, banks insulate themselves from financial risks. Instead of investing their own capital, they act as mediators assisting companies in finding investors willing to buy corporate shares or bonds. As the catalysts for these transactions, banks must, however, be held responsible for the large sums of money this mobilizes for the nuclear industry.



A Greenpeace team measures dangerous levels of radiation in the streets of Akokan and Arlit in Niger. AREVA's uranium mines threaten the health of 80,000 people living in these towns.

Left in the dust: uranium mining contaminates air, water and soils, poisoning local communities in poor and distant regions.



Protest at the Bohunice nuclear power plant in Slovakia to commemorate the anniversary of the Chernobyl accident.

A severe accident of a 1,000 MW reactor, due to technical or human failure, may impact the health of millions of people and force evacuation of an area as large as Belgium.

Our research finds that the top 10 nuclear banks are: BNP Paribas (France), Barclays (UK), Citi (US), Soci t  G n rale (France), Cr dit Agricole/Calyon (France), Royal Bank of Scotland (UK), Deutsche Bank (Germany), HSBC (UK/HongKong), JP Morgan (US), and the Bank of China. Together, these ten banks provided  92 billion to the nuclear industry in the period 2002-2009, over half of the total amount identified by our research.

Bank	Nuclear Finance (� millions)
BNP Paribas	13 502
Barclays	11 463
Citi	11 413
Soci�t� G�n�rale	9 750
Cr�dit Agricole	9 179
Royal Bank of Scotland	8 576
Deutsche Bank	7 842
HSBC	7 578
JP Morgan Chase	6 721
Bank of China	6 011
Mitsubishi UFJ	5 389
Mizuho	4 799
Morgan Stanley	4 327
Merrill Lynch	4 082
UBS	3 990
ABN Amro	3 979
Commerzbank	3 926
Goldman Sachs	3 731
Sumitomo Mitsui	3 238
Natixis	3 154
Credit Suisse	2 924
Nordea	2 686
Bank of America	2 361
UniCredit/HVB	2 310
Nomura	2 172
Bayerische Landesbank	1 755
BBVA	1 658
ING	1 563
Royal Bank of Canada	1 538
Lehman Brothers (now bankrupt)	1 428
SEB Bank	1 287
Gazprombank	1 236
Intesa San Paolo	1 071
China Construction Bank	1 027

Table: Ranking of banks that provided more than  1 billion of nuclear funding in the years 2000 – 2009.



All research results, including profiles of selected companies and nuclear projects, are available at www.nuclearbanks.org.

- 3| Department of Energy, „An analysis of nuclear power construction costs, energy information“, Administration of the US, DOE/EIA-0411, 1986.
- 4| M.V.Ramana, Antonette D'Sa, Amulsa K.N.Reddy, „Economics of nuclear power from heavy water reactors“, Economics and Political Weekly, April 2005 and updated information from the author.
- 5| http://www.powermag.com/POWERnews/AREVA-Suffers-Hefty-Losses-from-Delays-in-Finnish-EPR-Project_2151.html
- 6| Graph taken from: Mark Cooper, „The Economics of Nuclear Reactors: Renaissance or Relapse?“, Institute for Energy and the Environment, Vermont Law School, June 2009

Nuclear Power is Expensive

The promise of nuclear power was of “energy too cheap to meter.” This is one of the greatest fabrications of all time. Nuclear energy is astonishingly expensive – and all too often, it is the taxpayer that ends up bearing the risks – and the costs.

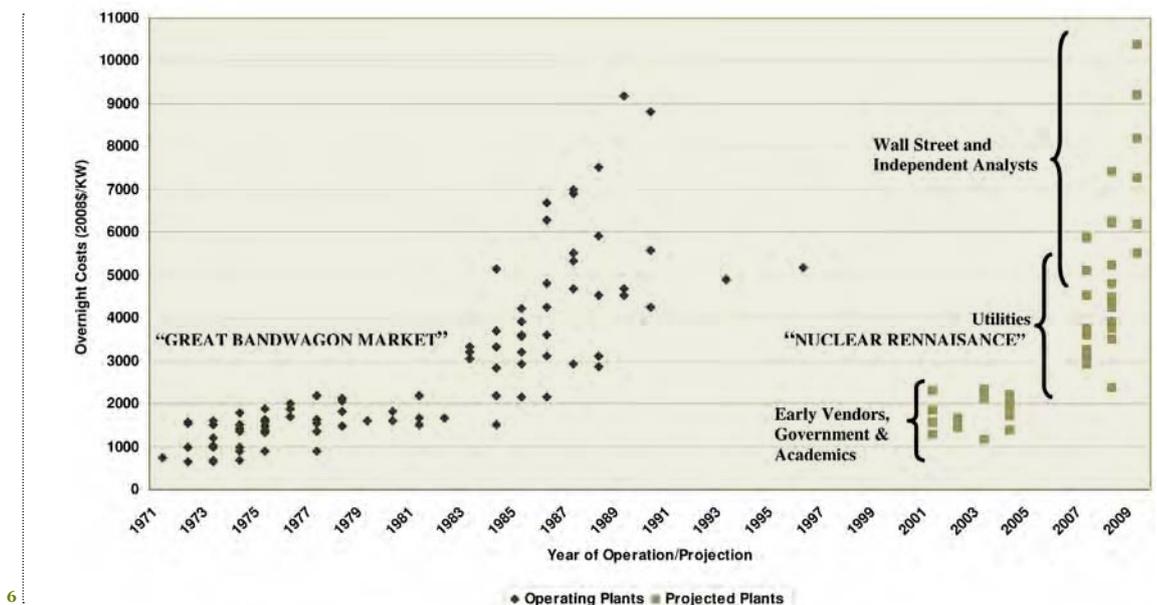
For example, a 1980s study of 75 of the 104 nuclear reactors in the US showed predicted costs of \$45 billion US dollars (€34 billion), but actual costs of \$145 billion - more than three times the initial estimates.³ A 2005 assesment found that in India, the country with the most recent experience in nuclear construction, completion costs for the last 10 reactors have, on average, been 300% over budget.⁴ The costs of nuclear projects keep spiraling out of control. The first cost calculations for the new generation of nuclear reactors were made in 2003 (for example

by MIT and the IEA). Since then, the estimated investment costs have tripled from US\$2 billion to between US\$6 and \$8 billion per reactor.

Such cost overruns are not only estimates; they are already being observed. In 2002, the Finnish parliament approved the building of a new European Pressurised Reactor (EPR), on the grounds that it was cheaper than investing in clean renewable energy. The initial price tag was €2.5 billion, the contract was signed for €3 billion. After four years of construction, the price tag has already reached an officially estimated €5.5 billion (US\$7.5 billion), and completion of the project has been delayed by several years.⁵

The bad economics of nuclear power is one of the main reasons most multilateral development banks, including the World Bank, refuse to get involved with the nuclear sector.

Overnight Cost of Completed Nuclear Reactors Compared to Projected Costs of Future Reactors



6

Sources: Koomey and Hultman, 2007, Data Appendix; University of Chicago 2004, p. S-2, p. S-8; University of Chicago estimate, MIT, 2003, p. 42; Tennessee Valley Authority, 2005, p. I-7; Klein, p. 14; Keystone Center, 2007, p.42; Kaplan, 2008 Appendix B for utility estimates, p. 39; Harding, 2007, p.71; Lovins and Shiekh, 2008b, p. 2; Congressional Budget Office, 2008, p. 13; Lazard, 2008, Lazard, p. 2; Moody's, 2008, p. 15; Standard and Poor, 2008, p. 11; Severance, 2009, pp. 35-36; Schlissel and Biewald, 2008, p. 2; Energy Information Administration, 2009, p. 89; Harding, 2009. PPL, 2009; Deutch, et al., 2009, p. 6. See Bibliography for full citations.



Protest in front of
Austria's Erste Bank
in 2008

© Antiatom Szene

Western banks finance nuclear projects that would never be permitted in their own countries.



© Greenpeace/Ingrid Fankhauser

BANKS

“Nuclear Waste – Where to?” In spite of the fact that 438 nuclear power plants are in operation worldwide, there is still no final storage facility for nuclear waste anywhere in the world.



The next 10,000 generations will be burdened with the radioactive waste generated by today's nuclear reactors.





Multilateral Development Banks on Nuclear Power

“Nuclear plants are uneconomic because at present and projected costs they are unlikely to be the least-cost alternative. There is also evidence that the cost figures usually cited by suppliers are substantially underestimated and often fail to take adequately into account waste disposal, decommissioning, and other environmental costs. Furthermore, the large size of many nuclear plants relative to developing country systems leads to risks of substantial excess capacity should demand fail to increase as predicted. A nuclear investment strategy lacks flexibility to adapt to changing circumstances. The high costs would require large increases in tariffs and could threaten the financial viability of the systems if nuclear power were a significant part of the total (...).”

“The economic case is clear: under present cost structures, the Bank would not finance new plants because they are uneconomic.”

“The major environmental issue is whether nuclear plants (including the production of fuels, cooling systems, and waste disposal) can be operated within acceptable safety standards expressed mainly in terms of radioactive releases. There are major differences of opinion on what is acceptable in terms of both the costs and probabilities of accidents, particularly those of a catastrophic nature.”

(World Bank, 1999, Environmental Assessment Sourcebook, Chapter 10: Energy and Industry).

„(..) nuclear power development faces a number of barriers, such as public concerns related to nuclear proliferation, waste management, safety issues, high investment costs, long lead times, and commercial acceptability of new technologies. (...) In view of concerns related to procurement limitations, availability of bilateral financing, proliferation risks, fuel availability, and environmental and safety concerns, ADB will maintain its current policy of non-involvement in the financing of nuclear power generation.“

(Energy Policy, Asian Development Bank, 2009)

Nuclear Ranking

No 1



No 7



Risky Business for Banks

Power utilities with nuclear ambitions need many billions of euros to build even a single reactor. The investment levels are so high, that even the largest corporations cannot afford to finance them on their own. Thus, they rely on commercial banks to help them raise the necessary capital.

Nuclear power, however, remains by far the most unpopular form of energy production and reputational risks are accordingly high. This makes providing loans for the nuclear sector a very risky business for banks. A 2005 IAEA survey across 18 countries showed 59% of the population opposed to the construction of new nuclear power plants.⁷ A more recent survey by the European Commission from March 2010 found that 52% of Europeans consider nuclear power plants to be a risk for themselves and their family. Only 17% of Europeans are in favour of increasing the use of nuclear energy.⁸

Banks need to wake up to the fact that nuclear power is extremely unpopular among the wider public and that their continued support for this dangerous and dirty form of energy will, in the long term, alienate many of their customers.

Profiles of Selected Nuclear Banks

BNP Paribas

With nuclear investments of €13.5 billion, BNP Paribas is the world's number one nuclear bank. More than a third of this sum (€5 billion) went to Electricité de France (EdF) – the world's largest nuclear operator 87 % owned by the French State. BNP Paribas is now the third largest financier of EdF after Credit Agricole (€6.7 billion) and Societ e G en erale (€6 billion).

BNP Paribas's other major nuclear clients include French AREVA, the German energy company E.ON (whose portfolio is 25% nuclear), Belgium's Electrabel and the Japanese state owned nuclear energy company TEPCO. BNP Paribas is the only western bank, which provided a loan to the highly controversial Belene project in Bulgaria (see page 19). BNP Paribas is also considered to be a likely financier for upcoming nuclear deals in Brazil and India (see pages 20, 21).

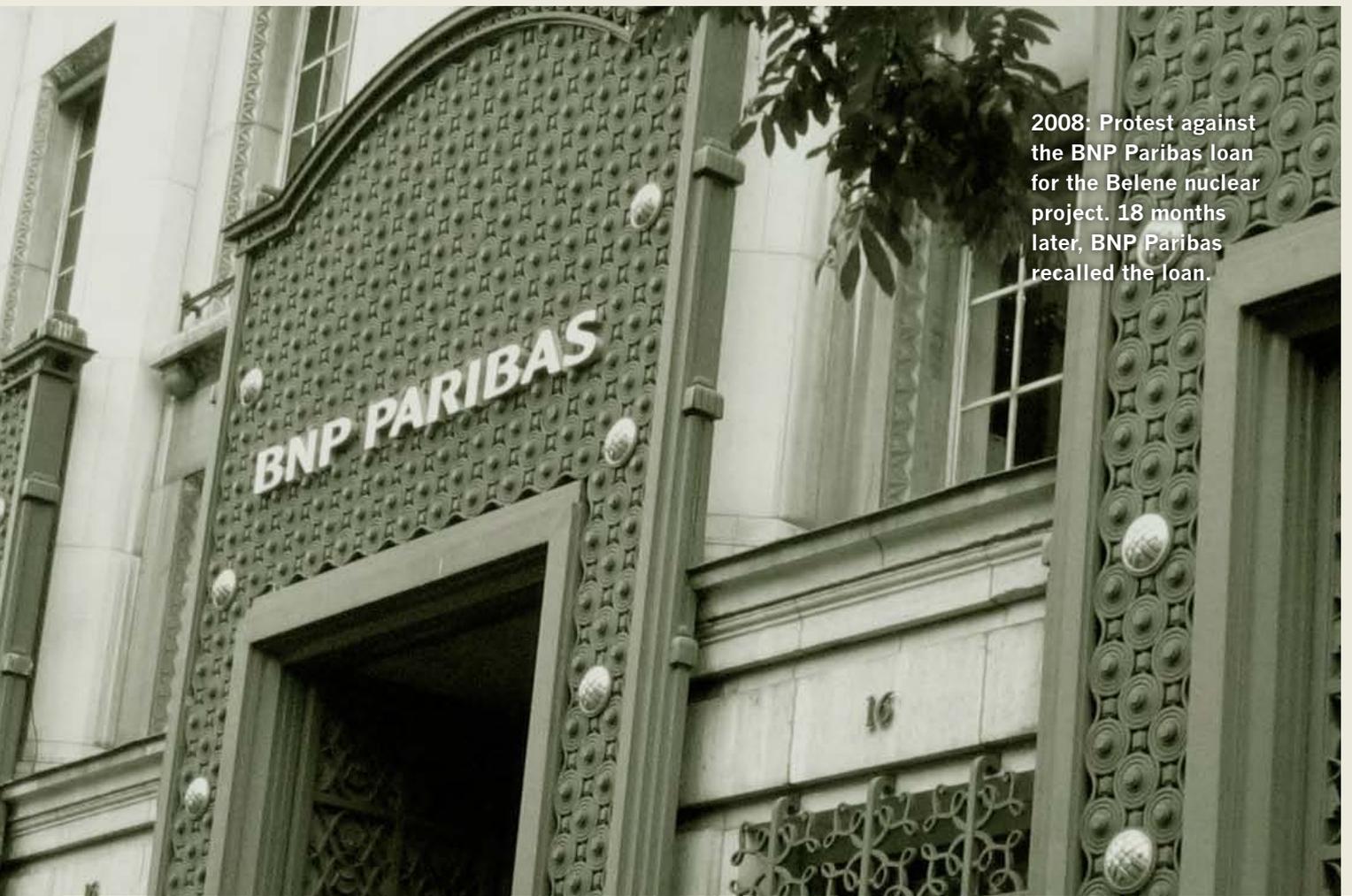
Deutsche Bank

Deutsche Bank is the seventh largest financier of nuclear activities in the world. With over €7.8 billion in nuclear investments, it has by far the most 'radioactive' portfolio of any German bank – in fact its investment amounts to the combined nuclear investments of all other German banks. Deutsche Bank investments include huge loans for uranium mining, particularly in Africa, as well as financial support for nuclear operators throughout the world.

Deutsche Bank is not only the nuclear industry's main financial partner in Germany, but also lobbies for the industry as well as actively promoting radioactive

7| Global Public Opinion on Nuclear Issues and the IAEA – Final Report from 18 Countries, IAEA, 2005

8| Eurobarometer, „Europeans and Nuclear Safety“, March 2010



2008: Protest against the BNP Paribas loan for the Belene nuclear project. 18 months later, BNP Paribas recalled the loan.

Without our knowledge, commercial banks provide dozens of billions of euros to the nuclear industry each year.



Protest by local communities against the plan to build the world's largest nuclear power station in Jaitapur, India.



With nuclear power on a decline globally, the industry is trying to survive by selling its dangerous reactors to developing countries.

investments as “the solution to the energy crisis”. For example, under the title ‘Limitless Participation in the Nuclear Boom,’ Deutsche Bank advertises the ‘S-Box Nuclear Power Index Certificate,’ based on the earnings of 20 leading nuclear companies.

HSBC

HSBC positions itself as progressive in terms of environmental policies and climate protection. Yet, it actively promotes nuclear power, a dangerous obstacle to saving the climate. One of HSBC’s special products - the Climate Investment Fund – for example, includes a 13% share of investments in the nuclear power sector.⁹

The top three nuclear companies HSBC invests in are: Siemens - which has a 34% share in AREVA; E.ON; and Exelon, the largest US nuclear operator, running 17 reactors with a history of tritium contamination¹⁰ and scandals such as reactor guards being found asleep on duty.¹¹

With investments of €4.2 billion, HSBC is also among the top six financiers of EDF, and together with Societe Générale, it is one of the major financiers of French state controlled nuclear engineering company AREVA. Both banks provided €710 million each to AREVA, in spite of the fact that this company received the 2008 “Anti-Oscar for worst company behavior,” handed out in a parallel event to the World Economic Forum each year.¹² Complaints raised against AREVA include the widespread contamination caused by its uranium mines in Niger, the shipping of radioactive waste to Siberia as well as massive problems in its reactors under construction. In Finland, local authorities already identified over 3,000 technical deficiencies in the construction of the AREVA built EPR in Olkiluoto.

HSBC is also explicitly mentioned as a future investor for reactors planned in India (see page 21 for more details).

Citibank

Citibank is the third largest nuclear bank in the world, providing nearly €11.5 billion globally. Its top clients include Japanese state owned TEPCO (€2.5 billion), which is infamous for its series of nuclear accidents, including the earthquake-hit Kashiwazaki-Kariwa reactors; E.ON (€1.5 billion) and EDF (€1.1 billion).

Other key partners are Vattenfall (€700 million), whose Forsmark reactor in Sweden came perilously close to a meltdown when its control and safety systems failed during a blackout in 2006; Finnish utility company Fortum (€650 million); AREVA (almost €500 million), ENEL (€380 million), and RWE (€320 million). RWE has an aggressive nuclear new-build policy and has announced plans to participate in the construction of six nuclear power stations throughout Europe, including the highly controversial Cernavoda 3 and 4 project in Romania.

In September 2009, Citibank issued bonds in the order of €3.5 billion, which will most likely be used to finance the Mochovce 3 and 4 power station in Slovakia, one of the most dangerous nuclear projects planned in Europe. Citibank has also displayed interest in financing the completion of several new nuclear power plants in Brazil, including the Angra 3 project.

Nuclear Ranking

No 8

HSBC 

No 3

citi 

9| HSBC 2009. HSBC Global Investment Funds – Climate Change. April 2009.

10| <http://www.freepressnews-papers.com/main.asp?SectionID=13&SubSectionID=143&ArticleID=5277>

11| <http://www.greenchange.org/article.php?id=3791>

12| <http://www.indymedia.org.uk/en/2008/01/390004.html>

Examples of Controversial Nuclear Power Projects

1.

Mochovce 3 and 4 in Slovakia: A Disaster Waiting to Happen

The Mochovce nuclear power station blocks 3 and 4 are of Russian design from the 1970s. The construction of two VVER 440/213 reactors began in 1986, but was suspended in 1992. The project came back on the agenda in April 2006 when the Italian power company ENEL gained control of Slovenske Elektrarne (SE), Slovakia's national energy company, ENEL immediately made the completion of Mochovce 3 and 4 a key part of its investment portfolio, representing 85% of all SE's investments in the next six years.

Mochovce is a disaster waiting to happen – the project falls far below current standards and the best available technology.

While SE recently put forward proposals for upgrades, not all the desired safety features can be implemented as much of the civil construction has already been completed. One of the most striking shortcomings of the Mochovce project is the lack of a full containment. This basic safety feature of all modern nuclear reactors is used to prevent radioactive material from leaking out, and to protect against external events such as airplane crashes.

Moreover, there are a number of questions about the legality of the 2009 environmental impact assessment (EIA) as it was carried out long after approvals and licenses were already issued. Moreover, it is not really an independent assessment as DECOM - the company contracted by the Slovak Environment Ministry to review the EIA - is wholly owned by VUJE, the primary project construction contractor.¹³ Greenpeace Slovakia has thus taken legal action against SE and the Slovak government, but the court cases are still pending.

In October 2007, SE acquired a corporate loan of €800 million intended for use in the construction of Mochovce 3 and 4. The eight banks participating in the loan were Erste Bank (Austria), ING (Netherlands), Intesa Sanpaolo (Italy), KBC and Dexia (Belgium), Mizuho (Japan), Soci t  G n rale and Credit Agricole (France). Huge public protests, particularly in Austria and the Netherlands, forced the banks to re-negotiate the deal. In April 2008, they specified that the money provided under this corporate loan may not be used to finance the building of Mochovce.

In the meantime, however, ENEL has secured several bond issues in Europe and US which will probably - at least partially - be used for financing the construction of the controversial Mochovce NPP.¹⁴

¹³ | <http://www.world-nuclear.org/info/inf91.html>

¹⁴ | Nucleonics Week, 16 July 2009, Enel looking at candidate sites for new reactors, CEO says, Platts



Protest against the nuclear power plant Angra 1 and 2 in Brazil. The reactors were built by Westinghouse and Siemens and created an immense debt for Brazil.

Nuclear power is expensive. Completion costs for reactors are on average three times higher than the initial estimates.





Nuclear power is the most controversial form of energy production. Surveys by the European Commission show that the majority of Europeans consider nuclear power plants a risk to themselves and their families.



Two years of protest against RWE's planned participation in the controversial Belene project led the company to pull out in 2009.

2.

**Belene: Russian Roulette
in Bulgaria**

The plan to build two nuclear reactors near the town of Belene in northern Bulgaria was developed in the early 1980s. As early as 1983, however, Soviet scientists warned that the site was not suitable for a nuclear power plant due to its high seismic risks.¹⁵ The last large earthquake in the region killed over 120 people in 1977 and caused many buildings to collapse, only 14 km from the Belene site. Belene was therefore cancelled after the communist regime fell.

Over a decade later, the project was, however, restarted and in 2006, the Bulgarian government awarded a construction contract to the Russian company Atomstroyexport. The planned design is a new Russian reactor type AES-92, for which neither an independent safety assessment nor operational experience exists.

Many towns close to Belene spoke out against these plans; their concerns were supported by one of Bulgaria's leading nuclear experts, Dr. Georgui Kastchiev, head of the Bulgarian Nuclear Safety Authority from 1997 – 2001.

According to Dr. Kastchiev: "The safety issues confronting Belene are immense and include design problems, lack of qualified construction personnel, inadequate safety culture at the corporate and governmental level, insufficient independence and competence of the regulatory body, and the lack of a strategy to deal with spent fuel and high-level waste. If one figures in the high seismic risks of the location and the low level of the nuclear safety culture in Bulgaria, there can only be one conclusion: This project must not go forward."¹⁶

In 2006, the campaign against Belene became an international issue, when German, French and Italian banks considered funding of the reactors. Tens of thousands of emails, actions in front of bank offices throughout Europe and protest letters from outraged customers led more than a dozen banks - including Deutsche Bank, UniCredit and Commerzbank - to refuse financing for the project.

The only bank that became involved with Belene was BNP Paribas, which provided a small loan to finance the project's initial development. Eventually, however, BNP Paribas recalled the loan and also ended its involvement. This was shortly after the project's sole foreign investor, the energy company RWE, took the decision to drop out of Belene in 2009.

Belene is now on hold as the Bulgarian government is unable to find either financiers or investors for this risky venture.



**„This project
must not
go forward.“**

**Dr. Kastchiev, former
head of the Bulgarian
Nuclear Safety Authority**

15 | Letter 500-HO/06.11.1984 from N. Georgiev, Director of the Central Laboratory on High Geodesy, Bulgarian Academy of Science, to St. Nozharova, Deputy Head of the Utility "Energia"

16 | Presentation of Dr. Georgui Kastchiev for DG Energy and Transport, November 23, 2007

PROJECTS

17 | Joaquim F. de Carvalho, Ildo L. Sauer, "Does Brazil Need New Nuclear Power Plants?", *Energy Policy* 37 (2009) 1580–1584

18 | <http://g1.globo.com/Noticias/Politica/0,,MUL1317577-5601,00-ALENCAR+DEFENDE+ARMA+NUCLEAR+E+ORCAMENTO+FIXO+PARA+AS+FORCAS+ARMADAS.html>

19 | <http://www.cnem.gov.br/lapoc/tecnica/licfisc.asp>

20 | Landslides inventory in the Angra dos Reis and Itaguaí region of the state of Rio de Janeiro, Brazil, Jose Miguel Peters-Garcia & Lazaro valentim Zuquette, IAEA 2006, Paper number 93, http://www.iaeg.info/iaeg2006/PAPERS/IAEG_093.PDF

21 | <http://news.bbc.co.uk/2/hi/americas/8438842.stm>

22 | <http://www.mapsofindia.com/maps/india/seismiczone.htm>

23 | Letter from Geological Survey of India, dated 5 January 2009

24 | <http://www.spiegel.de/international/europe/0,1518,655409,00.html>

25 | Management of safety requirements in subcontracting during the Olkiluoto 3 nuclear power plant construction phase, Investigation report 1/06, STUK (Finland's Radiation and Nuclear Safety Authority), 10 July 2006.

26 | ASN letter from Flamanville-3 inspection dated 25 January, 2008

27 | http://news.bbc.co.uk/2/hi/south_asia/8547436.stm

28 | <http://www.24dunia.com/english-news/shownews/0/Govt-acquires-required-land-250-villagers-held/5084629.html>

29 | <http://www.thehindubusinessline.com/2009/10/16/stories/2009101651880200.htm>

3.

Angra 3 in Brazil: An Obsolete Reactor on Shaky Ground

One of the most prominent nuclear projects currently seeking financing from private banks is Angra-3 on the coast of Rio de Janeiro State, Brazil. Angra-3 is a 1,350 MW reactor, based on an outdated design from the 1970s. Reports show that Angra is unneeded and uneconomic. Peer-reviewed analysis from 2009 concludes that clean renewable options in Brazil would generate electricity cheaper and faster.¹⁷

The original plan to construct Angra-3 was abandoned in the mid 1980s. It is now back on the agenda, not for energy or economic needs, but because of geo-political strategic interests.

Although Brazil joined the Nuclear Non-Proliferation Treaty in 1994, it refuses to ratify the Additional Protocol on safeguards or to allow inspectors from the International Atomic Energy Agency full access to its nuclear facilities. Many people previously involved in Brazil's nuclear weapons program (officially terminated in 1992) are now heavily involved in Angra-3. The list includes, for example, Admiral Othon Luiz Pinheiro da Silva - the current chair of Angra's operator, Eletronuclear. That proliferation continues to be a threat is also highlighted by Brazilian Vice-President Jose Alencar's recent statement that Brazil needs the atomic bomb "to achieve more respect in the world."¹⁸

It should also be noted that the building licence for Angra-3 violates the statutes of Brazil's Constitution, which specifies that the construction of nuclear reactors must be approved by Congress. Until today, the Brazilian Congress has never voted on this project. The fact that the independ-

ence of the country's nuclear regulator CNEN is called into question – as its subsidiary INB supplies nuclear fuel to the Angra reactors¹⁹ - creates further concerns.

Moreover, Angra is situated in an area prone to earthquakes, and where the bedrock is unstable. The most important escape route (BR-101) is often blocked by landslides and rockfall,²⁰ which has been repeatedly pointed out by local municipalities,²¹ but to no avail. The project's site is located 130 km east of Rio de Janeiro and 220 km west of São Paulo, Brazil's two biggest cities. The consequences of a major accident would be devastating.

A contract to build this reactor and put it into operation was signed in 2008 with AREVA NP, a consortium of the French state company AREVA and Siemens from Germany. In February 2010, the German export credit agency Hermes gave preliminary agreement to provide € 2.5 billion in guarantees if a corresponding loan from private banks is organised. Angra-3 is now being reviewed by several French banks, including BNP Paribas and Société Générale. It is likely that further European banks will be invited to participate in a syndicated loan.

4.

Jaitapur: French Problem Reactors for India

Another nuclear project soon to land on the desks of European banks is Jaitapur in the Indian State of Maharashtra. With up to 10,000 MW planned, the project is set to become the world's largest nuclear power plant. In the first phase, India's Nuclear Power Corporation (NPCIL) is looking for financing to build two French EPR units in Jaitapur. This raises significant safety concerns as Jaitapur is located in the only section of the Indian coastline which is classified as a "high risk zone" for earthquakes.²² Three tectonic faults transverse the area, and over the past 20 years, several earthquakes were recorded here. The strongest, in 1993, measured 6.3 on the Richter scale.²³

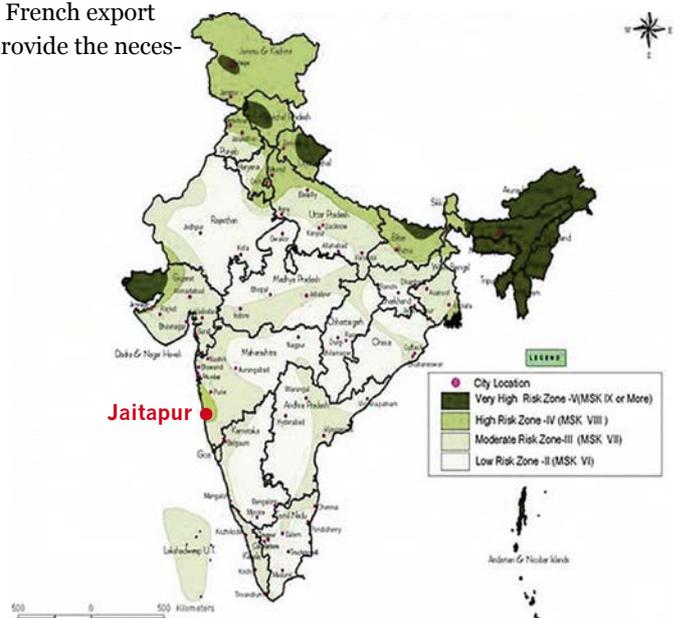
Moreover, the experience with EPR reactors under construction in Olkiluoto (Finland) and Flamanville (France) has revealed numerous technical design problems that could lead to reactor failure. Inspections also found serious defects in the quality of components, as well as in weldings and construction at both sites. In Olkiluoto, for example, STUK (the Finnish safety agency) identified over 3,000 safety and quality deficiencies.²⁴ Many of these problems occurred because attempts to reduce costs led the company to select cheap, incompetent subcontractors and overlook safety-related issues.²⁵ In France, inspections repeatedly mention that the problems arise from "haste without any quality assurance process."²⁶ These problems could well become worse in India, where the costs of the first two Jaitapur units are officially estimated at Crore 32,000 (€5.4 billion) – less than half of what the same reactors currently cost in Europe.

The project has already led to massive social conflicts. The site of the proposed Jaitapur reactors is a well-preserved and valuable natural area that provides good subsistence to local mango farmers and fishermen. From the start, there have therefore been huge protests by local farmers and fishermen.²⁷ Between December 2009 and January 2010, NPCIL officials seized 938 hectares of land from local villagers. The compensation offered was as low as 3 INR (5 eurocents) per square meter and was unanimously rejected by the villagers. Protests were suppressed by police, with hundreds of villagers beaten and arrested.²⁸

Other issues include lack of transparency and civil society participation in the planning process, as well as disputes about legislation that would exempt foreign companies from potential damages in case of accidents and contamination.

Since the announcement of the proposed nuclear plant in 2009, Indian authorities have stated that HSBC and four French banks (BNP Paribas, Societe Generale, Calyon and Natixis) would be providing €3 to €4 billion in loans.²⁹ They also stated that Coface, the French export credit agency, would provide the necessary loan guarantees.

Earthquake Zones of India indicating cities with population exceeding half a million.





Facts about Nuclear Energy

- As of May 2010, there are 438 commercial nuclear reactors in operation worldwide.³⁵
- As very few reactors were built after the 1986 Chernobyl catastrophe, the world's nuclear fleet is aging. The average age of a reactor is now 25 years.³⁶
- In 2008, despite all the hype about a 'nuclear renaissance', not a single reactor was added to the grid. The number of reactors is set to decline in coming years, as more units are retired than are finished. In 2009, more reactors and reactor capacity were taken offline than were added to the grid.³⁷
- Current nuclear reactors supply 5.5% of global energy, and 14% of global electricity consumption. Nuclear power generation has been declining and has dropped by 4% over the past three years.³⁸
- Over 200,000 tons of highly radioactive spent fuel – which will remain lethal for tens of thousands of years – has accumulated globally.³⁹ The current nuclear fleet adds 7,500 tons of this dangerous waste annually.

Why Banks Should Not Fund Nuclear

Most major commercial banks have made commitments to sustainability and corporate social responsibility. The entire nuclear cycle is, however, in stark contradiction to the principles of sustainable development and basic notions of social responsibility. Radioactive contamination routinely occurs all along the fuel chain, from uranium mining to processing, and from reactor operation through to the management of nuclear waste.

A severe accident of a 1,000 MW reactor, due to technical or human failure, may potentially affect many millions of people, causing tens of thousands of victims and forcing evacuation of areas as large as Belgium.³⁰ Every reactor generates hazardous nuclear waste - spent fuel that remains lethal for millennia. There is no permanent and safe solution for storing nuclear waste.

Nuclear power and nuclear weapons go hand in hand. The materials and the technologies used for nuclear energy can easily be diverted for nuclear weapon production by governments, military or terrorist groups.

The nuclear industry has spent the past decade trying to convince the public and decision makers that, despite its downsides, nuclear power is needed to tackle the climate crisis. The industry promised to have learned from past disasters, and that it would offer a clean, safe, cheap and reliable source of energy. None of these claims are true.

The 2008 International Energy Agency (IEA) energy scenario clearly shows that, even if the world were to build 1,300 new reactors and quadruple nuclear power generation by 2050, greenhouse gas emissions would be reduced by less than 4%.³¹ Given the long planning and construction schedules required,³² this would come far too late to meet the imperative to significantly decline greenhouse gas emissions by 2020 and thus prevent climate chaos.

Implementing the IEA scenario would require US \$10 trillion for reactor construction,³³ massively increase the amount of nuclear waste we and future generations will have to deal with, and create enormous proliferation hazards (a single reactor typically produces several hundred kilograms of plutonium every year³⁴ – an amount sufficient for dozens of nuclear weapons).

Investments in nuclear power actually undermine climate protection by diverting urgently needed resources away from clean and safe renewable power investments.

Similarly, the reality is that nuclear reactors often create energy insecurity. Out of 130 US commercial reactors, one third had outages lasting more than a year – the total number of long-term shutdowns exceeded 50, with seven cases involving units that were out of operation for two years or longer. And in 2007, the world's largest nuclear power plant, Kashiwa-

We therefore ask you to join us in sending a clear message to banks:

Nuclear deals – No thanks!

Help us call on banks to:

Stop providing loans to nuclear projects.

Adopt policies and guidelines to ensure that no financing goes either directly or indirectly towards the nuclear sector.

Ensure that nuclear expenditures are excluded from loans and bond emissions going to energy companies.

Shift their funding of energy projects to clean, safe and sustainable projects based on energy efficiency and renewables.

zaki-Kariwa in Japan, was kicked out of service for more than two years due to an earthquake. Even at present, only two of its seven reactors have been restarted.

Relying on nuclear power also leads to a dependency on uranium supplies from only a handful of countries. Seven countries provide 90% of world production: Canada, Australia, Russia, Niger, Namibia, Kazakhstan and Uzbekistan. Fuel production services are provided by only six countries globally. And not a single country in the world has yet developed solutions for the safe final disposal of nuclear waste.

The nuclear industry, however, isn't bothered by these facts. It is struggling to survive and therefore pushing for dozens of new reactors to be built over the coming years.

We believe this needs to be prevented in order to protect citizens' health and safety and to ensure that clean and safe energy solutions can be implemented on the scale needed to combat climate change.

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30| <http://www.greenpeace.org/raw/content/belgium/nl/press/reports/het-on-verzekerde-risico-van-ke.pdf>

31| International Energy Agency, Energy Technology Perspectives 2008 (Paris: IEA, 2008)

32| It takes five or more years for a reactor project to arrange all necessary planning and licensing. The construction takes at least five years, but regularly there are delays of additional years.

33| Assuming 1,300 new reactors at the cost of 5-8 billion USD each.

34| <http://www.world-nuclear.org/info/inf15.html>

35| International Atomic Energy Agency, online statistics at <http://www.iaea.org/programmes/a2/index.html>

36| International Atomic Energy Agency, online statistics at <http://www.iaea.org/programmes/a2/index.html>

37| International Atomic Energy Agency, online statistics at <http://www.iaea.org/programmes/a2/index.html>

38| International Energy Agency IEA/OECD, World Energy Outlook 2009, Paris

39| <http://www.world-nuclear.org/info/inf69.html>

Join the Campaign

Visit the Nuclear Banks – No Thanks! Webpage at **www.nuclearbanks.org** and find out whether your bank is a nuclear bank. Write a letter to bank management to let them know that you don't approve of nuclear financing. Consider moving your account to a non-nuclear bank. Help organize an action in front of a nuclear bank. Or simply pass on this briefing to friends and neighbours, so that they can find out whether their bank deposits are being used to fund dirty and dangerous nuclear deals. For further information contact:

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