

Press Kit - November 2009



INTERNATIONAL CAMPAIGN

335 partner organisations in 45 countries

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Summary

Despite all the industry's efforts to convince us that its technology does not emit greenhouse gases (GHG), nuclear power has always been excluded from the Kyoto Protocol's international mechanisms, in particular the Clean Development Mechanism (CDM) and the Joint Implementation (JI).

After its exclusion from climate change agreements over the last ten years, nuclear power is making a big comeback on the negotiating table for the new post-2012 framework.

The stakes are as crucial for the climate as they are for the nuclear industry. Even the official reports agree that nuclear power could only play a minor role in the fight against climate change.¹ Moreover, the globally heralded "renaissance" of the nuclear industry remains hypothetical for now, due to a significant number of bottlenecks (workforce, availability of funding....²). If the financial windfall expected under a new climate change agreement was to bypass the nuclear industry once more, the industry would lose the rewards it had hoped for, and the nuclear "revival" may well never see the light of day.

If nuclear power is gaining increasing support amongst the countries which are Parties to the Climate Convention, this support depends primarily on direct or indirect industrial interests, or on arguments which go beyond the climate debate (becoming one of the "big players" or energetic independence).

On the whole, people remain predominantly opposed to nuclear power and to their governments' position. As for bodies predominantly concerned with climate, such as the IPCC, they are rather more reserved on the issue.

The first part of this report documents the unsuccessful attempts to include the nuclear industry in climate agreements, and unravels the way in which an industry incapable of saving the climate is trying to salvage its revival during the discussions leading up to Copenhagen. The second part explains why nuclear power is not the solution to our climate crisis, but may in fact impede its resolution.

¹ In the International Atomic Energy (IEA) 2008 Blue Map, which makes the extremely ambitious hypothesis of a quadrupling of nuclear electricity production (from 2600 TWh to 9900 TWh by 2050), nuclear power would only reduce greenhouse gas emissions by 6%. International Energy Agency, Energy Technology Perspectives 2008 (Paris: IEA, 2008)

² See Mvcl Schneider. *The world nuclear industrv - Status report 2009*

Part 1

The nuclear empire counter-attacks

Or how the nuclear industry tries again to take advantage of climate change agreements

Nuclear power and the Kyoto protocol

The CDM opportunity

After a decline originating in the 80s, following the Chernobyl disaster, the nuclear industry has tried to build its revival on the back of growing concerns about climate change and the need to develop technologies low in greenhouse gas (GHG) emissions. It is attempting to restore its legitimacy mainly by exploiting environmental concerns.

Article 2 of the Kyoto Protocol, signed in 1997, officially recognises renewable energy and energy saving as a way for the Parties of achieving their quantified GHG emission reduction commitments. There is no mention of nuclear energy.

Yet two of the Flexibility Mechanisms, the Clean Development Mechanism (CDM) and the Joint Implementation (JI), have drawn the attention of the nuclear industry. The first, defined in Article 12 of the Protocol, gives industrialised countries (Annex 1 countries) the option of achieving part of their GHG reduction targets by financing "mitigation" projects (i.e. emission reductions) in Southern countries in exchange for carbon credits.³

The detail of the implementation of the Kyoto Protocol, which only fixed global reduction objectives for each country or group of countries such as the European Union (EU), was followed by three years of discussions; three years during which the nuclear lobby deployed large efforts to have its technology recognised as "sustainable" and worthy of inclusion in the CDM and JI.

The Convention of Parties (COP) 6 took place in November 2000 in The Hague in the Netherlands. Despite considerable lobbying efforts, the nuclear industry failed to convince the majority of countries to include nuclear technology in the Protocol's mechanisms.

Two blocs opposed on the nuclear issue

Leading the countries in favour of the nuclear industry were Australia, Canada - top uranium exporters - and Japan, India and Russia - three countries with a nuclear industry. They were supported by FORATOM, the official European nuclear lobby, acting as coordinator between some of the European countries.

Despite this, the EU has adopted an anti-nuclear stance. Most European countries at the time were either non-nuclear or in the process of drawing up nuclear phase-out legislation, as were Germany and Belgium. France, historically in favour of nuclear energy, found little support, except from the United-Kingdom.

Other countries, such as Norway and the OPEC countries, or countries from Central and Eastern Europe, took a clear stance against nuclear energy. But one of the prime movers of the opposition to nuclear energy

³ Within the Joint Implementation (Article 6), trading takes place between two countries with GHG reduction obligations. This mechanism was aimed mainly at ex-USSR countries.

was the Alliance of Small Island States (AOSIS), which during the same period and over several years was opposing the transport of nuclear waste and plutonium between Europe and Japan.

NGOs also played an important role in the negotiations in the Hague.

In the end, the Parties agreed to exclude nuclear power from the CDM. But negotiations failed on account of several other issues, and the general discussion was adjourned until a later meeting in Bonn in July 2001.

Definite failure for nuclear power

At the meeting in Bonn, the nuclear lobby went back on the offensive with proposals for the reintroduction of a nuclear option both in the CDM and the JI. But because of the need to produce an agreement in Bonn and because the majority of States continued to oppose to nuclear power, the deal agreed in the Hague was not challenged. Nuclear power remained excluded from the Flexibility Mechanisms.

The final text was finally be signed several months later in December 2001, under the Marrakech agreement, during the COP7. This agreement, which ratified the exclusion of nuclear power, was validated again in Montreal in 2005, during the eleventh Conference of the Parties COP11- MOP1 (First meeting of the Parties).

The Marrakech text specifies that "... **Parties included in Annex I⁴ are to refrain from using emission reduction units generated from nuclear facilities...**". The nuclear lobby thus failed to use the climate crisis as an opportunity for new subsidies, thus dashing its hopes for a relaunch.

Nuclear power prepares its post-Kyoto comeback

Presenting itself as the solution

Since its failure in 2001, the nuclear industry has not given up and has multiplied its efforts to impose its technology. It tried above all to play down its lack of success under the Kyoto Protocol, arguing that the its time-scale was too short for the development of nuclear projects; this perspective was not sufficient to secure the heavy investments necessary for such projects. The nuclear option supporters continue to use this argument to advocate for longer time-scales than those currently considered.

The nuclear industry has also invested a great deal of effort in global communication in order to have its technology recognized as the solution to climate change. This intense effort has focused on national governments and public opinion, via big information and publicity campaigns.

Within the climate change discussions framework, the nuclear lobby has targeted the IPCC (Intergovernmental Panel on Climate Change) and in particular the IPCC Working Group III, responsible for the mitigation of climate change through the limitation of emissions. For instance, expert meetings providing direct input to the IPCC report were organized by states very favourable to the nuclear option. The participation of many industry experts was then noticeable, for example in Japan in September 2004, where the working group on energy production was co-chaired by the Director of research and development of ESKOM (a South African energy company banking on nuclear energy) and included many representatives from AREVA, RWE,....

The last IPCC report in 2007 lists nuclear power as one of the technologies which could help reduce GHG emissions (alongside renewable energies, but also more controversial ones such as carbon capture and storage). This led the nuclear industry to pronounce that the IPCC supported nuclear power as a solution to climate change. Yet the report is much more consistent, and in the end more moderate, than this

⁴ i.e. developed countries

declaration implied. Whilst stating the potential for nuclear energy to reduce GHG, it also reminds that *"concerns about safety, weapons proliferation and waste remain as constraints for nuclear power."* It even mentions nuclear power's vulnerability to climate change: *"Cooling of conventional and nuclear power plants may become problematic if river waters are warmer."*⁵

It is difficult to assess what effect the promotion of nuclear energy had during those years. It seems that the nuclear industry has gained the support of a growing number of governments (see below); but although public opinion has changed, it still remains, on the whole, opposed to what it believes is a dangerous and polluting technology. The experts themselves are rather cautious on the issue and nuclear energy is far from bringing consensus amongst them.

Opportunities available to the nuclear industry

The start of negotiations for a second commitment period post-2012 is an opportunity, which the industry does not want to miss, to review nuclear exclusion. Before and during the Poznan summit in December 2008, proposals were made in that direction. The text proposed for discussion in Copenhagen will need to include again a decision on whether nuclear power is included or excluded from the CDM and the JI.

The CDM is currently coming under widespread criticism and according to the Climate Action Network this mechanism has had a negative impact on the reduction of emissions, diverting countries away from their obligation to reduce domestic emissions. Moreover, these projects seldom take into account the environmental perspective and disregard local communities. Finally, most of them have been concentrated in India and China and have not benefited the least developed countries.

Industrialists (including those within the nuclear industry) also see the disadvantages: the mechanism demands a long and uncertain project-by-project approval process, whereas the likely market is worth hundreds of billions of dollars.

The nuclear industry is therefore exploring other means of entering the negotiations. The way the post-Kyoto talks are set up offers several opportunities. There are two parallel processes for negotiations:

- The post-Kyoto pathway, aiming at an agreement for Annex I countries for the post-2012 period maintaining the framework of the Kyoto Protocol and its current mechanisms;
- The pathway known as "long-term cooperative action", which explores possible agreements, in particular for all countries without binding targets under the Kyoto Protocol.

The CDM is discussed under the first pathway.

The second pathway for negotiation is very broad and has given rise to various proposals, the best-known being the "sectoral approach". It consists of giving developing countries (non-Annex I countries) mitigation targets for a whole economic sector (e.g. steel, cement, electricity), rather than national targets. This system would also be set up to help Annex I countries meet their GHG reduction targets.

This new approach is strongly supported by the industrial giants - particularly the nuclear industry - who see it as a means to access potentially vast markets financed by emissions trading. Yet, beyond the fact that it opens the door to a nuclear intrusion, this option is not without criticism. Its application would be extremely complex. It would also be a much slower and more costly process than a global approach, which tries to achieve emission reductions where they are most easily achievable with fewer measures.

Moreover, Article 26 of the document produced by the Working Group on long-term cooperative action defining nationally appropriate mitigation actions (NAMAs) in developing countries, excludes "...technologies that have adverse impacts on the environment, including, inter alia, nuclear power and

⁵ Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change - Technical summary: <http://www.incc.ch/ndf/assessment-report/ar4/wg3/ar4-wg3-ts.pdf>

large-scale hydro-electric power"⁶. However, during last October's negotiations in Bangkok, several countries demanded that this paragraph be deleted, and opposed the exclusion of nuclear power from the NAMAs.

The nuclear industry is desperately trying to be included in climate agreements, through the CDM reforms negotiations as well as through the new approaches discussed within the Bali roadmap in December 2007. For the nuclear lobby, this opportunity is crucial for nuclear power to be acknowledged as a solution to climate change and to give it access to important subsidies.

Position of individual countries and international organizations

This chapter reviews the positions, country by country, of the Parties to the Climate Convention in relation to the inclusion of nuclear power in the flexibility mechanisms or the mitigation plans.

It must be pointed that these positions reflect mainly the views of their leaders, often out of step with public opinion, if it is given a voice on nuclear matters. The position of most concerned countries is also strongly linked with their industrial interests. The others have motives based exclusively on arguments which have nothing to do with climate issues, such as energetic independence or, most frequently, access to the elite of the "big players", a motive directly linked with the military applications of this technology.

France, the most nuclearized country in the world, has always supported nuclear power, central to its energy, industrial and even diplomatic policy. During the last few years, France has indeed tried to sell its new EPR reactor to any government or energy company wishing to build new reactors. It has also signed cooperation agreements with dozens of countries, in particular in the Mediterranean area.⁷ Yet within the climate negotiations, discussions take place under the European Union framework, and this has a moderating effect on the French nuclear frenzy. Up to now, France has remained in the minority on the subject, despite support from the United Kingdom, amongst others. However, the French influence can be felt strongly over some developing countries and regions, such as the African group (the target of both direct and indirect lobbying), and it has recently expressed its wish to see nuclear power included in the NAMAs.

As the French position is suppressed within the EU, Japan, another great nuclear nation with the second largest nuclear industry, has taken on the lead of openly pro-nuclear countries. Successive Japanese governments have always dreamt of overturning the decision on nuclear exclusion. It is through the Japanese Atomic Energy Commission that the wish to include nuclear power in the CDM was expressed. At a regional level, Japan has also played a leading role within the Forum for Nuclear Cooperation in Asia (FNCA), which comprises ten countries⁸ and in December 2007 put forward the first regional position supporting the inclusion of nuclear power in the CDM.⁹

The role of **China** is crucial today. The importance of its GHG emissions and its increasing energy consumption make this country a central player courted by all governments and energy industries - including the nuclear industry. China has announced a vast programme of nuclear development and is looking for international sources of funding. Within this perspective, the CDM would prove very advantageous to the country, which has attracted nearly 50% of all CDM projects approved up to now! After keeping a low profile for the first decision in the Hague, China has gradually become more transparent in its support for nuclear power and its inclusion in the CDM.

⁶ Document FCCC/AWGLCA/2009/INF.2 -Point 50 : <http://unfccc.int/resource/docs/2009/awglca7/eng/inf02.pdf>

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⁸ Australia, Bangladesh, China, Korea, Indonesia, Japan, Malaysia, Philippines, Thailand and Vietnam

⁹ www.fnca.mext.go.jp/english/mini/e_08_minister_com.html

In Asia, since 2000-2001, **Indonesia, Malaysia, Bangladesh, Thailand and Vietnam** have all announced their plans to develop or relaunch nuclear projects and all support the inclusion of nuclear power in the post-2012 agreements.

Australia is also a member of the FNCA. The new Labour government elected in 2008 is indeed opposed to domestic nuclear development, but staunchly supports uranium exports, as the country owns some the greatest reserves in the world. It is therefore in favour of the inclusion of nuclear power in the climate agreements.

India is one of the largest and most constant defender of nuclear power alongside Japan, and it will be no surprise to find it amongst the main drivers behind the inclusion of nuclear power in the CDM. Like China, India must be taken seriously; it is planning a large increase in the number of its nuclear reactors, becoming the envy of other nuclear countries and industries. It is very important to stress that India is not a signatory to the Nuclear Non-Proliferation Treaty (NPT); as such, it is not entitled any help for its nuclear development. Yet, following the example of the United States, several countries including France have disregarded the NPT commitments and have recently signed cooperation agreements with India, thus creating an important precedent in breaching the basic principles of the NPT. After China, it is the country securing the highest number of projects approved by the CDM (approximately 30%).

Canada is also one of the countries favouring, since 2000, the inclusion of nuclear power in climate negotiations. With its large deposits of uranium ore, - it is one of the main uranium exporters alongside Australia - Canada also boasts a world-ranking nuclear industry. It also supported the first steps towards nuclear cooperation with India and took part in negotiations on cooperation.

Finally, completing the great pro-nuclear countries squad, **Russia**. It will cling on to its past positions, which are very supportive of an industry it has tried to relaunch since the fall of the USSR, mostly through cooperation and international contracts.

The leading developing countries, such as **Brazil** and **South Africa**, are likely to take a pro-nuclear stance. These countries are planning to expand their nuclear programmes originating from the 80s, which were on a small scale and have been at a standstill for at least ten years.

Until recently, the position of the African Group was unclear. This group contains countries vary favourable towards nuclear technology because of their ambition to develop a nuclear programme, Algeria for instance, or because they export uranium, like Niger. Many of the other countries have no plans for a nuclear industry, nor any interest in it. Yet the former seem to have managed to sway the others. In Bangkok, the Group adopted a position favourable to nuclear power, and demanded that the exclusion of nuclear power be removed from the NAMAs. Let's not forget that for many countries, including those with neither the intention or the capacity to build nuclear reactors on their soil, access to nuclear technology is synonymous with access to development.

The **Middle East** countries, led by **Saudi Arabia**, have played a major role in the exclusion of nuclear power in 2000-2001. Yet their position is no longer as clear. Some of them actually have nuclear programmes (in particular the **United Arab Emirates**), and have signed cooperation agreements notably with France. Saudi Arabia has also shown some interest in the use of nuclear power for seawater desalination, but continues to oppose its development in the region.

Despite the position taken by France and the United Kingdom, the **European Union** has played a crucial role in opposing the inclusion of nuclear power in the flexibility mechanisms. It is unlikely that its position will remain unchanged during the next round of negotiations, yet it is very difficult to guess exactly what stance it will take. The group of States favourable to nuclear power has grown since 2001, with some countries like the Netherlands, Italy and Belgium having become staunch defenders of this energy. Angela Merkel's recent victory in **Germany** is also likely to change the position of this EU heavyweight. Many newcomers, such as Poland, the Czech Republic, Slovakia or Romania, also support nuclear power. Yet there are still several European Union member states strongly opposed to nuclear power, such as Austria

and Ireland, and others which are not in favour, such as Denmark, Portugal, Greece.... The European Commission plays a key role in a balancing act where the EU must represent all the countries and express a consensus position. But despite its theoretical "neutrality", the Commission regularly and openly adopts a very favourable position on nuclear power, notably through its President José-Manuel Barroso or through its Energy Commissioner Andris Piebalgs; it is also important to point out that the official lobby, FORATOM, has many supporters within.

Finally, the position of the **United States** in the next round of negotiations remains uncertain. The Bush administration was clearly in favour of nuclear power. Since his election, Obama and his administration have been sending mixed messages. The President did indeed withdraw federal funding for the establishment of a nuclear waste repository at Yucca Mountain and for a large international cooperation (GNEP) project. Yet Stephen Chu, the US Secretary of Energy, believes nuclear power must be part of the country's energy mix. The most recent developments on the issue stem from discussions currently taking place in Congress on the adoption of climate control legislation, which may be used as the framework for the American position in Copenhagen. To gain the Republican support necessary for the Senate to pass the bill, some senators (John Kerry, Lindsey Graham and Joseph Lieberman) have proposed a number of "compromises", some of which would provide support to the relaunch of nuclear industry...

Part 2

Nuclear power, fantasy in the face of climate change

The second part is a summary of the detailed document, "Nuclear power, fantasy in the face of climate change", edited by an association of large French environmental NGOs and coordinated by Réseau Action Climat France.

It is an argument in three parts:

- Nuclear power cannot solve the climate issue
- Nuclear power is in contradiction with the Rio Declaration on the Environment and Development (1992).
- Nuclear power: a specifically French issue which undermines national climate change policies.



Brochure produced jointly by:
Réseau Action Climat France
Agir pour l'Environnement
Amis de la Terre
France Nature Environnement
Greenpeace
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PART 1.

NUCLEAR POWER CANNOT SOLVE THE CLIMATE PROBLEM

AN INCREASE IN GLOBAL NUCLEAR ENERGY PRODUCTION IS HIGHLY UNLIKELY. ON THE CONTRARY, NUCLEAR POWER IS FACING DECLINE (FILE 1.1)

The reactors which will be built in the years to come will not be able to replace the 440 reactors currently in service, most of them reaching the end of their lives or due for closure in the coming decades. To replace all of them would require 10 new reactors each year, so the few expected to be sold to China, the States and Europe will not be sufficient. The International Atomic Agency forecasts for nuclear power show a decline, with a drop from 15.6% of global energy production to 10% in 30 years time. If the optimistic scenario of a nuclear revival by 2030 (SUNBURN) is to be believed, not only will the financial investment need to be astronomical (32.5 billion Euro per year on average over the period, which is equal to more than a third of public funding spent on social and economic development each year), but the uranium reserves will be depleted as early as 2030!

MOST GREENHOUSE GAS EMISSIONS ON THE PLANET COME FROM SECTORS WHICH CANNOT BE SUPPLIED BY NUCLEAR POWER (FILE 1.2)

Nuclear power produces electricity, but only represents 2.5% of the total energy use in the world.

The energy produced by nuclear power does not supply sectors which are high producers of CO₂ emissions, particularly those reliant on oil (transport, industry, etc...). In addition to CO₂, other greenhouse gases (N₂, O, CH₄, fluorides) must be taken into account, produced by sectors unsuitable for nuclear power (agriculture, electronic components, frozen foods, etc...). Overall, nuclear power is and will remain irrelevant for 75% of all global greenhouse gas emissions.

THE AMOUNTS OF CO₂ PRODUCED BY THE NUCLEAR SECTOR ARE SIGNIFICANT (FILE 1.3)

Unlike coal or gas, nuclear power does not produce CO₂ while power plants are running. But it requires top-up production from traditional power stations during high electricity demand peaks and when the reactors are not functioning, which does produce CO₂. Furthermore, the nuclear sector as a whole produces significant greenhouse gas emissions due to the life cycle of power plants, from construction to decommissioning, and the life cycle of the fuel, imported to France from Niger or Canada.

Ultimately, although the carbon footprint of the nuclear sector may be difficult to measure, it is not insignificant!

NUCLEAR POWER IS INCOMPATIBLE WITH THE RESPONSIBLE USE AND ENERGY EFFICIENCY REQUIRED BY CLIMATE CHANGE (FILES 1.4, 1.5, 1.6)

Nuclear power is detrimental to energy saving because it encourages waste (reactors must be kept running both night and day, illusion of energy abundance, hindrance to alternative energy, etc...). Yet, the general consensus is that the emphasis should be on responsible use and energy efficiency, as well as renewable energy, in order to reduce greenhouse gas emissions. Within a 2030 or a 2050 time horizon, their potential for preventing CO₂ emissions is much greater, they are more cost-effective, and their effects are much more immediate than those resulting from nuclear power. In China, for example, solar panels alone already produce as much as the available energy output from two thirds of the country's nuclear production.

IN ANY CASE, THE TIMESCALE OF NUCLEAR POWER IS OUT OF STEP WITH THE URGENCY OF CLIMATE CHANGE (FILE 1.7)

To fight against climate change and stabilise the climate, global greenhouse gas emissions must be halved by 2050. Now is the time to transform the energy models of the industrialised countries (reducing our GGH emissions by 3% a year) and to help developing countries achieve efficient energy policies. In 20 or 30 years time, it will be too late to act to stabilise the climate. There is therefore no point in discussing the hypothetical benefits of fourth generation nuclear power as it wouldn't come into operation before 2040, or of nuclear fusion, not available till at least 2050!

NUCLEAR POWER HAS LIMITED FUEL RESOURCES (FILE 1.8)

Nuclear fuel resources are limited in time. Reserves in uranium, which fuels the reactors, are estimated to last 60 years at the current rate, and therefore much less long if nuclear power were to be developed. This situation means that a massive revival based on traditional uranium-enriched reactors is impossible. As for the reactors known as 4th generation, they would require plutonium, a fuel which multiplies the risk of proliferation and of theft of fissile matter during transport.

NUCLEAR POWER IS VULNERABLE TO CLIMATE CHANGE (FILE 1.9)

During the summer, reactor efficiency decreases. Reactors need to be turned off if the temperature climbs too high... In the summer of 2003, it became necessary to spray water over the roof of the Fessenheim reactor to keep it functioning. In view of global warming, events such as Fessenheim are likely to re-occur. Water required for reactors would also need to be taken from rivers, with detrimental effects on their biodiversity, or would be provided by complex closed systems at a huge cost. Also, given that most nuclear reactors are situated close to rivers or to the sea, the risk of flooding due to rising waters (from thermal expansion of the oceans and melting of the polar ice) is high.

PART 2.

NUCLEAR POWER IS IN CONTRADICTION WITH THE RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT (1992)

NUCLEAR POWER IS EXCLUDED FROM THE KYOTO PROTOCOL MECHANISMS (FILE 2.1)

Member countries of the United Nations Framework Convention on Climate Change have excluded nuclear power from the Kyoto Protocol flexibility mechanisms. Because there is no way of telling how long the construction will take, it is impossible to put a value on the amount of CO₂ emissions prevented, difficult to estimate in the first place. An economic incentive mechanism like the Kyoto Protocol has little influence on choices which are predominantly political and depend on public authorities, as does nuclear power. Finally, the problems of proliferation, of reactor overcapacity, of nuclear waste management, etc... are even more prominent in developing countries.

NUCLEAR POWER IS NOT ADAPTED TO "DEVELOPMENT" (FILE 2.2)

The long and unpredictable time scales of the construction of power plants are difficult to reconcile with the constraints experienced by developing countries. Choosing this type of infrastructure, which is very costly, is a disincentive to invest in the environmentally and financially much more efficient options of renewable energy or cogeneration. In addition, nuclear power production relies on a model of centralised production which today acts as a hindrance to alternative developments in rich, nuclear countries. Developing countries, which are still lacking energy infrastructures, have the choice to opt for decentralisation and shorter production chains.

NUCLEAR POWER: A FINANCIAL ABYSS CONTRIBUTING TO POVERTY IN THE SOUTH (FILE 2.3)

Chancellor Willy Brandt wrote that the colossal sums swallowed up by nuclear power across the world would never benefit the poorer half of humanity. Indeed, nuclear power is not the answer to problems of equity and poverty. On the contrary.

The "developing world" needs short term finance and cannot afford to freeze the large sums necessary to invest in nuclear power, particularly for the excessively long periods set by the time-scale required for construction. The governments of developing countries, vulnerable to bankruptcy, are unable to back such projects. The financial risk is then very high, for the country buying as well as the one selling.

NUCLEAR POWER TAINTED BY CORRUPTION (FILE 2.4)

In the developing countries, nuclear power already has a history... Most of the power plants which are said to be "under construction" have already cost more than their "interest" value. For example, neither the Buser plant in Iran, started in 1975, nor Angra III in Brazil, started in 1976, nor Atucha II in Argentina, which has already cost 1 billion dollars, have yet become operational. In the Philippines, the Bataan power plant, completed but not operational, represents the greatest external debt for the country in the last 20 years.

NUCLEAR POWER IS A FACTOR OF INSTABILITY AND OF ARMED CONFLICT RISK (FILE 2.5)

The dangers linked to nuclear power are well established: vulnerability to terrorism, risks due to state instability, increased use and risks of plutonium, risk of proliferation. Since the 9/11 attack, an airline crash over a nuclear power plant has become a real possibility with disastrous consequences. In France it is even considered subversive to point out that reactors are not immune to air crashes, or that such a crash on reprocessing plant at La Hague would cause fallout several times worse than the Chernobyl disaster. The establishment of nuclear power does require transparency and independent control organisms. This is far from being the case in western democracies. There are therefore some justifiable concerns about totalitarian countries and dictatorships.

PART 3.

NUCLEAR POWER: A SPECIFICALLY FRENCH ISSUE WHICH UNDERMINES NATIONAL CLIMATE CHANGE POLICIES.

ENERGY SAVING IS MORE SUCCESSFUL AT REDUCING CO₂ EMISSIONS THAN FRENCH NUCLEAR POWER PLANTS (FILE 3.1)

The French nuclear industry, hastily launched after the first oil crisis, holds the world record with 58 large reactors. Yet, despite what the advocates of nuclear power would like to think, the main decrease in CO₂ emissions since the 70s comes from ... energy saving, mainly in housing and services and in industry.

EPR: NO SIGNIFICANT IMPACT ON CO₂ REDUCTION(FILE 3.2)

In France, the debate is focusing on the construction of a new reactor in Flamanville, which could be operational in 2012, in a network already suffering from nuclear overcapacity, and when there should be no "need" for reactors until 2025 (assuming a regular increase in energy demand). So the direct effect of EPR in terms of CO₂ emission reductions will be very low, if not zero... It will just feed into the logic of overcapacity, with its insidious effects, such as encouraging energy consumption.

ENERGY ACCOUNTING UNITS OVERESTIMATE NUCLEAR POWER (FILE 3.3)

The tonne of oil equivalent (toe) is not an objective unit, particularly when it comes to compare different energy sources. To estimate the electricity production from nuclear power, a toe includes the heat released by the reactor into the air and water on a par with the electricity produced. Yet this heat represents two thirds of the energy produced by the reactors, which are therefore only 33% efficient. It is then easy to exaggerate the importance of nuclear power and overestimate France's energetic independence in relation to oil and gas. But if one considers available energy output rather primary energy output, nuclear power remains a minor energy in France and only supplies 17% of energy used.

NUCLEAR POWER: A COSTLY STATE MONOPOLY (FILE 3.4)

The huge overall cost of nuclear power (construction and decommissioning of power plants, nuclear waste management, etc...) is not very attractive for private investors. With massive injections of subsidies, special measures and other derogations, nuclear energy has only survived with the help of governments. But in the end, it is the taxpayer who pays and will continue to pay.

NUCLEAR POWER IS A CONSIDERABLE DRAIN ON PUBLIC FUNDS (FILE 3.5)

Nuclear power benefits from many subsidies and advantages.... In France, it is still the case today that over two thirds of the government and government-owned corporations' budgets for research are allocated to nuclear research. Some international treaties like Euratom also remove nuclear power from local jurisdiction. Not only is the European Commission taking on nuclear promotion, but in addition, the European Parliament is not consulted for decisions on the European energy research budget (two thirds of which are earmarked for nuclear energy).

THE NUCLEAR LOBBY IS POWERFUL AND OMNIPRESENT (FILE 3.6)

Nuclear promoters are present everywhere, influencing the media and hence public opinion. There are myriads of articles tending to present nuclear power in a favourable light and to belittle the alternatives. And this lobby is growing at international level. Except for massive institutional support, how could you explain, for example, that nuclear power cannot be criticized for its health impacts, following an agreement which submits the World Health Organisation to the International Atomic Energy Agency's decisions?

TO CREATE JOBS, NO NEED FOR OIL OR NUCLEAR POWER! (FILE 3.7)

Energy saving and renewable energy are both much more likely to create employment than nuclear power, facing decline. The construction and renovation of housing, an issue crucial in the climate debate in France, since the construction industry is responsible for 19% of greenhouse gas emissions, is a huge source of employment. The renovation of existing buildings would on its own create between 100,00 and 150,000 jobs over 40 years. The same applies to renewable energy. According to the Syndicat des Energies Renouvelables (a French organization grouping all renewable energy producers), the number of jobs in this sector in France could increase from 38,900 in 2004 to 115,000 in 2010, twice as many as the total number employed in the French nuclear industry.