KEEP NUCLEAR POWER OUT OF CDM: IT'S AN OBSTACLE TO CARBON MITIGATION

NGOs Call for removal of the Option to "Include Nuclear Activities" in the Clean Development Mechanism (CDM) and Joint Implementation (JI)"
from Agenda Item 3a of the Accra Conclusions of the Ad-Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol: Item I-D, Option 2 in the CDM and Item II-B, Option 2 in the JI

Nuclear Power contradicts Clean Development

The nuclear industry is using the issue of climate change and energy supply as a vehicle to win political and financial support for its dirty and dying sector. Even a massive, four-fold expansion of nuclear power by 2050 would provide only marginal reductions (4%) in greenhouse gas emissions, when we need global emissions to peak at 2015 and 50 - 80% cuts by 2050.

Nuclear energy's 'contribution' to fighting climate change would come too late (long after 2020), with huge costs (US$ 10 trillion) and would create a myriad of other serious hazards related to accidents, waste and proliferation. These large costs and negative impacts make nuclear energy an obstacle to the necessary development of effective, clean and affordable energy sources – both in developing and industrialised countries.

Activities related to nuclear power must not be allowed to become eligible for the Kyoto Protocol's flexible mechanisms in order to avoid:

- Undermining climate protection by wasting time and taking resources away from more effective and clean solutions;
- Dumping this expensive and unsafe technology on developing countries who would be landed with the associated economic and environmental impacts (accumulation of massive financial debts, increased dependency on foreign fuel and technologies, increased risk from reactor accidents and contamination); and
- Decreasing global security as volumes of nuclear waste with no safe methods of disposal increase massively and both nuclear materials and technologies are spread.

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Expensive and dangerous nuclear power would provide only a marginal contribution to carbon mitigation

The OECD International Energy Agency's (IEA) Energy Technology Perspectives 2008 Blue Map scenario [1] assesses what energy mix could achieve a 50% reduction in carbon emission by 2050. The agency assumes a four-fold increase of nuclear power generation, from today's 2,600 TWh/year to 9,900 TWh/year in 2050. But this would only reduce CO2 emissions from the energy sector by 6% (around 4 % of overall greenhouse gases).

Even getting to this 6% would require unprecedented rates of growth, sustained over four decades. The nuclear industry would have to build an average of 32 large (1,000 MWe) nuclear reactors every year from now until 2050.

Compare this with the last decade's average where the nuclear industry added 3000 MW of new capacity a year. In the 1980's, the decade of the industry's fastest growth, it built an average of 17,000 MW a year [2] – still only half the rate needed to realise the IEA's Blue Map scenario. But the IEA believes we can build 32,000 MW capacity every year from now to 2050.

Then there's the cost. Moody's [3] currently estimates the investment cost for new reactors at USD 7,500 USD/kW. Assuming this, the required 1,400 large new reactors would cost around USD 10,500 billion – and this is only the up-front investment.

While nuclear power presents itself as the largest carbon free energy source, its potential role in carbon mitigation is very limited and is simply not worth taking, given all its risks and costs.

Nuclear energy's massive problems and risks remain unsolved

Even today, running at one-tenth of the hypothetically required construction speed, the nuclear industry is struggling with serious problems and has hit many bottlenecks:

- **Massive technical problems and ever-rising costs** have affected attempts to build new reactor units, for example both of the French EPR units – in Finland and France – have experienced years of delays and billions in cost overruns already. [4]
- **Capacity to produce reactor components is limited** to only several pieces a year and are only produced by half a dozen corporations in a handful of countries. [5]
- **Shortages in uranium supplies** to fuel the existing fleet of reactors; the annual consumption reached 69,000 tonnes of uranium in 2007, compared to an annual production of just 41,300 tonnes in 2007.6 The world's proven and reasonably assured uranium resources would only be able to cover current consumption for a few decades and, as they deplete, carbon emissions from the nuclear fuel chain would rise significantly. [7]

- **A crunch for raw materials**, because of the high demand for large volumes of steel and concrete.
- **Negative health effects** of ionising radiation. Recently published peer-reviewed research found statistically high incidence of childhood leukaemia in the close vicinity of nuclear power plants in Germany [8] and the US [9].
- **Dangerous impacts of uranium mining and milling** threatens the lands, communities and health of Indigenous Peoples, many of whom (in Canada, the US, Africa, India and Australia, inter alia) continue to protest the extraction of uranium on or near their homelands and territories
- **Lack of qualified engineers, inspectors** and personnel to safely manage and oversee operations at the current scale.
- **Long lead-times for projects.** It takes 10 to 15 years, even in countries with developed related infrastructure, to plan, approve, site and build a new reactor, not to mention bringing it online. It would take even longer in countries that are just starting their nuclear programmes.
- **No safe disposal method for radioactive wastes that** reactors have already produced, despite decades of research and money spent. In the past five years, the estimated costs of radioactive waste disposal grew by USD 40 billion in United States [10] and by GBP 27 billion in the United Kingdom [11] with no guarantees that safe storage, at the end of the day, is really possible.
- **Growing proliferation problems**: As stockpiles of separated plutonium increase, nuclear technologies and materials spread to new countries. International safeguards are under-resourced and structurally weak. It is only a question of time before they become accessible to terrorist groups. One large reactor can produce 200 kgs of plutonium every year - enough for two dozen nuclear weapons.

All these factors raise additional scepticism about the actual potential of nuclear power to really mitigate greenhouse gases on any useful scale and within a reasonable timeframe.

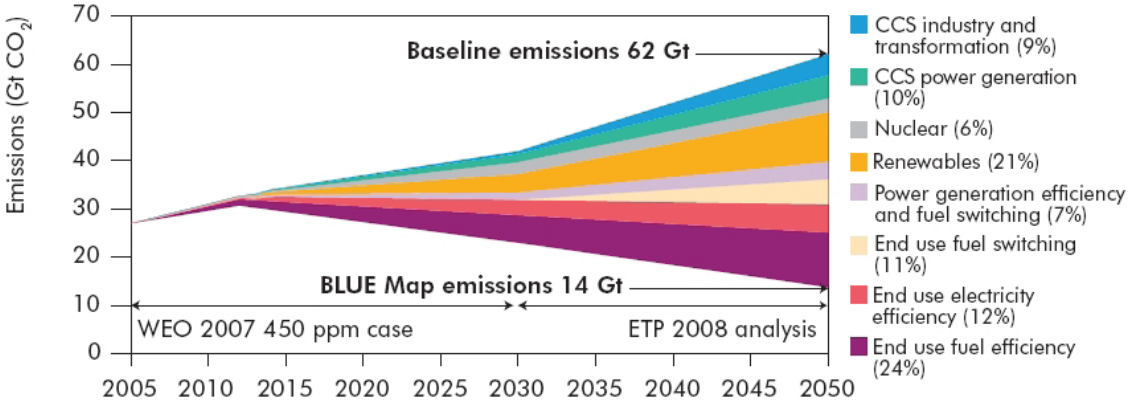
Nuclear power steals “time and money” that would be better invested in energy efficiency and renewable technologies

Expensive, dirty and hazardous nuclear power stands in the way of clean and sustainable solutions. It could take USD10 trillion or more to build enough reactors to produce 9,900 TWh of “nuclear electricity” as projected under the International Energy Agency (IEA) 2008 “Blue Map” scenario. Building enough wind farms to produce the same amount of electricity, for example, would cost USD 6 trillion at current prices, for a savings of USD 4 trillion. And, these costs would decrease over time.

Wind power has no associated fuel costs and does not require expensive dismantling of its power plant at the end of its life and long term disposal of radioactive waste as is required in the decommissioning of a nuclear power plant. Other calculations show that, compared to nuclear, wind power at today’s costs replaces twice as much carbon per invested dollar and energy efficiency measures three to six times more. [12]

Even the IEA's 2008 Blue Map scenario itself shows that, while massive nuclear expansion reduces carbon emissions from the energy sector by 6%, the potential of renewable energy sources is around four times greater, and the potential of energy efficiency six times greater. It is clear by these numbers which technology deserves the priority for investment:

Figure ES.2 ▶ Comparison of the *World Energy Outlook 2007* 450 ppm case and the BLUE Map scenario, 2005-2050



Lastly is the issue of time. Energy efficiency measures can be implemented in months. A wind farm can be planned and built in one year. Nuclear reactors take one to two decades to plan and build.

Every dollar invested in nuclear power means a dollar less invested in energy efficiency and renewable energy sources — sources that can not only replace several times more carbon for the same cost, but also achieve the desired carbon reduction more rapidly.

Renewable energy sources can easily provide power to remote areas with underdeveloped infrastructure and can be implemented quickly while supporting local job development. In contrast, large nuclear power plants are often not compatible with established grids and infrastructure in developing countries. Various institutions have recently warned developing countries against unrealistic expectations from nuclear energy plans.

> "You should go for it [renewable energy]. It is cheaper than investing in nuclear development."

– Ferran Tarradellas Espuny, spokesman for the EU Energy Commissioner, speaking about renewable energy projects in South East Asia.

> "Nuclear energy is not the panacea for tackling global warming. Even if you set aside the problem of long-term waste storage and the danger of operator accident and the vulnerability to terrorist attack, you still have two others that are more difficult. The first problem is one of economics..... The second is nuclear weapons proliferation. For eight years when I was in the White House, every problem of weapons proliferation was connected to a reactor program."

– Al Gore, Former Vice President of the United States, Nobel Peace Prize Winner, 2007

Conclusion: Too little, too late, too expensive, and just too dangerous.

Nuclear power is not a suitable answer to climate change and should be removed as an investment option for the Clean Development Mechanism and Joint Implementation strategies.

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12 Amory Lovins, The Nuclear Illusion, May 2008.

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Undersigned: