

NUCLEAR MONITOR

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INDIA: PROTESTS AGAINST KODANKULAM NUCLEAR PROJECT

Our most decent, most democratic and most lameduck Prime Minister Manmohan Singh signed a deal for four additional nuclear plants at Koodankulam with the Russian President Putin on January 27, 2007 even before the public hearing process was held for the same. The first hearing was held on October 6. Some 700 to 800 people unexpectedly turned up and the group included many rural women who were not reluctant to speak their minds. The meeting prematurely ended in chaos. The second hearing was scheduled for January 31.

(652.5782) SACCR - Alarmed by the plan of the Koodankulam authorities to take water from the Pechiparai irrigation dam in Kanyakumari district, several farmers' organizations and fisherpeople's associations started organizing against that dangerous move. This dam water plan was recorded in the official EIA (Environmental Impact Assessment) report that the Koodankulam authorities had prepared for the additional four nuclear power plants they were planning at Koodankulam.

Several meetings were organized in October 2006 to plan the centenary celebrations of the Pechiparai Dam and to think about the ways and means of preventing the Koodankulam authorities from usurping the irrigation water from us to use it in the wasteful and dangerous nuclear programs. The newly set up "Kanyakumari District Water Resources Protection Federation" organized a massive public meeting on November 4, 2006 at Thuckalay to discuss the threats to our water resources from various quarters, including the nuclear dragon. The

Koodankulam authorities cunningly ducked and conveniently claimed that they were setting up desalination plants with Israeli technology and hence they were not going to take Pechiparai dam water. When we pointed out their claim in the official EIA report and in a recent journal article written by a senior nuclear official, they claimed that they were all mistakes. Typical nuclear behaviour!

The TNPCB (Tamil Nadu Pollution Control Board) was going to hold the postponed public hearing for the Koodankulam nuclear power plants III, IV, V and VI on January 31, 2007 at 10:30 am at Koodankulam. The newspaper ads said that the hearing would be held at the town hall at Koodankulam but later we found out that the public hearing would be held at one of their own meeting halls in the nuclear power project township itself.

The public hearing announcement indicated that the possible issue of displacement of the local people would also be dealt with in the meeting. This last straw broke the proverbial camel's

INDIA: PROTESTS AGAINST KODANKULAM NUCLEAR PROJECT	1
USA: NRC MUST REVIEW N-TERRORISM IN CALIFORNIA LICENSING	2
SWEDEN: LEAKED REPORT REVEALS SAFETY BREACHES AT FORSMARK	3
SWEDEN: NUCLEAR CHALLENGE TO ENVIRONMENTAL CODE FAILS	4
NUCLEAR POWER POLICY IN EUROPE	5
ENERGY (R)EVOLUTION: A SUSTAINABLE WORLD ENERGY OUTLOOK	6
IN BRIEF	8

back for the Koodankulam public. They were already deeply disturbed by the facts that the promised 10,000 jobs never came and the proclaimed economic boom never happened. When they were also going to be kicked out of their village, the Koodankulam people said 'enough is enough', founded the "People's Rights Movement" and organized protest marches, fasting, road blocks and so forth on three consecutive days in late January 2007.

Seeing the latest developments in Koodankulam, the neighboring fishing and farming villages also rose up with fresh energy and enthusiasm. None of them want to have four more additional nuclear power plants in their midst and they also want to stop the construction of the first two plants.

Taken aback by this popular upsurge and groundswell, the authorities quietly postponed the public hearing once again. The nuclear authorities from the topmost boss to the bottommost peon tried in vain to reassure the people that nobody would be displaced. Typical nuclear behaviour! They came up with

all kinds of ridiculous ground plans to explain that they could have upto eight plants on the existing land. Our most decent, most democratic and most lameduck Prime Minister (White)Manmohan Singh signed the deal for the four additional nuclear plants at Koodankulam with the Russian President Putin on January 27, 2007 even before the public hearing was held for the same. Perhaps he knows that the whole public hearing exercise is a sham and a fraud on the people of India.

The plan for Koodankulam seems to include six Russian-made VVER nuclear power plants producing 6000 MW power, two Indian-made fast breeder plants producing 400 MW power each, a possible reprocessing plant, and also a weapons production facility. This dangerous "temple of science and technology" will be the biggest nuclear facility in the entire world.

With the public hearing postponed indefinitely, the nuclear authorities are scheming on how to trick the people of Tirunelveli, Kanyakumari and

Thoothukudi districts of Tamil Nadu into the deadly nuclear trap. The local press and other media who are pampered by the nuclear ads and booze (and what not) do not want to report anything that is unpleasant for the nuke bosses. The political parties that speak so much about the Tamil race and its welfare, tend to think that the people of the southern districts are Martians who deserve to be nuked. The religious elements are busy with their enlightened escapades.

So the local people are left to fend for ourselves. We are organizing slowly, steadily but surely. Wish us luck and do something in your area too for the danger of nuclearism is taking over the entire globe.

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USA: NRC MUST REVIEW N-TERRORISM IN CALIFORNIA LICENSING

On January 16, 2007 the United States Supreme Court refused to hear Pacific Gas & Electric's (PG&E) appeal backed by the Bush Administration for a review of the San Francisco-based 9th Circuit Federal Court of Appeals' decision concerning the environmental impacts of nuclear terrorism. The lower court had ruled that the U.S. Nuclear Regulatory Commission (NRC) must hear the case of the San Luis Obispo Mothers for Peace, Sierra Club and Peg Pinard, collectively MFP, as a requirement of the National Environmental Policy Act (NEPA).

(652.5782) NIRS - The Mothers For Peace (MFP) had challenged the construction license for a dry cask radioactive waste storage system at California's Diablo Canyon nuclear power plant on the consequences of a successful terrorist attack. The NRC dismissed the hearing request by a similar Order that has been applied in earlier National Environmental Policy Act (NEPA) hearing requests including a NIRS challenge to license extensions for Duke Power's Catawba and McGuire nuclear power stations. In all those cases, the federal agency concluded, just over a year after the

9/11 attacks, that terrorism was "too speculative and remote" to be applied in any of its site-specific proceedings.

PG&E had argued to the high court that an environmental impact statement on the consequences of terrorism isn't required under federal law and "would place an unnecessary and duplicative burden" on the power company.

The Supreme Court justices' decision, without comment, opens the door to further legal actions where NRC dismissed public challenges on the environmental impacts of terrorist

attacks and acts of sabotage at nuclear power plants. The ruling potentially effects seven additional licensing hearings including 20-year license extensions for the Oyster Creek, Palisades, Pilgrim and Vermont Yankee nuclear power stations and challenges to an Early Site Permit application for new construction at Mississippi's Grand Gulf nuclear power plant, an application to construct and operate an industrial irradiator in Hawaii, and the state of Utah's appeal of the NRC license handed to Private Fuel Storage for an Away-From-Reactor nuclear dump in Tooele County, Utah. NIRS was

involved in two of those seven legal challenges.

"After the events of September 11, 2001, it is only reasonable that the significant health and environmental risks of terrorist attacks be considered when designing and building nuclear facilities," said MFP spokesperson Jane Swanson. The NRC must now issue a new environmental assessment addressing the impacts of an intentional attack on the proposed radioactive waste dump. The focus of MFP is to require a new environmental assessment that would not only evaluate consequences but consideration of hardening onsite storage of nuclear waste by building berms around more robust casks that are dispersed over the reactor site. "We're looking for real design alternatives, not just more fences and guns," said Diane Curran, attorney for MFP.

Like many nuclear power stations in the United States, Diablo Canyon's two reactor units are running out of storage

space for irradiated fuel rods in densely packed nuclear waste storage pools. While the court ruling bars PG&E from off loading the nuclear waste from the pools into storage casks until it complies with a hearing it does not halt the construction of the onsite storage facility itself. Current onsite nuclear waste storage designs in the United States consist of a variety of cask designs that are openly congregated on concrete pads.

Within days after the Supreme Court decision, a NRC licensing board dismissed a legal challenge by the Massachusetts Attorney General for a hearing on the consequences of a successful terrorist attack on the nuclear waste storage pool in Vermont Yankee nuclear power station. The nuclear waste laden pool of the General Electric Mark I Boiling Water Reactor is six to ten stories up in the reactor building outside primary containment. The NRC licensing board ruled that the nuclear waste contention and terrorist concerns were beyond the scope of the hearing.

The licensing board's decision against Massachusetts signals NRC's intentions to ignore the Supreme Court's rejection in the other legal circuits.

Meanwhile, the NRC Commissioners voted on January 29, 5-0, to reject requirements for nuclear power plants to defend against September 11th style attacks. Commission Chair Dale Klein claimed that the nation's nuclear power plants are structurally robust and can withstand any aircraft attack without significant consequences. The Commission also rejected requirements for nuclear power plants to have enough defense forces to repel a ground or water borne attack by a force of 19 suicidal attackers coordinated in four teams, the equivalent force that successfully attacked the World Trade Center and Pentagon on September 11, 2001.

Source and contact: Paul Gunter at NIRS Washington

SWEDEN: LEAKED REPORT REVEALS SAFETY BREACHES AT FORSMARK

An internal report on safety at Forsmark Kraftgrupp AB is "shaking up Swedish energy policy", to quote Sweden's leading business daily. The report was leaked to investigative journalists at SVT1 (public service TV). The analysis, addressed to Forsmark management, was prompted by a blackout that might well have led to a meltdown at Forsmark 1 in late July 2006, but the examples in it outline problems both before and after the blackout. They include known installation errors, diesel failures, workplace hazards, instances of alcohol and drug abuse at the plant.

(652.5783) WISE Sweden - The examples were culled from numerous protocols from routine production meetings, with particular focus on the annual shutdown at F2 (Forsmark 2) for repairs and testing. These started just days after the incident at F1 and are therefore an indicator of the impact the problems at F1 had on the safety culture. Few of surprisingly many incidents were reported; even fewer have been followed up, despite the fact that several were potentially fatal and several have direct bearing on the incident at F1.

Total reform called for

The report recommends a total reform of the annual revision procedure. "Time, or rather lack of time, must no longer be allowed to justify breaking the rules, cutting corners on established routines and instructions, poor workmanship and hasty testing and approvals," the authors write. Indeed, middle management and workers had been exhorted to "break the record" in terms of how quickly they could complete the renovation and testing process. The authors complain of the very narrow focus of the official report on the incident at F1. It fails to ask what lies

behind the failures that day or if they may be symptoms of systematic error. The report speaks of a "slippery slope", where gradual impairments over time have resulted in an "overall and fundamental decline" in the safety culture.

Poor feedback, little follow-up, no transparency

"Much suggests that the basic causes of the incident 25th July reside in faults in the quality assurance system," the group observe. Communication on safety issues has largely been top-down. Many faults and malfunctions are

recorded in the minutes of production meetings, but few are communicated upward along the chain of command. Nor are such events reported to the regulatory authority. The sum total is a misrepresentation of the conditions prevailing at the plant, giving authorities, politicians and the public the impression that all is well.

Even mainstream media are now referring to "the scandal at Forsmark", until now considered the flagship of the Swedish nuclear fleet. The Minister for the Environment has summoned the regulator, SKI, to explain what they have done to impress safety concerns on Forsmark and its owners. The Ministry of Industry has summoned Forsmark's owner, government-owned Vattenfall, to explain what they intend to do to influence their subsidiary, and the parliamentary Committee on

Defence has also summoned both SKI and Forsmark management to a hearing. Greenpeace and the Green Party are no longer alone in calling for changes in Forsmark's leadership.

The scandal comes at an awkward time for the Swedish nuclear industry. Forsmark is one of three operators who have applied for permits to raise their thermal effect in order to increase electricity production, in itself a risky venture. A bad show on safety may well bring these plans under more critical scrutiny.

On February 3, two reactors at Forsmark were shut down because of a possible problem with rubber sealing. A part of the sealing at the Forsmark 1 reactor showed possible degradation, and since Forsmark 1 and 2 have the same type of seal, management

decided to shut down both. "This is not serious, it's not unusual that reactors are shut down," said Anders Bredfell, information director at the Swedish Nuclear Inspectorate. Bredfell said both reactors would be restarted in a couple of days.

Forsmark has three reactors and is situated about 100 kilometers north of the capital Stockholm on the Swedish east coast. It accounts for about one-sixth of Sweden's total electricity generation

Source: read more (in Swedish) at www.svt.se/uppdraggranskning (including pdf of full report) and press reports in Dagens Industri, Dagens Nyheter and Svenska Dagbladet, all 31st January 2007 / AP, 3 February 2007

Contact: Charly Hultén, WISE Sweden

SWEDEN: NUCLEAR CHALLENGE TO ENVIRONMENTAL CODE FAILS

Sweden prides itself on its Environmental Code, introduced in 2003. It is universal (trans-sectorial), has stringent demands regarding environmental impact assessments, and provides for transparency and broader co-decision-making in the approval process. It is intended to be the touchstone for environmental law-making and practices in the country. But is it appropriate and necessary to impose conditions, in view of the responsibilities of the nuclear regulatory agencies? On December 20, the Court decided it is appropriate to do so.

(652.5784) **WISE Sweden** - Sweden's nuclear power industry has traditionally been regulated by two agencies, the Swedish Reactor Safety Inspectorate (SKI) and the Swedish Radiation Protection Institute (SSI) in accordance with sector-specific legislation (Lagen om kärnteknisk verksamhet, KTL), supplemented with more detailed requirements drafted and enforced by the respective agencies. With the coming of the Environmental Code a question arose as to how it would apply to nuclear energy (see *Nuclear Monitor* 628, 27 May 2005) and whether it would supersede KTL. The environmental movement was quick to raise the question, but jurists and law-makers were reluctant to give unequivocal answers. Within a few years' time a regular "turf war" between the nuclear power industry and its industry-friendly regulators on the one

hand, and the environmental courts, set up under the Code, had broken out.

The issue was brought to a head in March 2006, when Ringhals AB applied to the Environmental Court in Vänersborg for approval of plans to significantly augment the electricity output by raising the thermal effect in two reactors under the Environmental Code.

Ringhals AB apparently took approval for granted. The Court, however, rejected the application on three principal grounds: the essentially incalculable riskiness of nuclear energy per se, the unsolved problem of what to do with nuclear waste, and the operator's failure to utilize the heat generated by its reactors. But, in accordance with provisions of the Code the Court then referred the case to the then-Social Democratic Government,

who overrode the Court's objections and approved Ringhals' plans. When the matter was returned to the Court, the Court again surprised Ringhals and the industry by handing down a number of conditions relating to reactor safety and radiation protection and imposing a trial period for the planned upgrade. This was perceived as a direct challenge to the hegemony of the industry, the two regulators and the sectorial law, KTL. Ringhals appealed the Court's decision to the Environmental Supreme Court (Miljööverdomstolen/Svea Hovrätt) in Stockholm. The company argued that parallel regulation according to the Code and KTL might result in uncertainty and contradictions in matters of reactor safety and radiation protection. Secondly, the imposition of a trial period would delay costly long-term investments needed to ensure

maximum safety. In short, the Court's ruling, if implemented, would be counterproductive.

SKI both seconded and expanded these arguments in comments to the Court, recommending that the Court set only one single condition, namely, that Ringhals follow SKI's rules and regulations.

In its decision of December 20, 2006 (M3363-06) the Environmental Supreme Court comments, "It is clear to all that the Court has the authority to impose conditions. All are agreed on this, including Ringhals. ... The question at hand is whether it is appropriate or necessary to do so, in view of the responsibilities of the regulatory agencies." It then proceeds to find that it is appropriate.

The Court is considerably more creative in its interpretation of the law than either SKI or Ringhals' lawyers. The Environmental Code, it finds, foresees a balance between general regulation (through the Code) and more detailed regulation (by sectorial agencies).

Secondly, how well this division of labor works should be determined after a prescribed trial period. The trial period also assures the general public of an opportunity to give their views. The ruling is a setback for those who would see sectorial law reign supreme, and there is more at stake than mere prestige. The key factor is that KTL empowers the agencies to grant exemptions from the requirements of the law without consulting any third party, a practice euphemistically referred to as 'flexibility' in comments supporting the appeal. Such dispensations, termed 'transitional provisions', are rather many. In sum, the arrangement allows the Swedish Government, SKI and the industry to boast of strict regulations, while the nuclear operators carry on, business as usual, free to comply with the law as and when it suits them. Thus, the intervention of the Environmental Court complicates a cosy relationship between regulator and regulated. The industry-friendliness of particularly SKI is not only irksome to

environmentalists, but actually outright dangerous. Several incidents in recent years point to a decline in the culture of safety at Swedish reactors. Two examples: (1) Some winters ago, the operators of the now defunct station at Barsebäck were found to have run a reactor at full effect for months despite chronic and unexplained fluctuations in the water level in the cooling system. Management had ordered continued operation, as electricity prices were at their annual peak. (2) This past summer, work on a rectifier outside a Forsmark reactor that was on line precipitated a power outage that, because back-up power systems could not be activated, might well have led to a catastrophe of Chernobyl proportions (see *Nuclear Monitor* 649, 6 September 2006). A more firm exercise of regulatory authority, whether by SKI or the courts, seems to be needed.

Source and contact: Charly Hultén, Swedish Anti-Nuclear Movement/WISE-Sweden

NUCLEAR POWER POLICY IN EUROPE

Since its publication on the 10th January the Energy Package (see previous *Nuclear Monitor* 651, 12 January 2007) has been discussed by the EU Council (made up of civil servants from Member States) in preparation for Ministerial meetings in mid February and a final text agreement at the Spring Summit of EU Heads of State on the 8/9th March, where the EU is expected to adopt a 'Road Map for a New Energy Policy for Europe'. This will draw together a number of energy and environment issues which the European Commission claim will part of "a new industrial revolution".

(652.5785) Antony Froggatt - However, despite the volume of material presented in the energy package, 12 communications (positions papers) and 12 staff working documents (background material) there are some gaping holes in this 'new European energy policy'. For environmental and security of supply reasons the use of oil should be the number one priority, but the transport sector is barely touched upon. Secondly, energy efficiency: In October 2006 the European Commission released an Action Plan on Energy Efficiency. This laid out plans for how the EU could increase its energy efficiency by 20% by 2020, leading to annual savings of EUR.100 billion. Despite the logic of promoting this

action plan, the EU does not adopt this as its reference scenario in the Energy Package, but rather uses it 'business as usual' approach which envisages a much larger use of energy, thus countering its own proposals.

The original European Commission text of the package has the following major proposals:

- A 20% cut in Greenhouse gases (mainly CO₂) by 2020; which contradicts current EU policy, which aims to limit the global temperature increase to 2 degrees compared to pre-industrial levels this requires a 30% cut in emissions.
- The introduction of a binding target that proposes that 20% of energy

comes from renewable energy sources. This does not include sector targets (individual targets for electricity, heat and cooling and biofuels), despite calls from the renewable energy sector for them and the Commission's staff working documents itself stating "a single broad target is too unfocused and would fail to provide sufficient guidance and certainty to businesses operating in a specific sector of the market".

- A number of options to reduce the market power of large energy companies, in particular by restricting the ability of companies to own or operate both the transmission grid and generation/supply. Additional

measures proposed to increase the cross border movement of energy.

- The development of demonstration projects to assess the economic and technical viability of carbon capture and storage (CCS), with the target of having 12 demonstration facilities in operation by 2015.

There was a separate paper for nuclear power, a *Draft Nuclear Illustrative Programme [COM (2006) 844]*. This is the fifth so called 'PINC' paper, which is based on article 40 of the Euratom Treaty, which states that the Commission shall '*periodically publish illustrative programmes indicating in particular nuclear energy targets and all the types of investment required for their attainment*'. The paper and other parts of the energy package retain the inherent bias that existing within the European Commission towards nuclear power.

In particular the PINC paper and energy policy document try to stress the economic viability of nuclear power. However, they have done so at the expense of their own credibility. In particular, the paper states '*Construction of the new NPP in Finland, although not requiring government subsidies depends on secure long-term investments*'.

However, the paper fails to mention that the project is now subject of a formal investigation into the granting of State Aid to the project (SEE previous edition). Furthermore, the paper states that '*that new nuclear plants are generally being built without subsidies*'. However, this is blatantly untrue, given the situation in Finland and the fact that the only way construction is being considered in the US is through the US 2005 Energy Act granting \$12-20 billion in a Government financial support programme.

Finally, the over-riding Energy Policy for Europe document (which summarise much of the content of the package) includes economic data on different energy option. This estimates that the cost of nuclear electricity is in the range of EUR 40-45/MWh, which is far lower than most predictions. The UK Government estimated in its 2006 energy review that nuclear electricity will cost around EUR 57/MWh. Despite the propaganda the PINC paper is on the face of it short on concrete measures to further support the nuclear sector, with major initiatives listed as: -

- * The **establishment of a new 'High Level Group on Nuclear Safety and Security'** with a mandate of progressively developing common

understanding and eventually additional European Rules on nuclear security and safety.

- * The paper calls for '**great availability of Euratom loans**, provided the ceilings are updated in line with the needs of the market as already proposed by the Commission'.
- * Developing a harmonized liability scheme and mechanism to ensure the availability of funds in the event of damage caused by a nuclear accident.
- * Simplifying and harmonising licensing procedures.

In the coming weeks the debate on the future of European Energy policy will be focused on the level of greenhouse gas emissions cuts proposed for 2020 and the firmness of the targets for reductions in energy use and the introduction of renewable energy. These are fundamentally important for the creation of a sustainable energy sector for Europe. While nuclear power is not grabbing the headlines, it remains a highly controversial issue, but one which is slowly creeping up the political agenda.

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ENERGY (R)EVOLUTION: A SUSTAINABLE WORLD ENERGY OUTLOOK

The Energy [R]evolution Scenario has a target for the reduction of worldwide greenhouse gas emissions by 50% below 1990 levels by 2050, with per capita carbon dioxide emissions reduced to less than 1.3 tonnes per year in order for the increase in global temperature to remain under +2°C. A second objective is to show that this is even possible with the global phasing out of nuclear energy.

(652.5786) Greenpeace - This new publication by Greenpeace and EREC (European Renewable Energy Council) provides stimulating analysis on future scenarios of energy use, which focus on a range of technologies that are expected to emerge in the coming years and decades. There is now universal recognition of the fact that new technologies and much greater use of some that already exist provide the most hopeful prospects for mitigation of emissions of greenhouse gasses

Climate threats and solutions

An average global warming of 2°C threatens millions of people with an increased risk of hunger, malaria, flooding and water shortages. If rising temperatures are to be kept within acceptable limits then we need to significantly reduce our greenhouse gas emissions. This makes both environmental and economic sense. The main greenhouse gas is carbon dioxide (CO₂) produced by using fossil fuels for energy and transport. Spurred by recent large increases in the price of oil, the issue of security of supply is now at the top of the energy policy

agenda. One reason for these price increases is the fact that supplies of all fossil fuels - oil, gas and coal - are becoming scarcer and more expensive to produce.

The days of "cheap oil and gas" are coming to an end. Uranium, the fuel for nuclear power, is also a finite resource. By contrast, the reserves of renewable energy that are technically accessible globally are large enough to provide about six times more power than the world currently consumes forever. Renewable energy technologies vary

widely in their technical and economic maturity, but there are a range of sources which offer increasingly attractive options. These sources include wind, biomass, photovoltaic, solar thermal, geothermal, ocean and hydroelectric power. Their common feature is that they produce little or no greenhouse gases, and rely on virtually inexhaustible natural sources for their "fuel". Some of these technologies are already competitive. Their economics will further improve as they develop technically, as the price of fossil fuels continues to rise and as their saving of carbon dioxide emissions is given a monetary value.

At the same time there is enormous potential for reducing our consumption of energy, while providing the same level of energy 'services'. This study details a series of energy efficiency measures which together can substantially reduce demand in industry, homes, business and services.

The solution to our future energy needs lies in greater use of renewable energy sources for both heat and power.

Nuclear power is not the solution as it poses multiple threats to people and the environment. These include the risks and environmental damage from uranium mining, processing and transport, the risk of nuclear weapons proliferation, the unsolved problem of nuclear waste and the potential hazard of a serious accident. The nuclear option is therefore eliminated in this analysis.

The Energy [R]evolution

The climate change imperative demands nothing short of an energy revolution. At the core of this revolution will be a change in the way that energy is produced, distributed and consumed. The five key principles behind this shift will be to:

- o Implement renewable solutions, especially through decentralised energy systems
- o Respect the natural limits of the environment
- o Phase out dirty, unsustainable energy sources
- o Create greater equity in the use of resources
- o Decouple economic growth from the consumption of fossil fuels

Decentralised energy systems, where power and heat are produced close to the point of final use, avoid the current waste of energy during conversion and distribution. They will be central to the Energy [R]evolution, as will the need to provide electricity to the two billion people around the world to whom access is presently denied.

Two scenarios up to the year 2050 are outlined in this report. The reference scenario is based on the business as usual scenario published by the International Energy Agency in World Energy Outlook 2004, extrapolated forward from 2030.

Compared to the 2004 IEA projections, the new World Energy Outlook 2006 assumes a slightly higher average annual growth rate of world GDP of 3.4%, instead of 3.2%, for the 2004-2030 time horizon. At the same time, WEO 2006 expects final energy consumption in 2030 to be 4% higher than in WEO 2004. A sensitivity analysis on the impact of economic growth on energy demand under the Energy [R]evolution Scenario shows that an increase of average world GDP of 0.1% (over the time period 2003-2050) leads to an increase in final energy demand of about 0.2%.

The Energy [R]evolution Scenario has a target for the reduction of worldwide emissions by 50% below 1990 levels by 2050, with per capita carbon dioxide emissions reduced to less than 1.3 tonnes per year in order for the increase in global temperature to remain under +2°C. A second objective is to show that this is even possible with the global phasing out of nuclear energy. To achieve these targets, the scenario is characterised by significant efforts to fully exploit the large potential for energy efficiency. At the same time, cost-effective renewable energy sources are accessed for both heat and electricity generation, as well as the production of biofuels.

Today, renewable energy sources account for 13% of the world's primary energy demand. Biomass, which is mainly used for heating, is the largest renewable source. The share of renewable energy in electricity generation is 18%, whilst the contribution of renewables to heat supply is around 26%. About 80% of primary energy supply still comes from

fossil fuels, and the remaining 7% from nuclear power.

The Energy [R]evolution Scenario describes a development pathway which transforms the present situation into a sustainable energy supply.

- o Exploitation of the large energy efficiency potential will reduce primary energy demand from the current 435,000 PJ/a (Peta Joules per year) to 422,000 PJ/a by 2050. Under the reference scenario there would be an increase to 810,000 PJ/a. This dramatic reduction is a crucial prerequisite for achieving a significant share of renewable energy sources, compensating for the phasing out of nuclear energy and reducing the consumption of fossil fuels.
- o The increased use of combined heat and power generation (CHP) also improves the supply system's energy conversion efficiency, increasingly using natural gas and biomass. In the long term, decreasing demand for heat and the large potential for producing heat directly from renewable energy sources limits the further expansion of CHP.
- o The electricity sector will be the pioneer of renewable energy utilisation. By 2050, around 70% of electricity will be produced from renewable energy sources, including large hydro. An installed capacity of 7,100 GW will produce 21,400 Terawatt hours per year (TWh/a) of electricity in 2050.
- o In the heat supply sector, the contribution of renewables will increase to 65% by 2050. Fossil fuels will be increasingly replaced by more efficient modern technologies, in particular biomass, solar collectors and geothermal.
- o Before biofuels can play a substantial role in the transport sector, the existing large efficiency potentials have to be exploited. In this study, biomass is primarily committed to stationary applications; the use of biofuels for transport is limited by the availability of sustainably grown biomass.
- o By 2050, half of primary energy demand will be covered by renewable energy sources.

To achieve an economically attractive growth of renewable energy sources, a

balanced and timely mobilisation of all renewable technologies is of great importance. This depends on technical potentials, actual costs, cost reduction potentials and technological maturity.

Development of CO₂ emissions

Whilst worldwide CO₂ emissions will almost double under the reference scenario by 2050 - far removed from a sustainable development path - under the Energy [R]evolution Scenario emissions will decrease from 23,000 million tonnes in 2003 to 11,500 million tonnes in 2050. Annual per capita emissions will drop from 4.0 t to 1.3 t. In the long run, efficiency gains and the increased use of biofuels will even reduce CO₂ emissions in the transport sector. With a share of 36% of total CO₂ emissions in 2050, the power sector will be overtaken by the transport sector as the largest source of emissions.

Costs

Due to the growing demand for power,

we are facing a significant increase in society's expenditure on electricity supply. Under the reference scenario, the undiminished growth in demand, the increase in fossil fuel prices and the costs of CO₂ emissions all result in electricity supply costs rising from today's \$1,130 billion per year to more than \$4,300 bn per year in 2050. The Energy [R]evolution Scenario not only complies with global CO₂ reduction targets but also helps to stabilise energy costs and thus relieve the economic pressure on society. Increasing energy efficiency and shifting energy supply to renewable energy resources leads to long term costs for electricity supply that are one third lower than in the reference scenario. It becomes obvious that following stringent environmental targets in the energy sector also pays off in economic terms.

To make the energy [r]evolution real and to avoid dangerous climate change, the following assumptions

need to be implemented:

- o The phasing out of all subsidies for fossil fuels and nuclear energy and the internalisation of external costs
- o The setting out of legally binding targets for renewable energy
- o The provision of defined and stable returns for investors
- o Guaranteed priority access to the grid for renewable generators
- o Strict efficiency standards for all energy consuming appliances, buildings and vehicles

Source: "Energy (R)evolution: a sustainable world energy outlook", January 2007 by Greenpeace and EREC.

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IN BRIEF

Ignalina-3 - a public debate in Latvia starting; Poland moving forward without public debate. On 26 January, the Latvian Environment Minister and the town of Riga hosted the first public debate in Latvia about participation in the construction of a third (new) nuclear power reactor near Ignalina in neighbouring Lithuania. In spite of mainly pro-nuclear media representations of the meeting, the meeting itself came with a relatively clear conclusion that Latvia nor the region needs Ignalina 3 and that it is high time for a more aggressive development of energy efficiency and renewable energy sources.

At the meeting in Riga the Lithuanian organisation Atgaja proposed an alternative energy policy scenario for Lithuania, which proved that for lower cost, the region can fulfil its need for energy services with energy efficiency measures and renewables. But Latvian state-owned utility Latvenergo at the moment only looks at the possibility to integrate nuclear power from Ignalina 3 in its portfolio, supported in that by the Latvian Ministry for Economy. Voices from the public, journalists and the Ministry of Environment, however, indicated strong opposition to creating a new nuclear power plant near Latvia's border. Their arguments strongly referred to the still fresh memories of the effects of Chernobyl on Latvia, as well as on the high total-cost of nuclear power and the fact that alternatives exist but are not taken properly into consideration.

At the same time, negotiations between the Polish government and Polish utility PSE on one hand and Lithuania on the other are continuing. Polish participation in the Ignalina project is seen as important by Lithuania in order to motivate Poland to also participate in a cable connection that would link Lithuania to the European UCTE grid system. Without a clear source for import to Poland, such a link would provide the Polish grid with little advantages. Estonia and Latvia, the other two Baltic States, however, doubt whether only 25% participation in Ignalina 3 (or less) would be worthwhile and therefore some oppose Polish participation in the project.

For the time being, the Ignalina 3 project is based on the "dream figures" that the nuclear industry is spreading throughout Europe: a generation 3 reactor of 1000 MW or more, 5 years construction time, 60 years lifetime, construction investment of 2000 / kWe, electricity prices of 2 to 4 ct/kWh. That the reality in Finland and Bulgaria - the only two third generation projects currently under way in Europe - shows that these conditions cannot be met was presented during the debate in Riga, but not represented by the media. For the time being, the Ignalina 3 project floats on PR - when the real public debate starts, at least the outcomes in Latvia, Estonia and Poland (which has a strongly anti-nuclear population) could come as a cold shower for the centralised energy planners in those countries.

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U.S.: Yucca Mountain news. The government should be looking for alternative sites to Yucca Mountain, said NRC Commissioner Edward McGaffigan. Speaking to a group of reporters at a Platts Energy Podium January 22, McGaffigan said there

are so many problems with the planned Nevada high-level waste repository that it "may be time to start rethinking this." McGaffigan stressed that his comments were his views and not those of the commission.

At the same time, DOE is also looking for provisions to eliminate the 70,000 metric ton cap on the amount of spent fuel that can be disposed of at Yucca Mountain. DOE has maintained that it will have to cite a second repository if that cap is not lifted. Meanwhile, the department's \$495 million Fiscal Year 2008 budget request for the waste program includes \$2 million to begin evaluating the need for a second repository. But the search for a second (or alternative?) repository is on.

In 1987 Yucca Mountain was mandated to be the nation's first underground repository for spent fuel and the first shipment was planned in 1998. Since Yucca Mountain is now expected to be opened (if ever) 'not before September 2020', it is about 22 years behind schedule (must be some kind of world record).

Nuclear News Flashes, 22 January & 5 February 2007

Bulgarian offensive to re-open debate on Kozloduy 3 and 4 closure. On 31 December 2006, the Kozloduy blocks 3 and 4 were taken from the grid as agreed during the G7 meeting in Munich in 1992 and fixed in the Accession Treaty of Bulgaria with the European Union. Within Bulgaria, however, the issue of the Kozloduy closure has become a populist and nationalist issue and the nuclear lobby currently feeds a large spectrum of politicians in an attempt to get permission from the EU for a restart of these two outdated VVER 440/230 units. President Parvanov, Energy Minister Ovcharov, but also prime-minister hopeful and current Sofia mayor Boris Borisov started a push towards Brussels to get a re-negotiation of the closure paragraph and offered the EU peer review of their claims that Kozloduy 3 and 4 are safe. EU Energy Commissioner Andras Piebalgs, however, already made clear that because of the safety issues around the VVER 440/230 type and the resistance of several EU countries against re-negotiation, it is time for Bulgaria to look to the future instead of to the past.

His remarks were met with renewed vigour in which Bulgarian politicians used the arguments that several countries in the region of South East Europe (SEE) are currently faced with black-outs because of the Kozloduy closures. Information at the disposal of WISE/NIRS, however, shows that no extraordinary black-outs have taken place in the region since January 1 - those glitches in the grid that did take place fall in the annual pattern due to lack of maintenance and bad management of the grid in Macedonia, Albania and Bosnia-Herzegovina. In Albania, the availability of electricity is in January even better than in December, due to the upcoming elections.

Bulgarian Economy and Energy Minister announced to bring the issue into the EU Energy Ministers Council meeting on February 15, and demand higher financial compensation for the Kozloduy closures when the EU will not agree with a re-start.

Source: WISE Czech Republic

THORP's OK to re-start fires off Norwegian minister, and is then delayed after another found fault.... On January 10, the UK Nuclear Installation Inspectorate has given the green light for the THORP reprocessing plant at Sellafield to restart operations after being shut for nearly two years following a serious leak. British Nuclear Group (BNG), which operates the plant for owners the Nuclear Decommissioning Authority (NDA), were fined £500,000 (US\$978,000 or 756.000) last year for the leak of 83 cubic metres of radioactive liquid that went undetected for months. The NII said it was satisfied the BNG had carried out all the necessary work to ensure the plant operated safely. However, the THORP plant is unlikely to re-open soon because of a shortage of storage space for the highly-active liquid waste produced by reprocessing.

The two year closure of Thorp has meant at least an estimated £160 million (US\$313 million or 242 million) drop in income for the NDA and this has meant cutbacks in the authority's decommissioning budget.

The news of the impending restart of THORP brought critical comment from the Norwegian government. Environment minister Helen Bjørnøy said she had hoped the plant would remain closed permanently because of its radioactive discharges into the sea, which could hurt commercial fisheries' business. Norway is to contact the Irish and Iceland governments to consider a joint response. Luckily for UK's neighbours, a new fault was found at THORP late January, further delaying its re-start. Faults have been found in evaporators in the plant and the Nuclear Decommissioning Authority says it cannot say how long repairs will take.

Platts Nuclear News Flashes, 10 January / Financial Times 11 January / Norway Post 13 January / The Guardian 29 January 2007

Mihama-3 reactor of 2004 deadly accident is restarted, but questions remain

On January 10, Kansai Electric Power Co. (Kepco) restarted the Mihama-3 nuclear reactor 2,5 years after it was shut down by a steam pipe rupture that killed five people and injured six others in Japan's deadliest atomic plant accident.

The accident was blamed on pipes that had not been inspected since the reactor went online 28 years earlier. Some of the victims' kin remain opposed to the restart and many experts are concerned that the aging reactor may suffer more accidents. Fukui Prefectural Police are about to complete their investigation into the accident, but critics say the utility should not restart the reactor until the question of Kepco's criminal responsibility has been resolved. Just before the re-start, investigative sources said police plan to seek charges against some 10 Kepco employees, including a former local branch manager, for professional negligence over the accident.

The prefecture and town authorities approved Kepco's request to restart the reactor after reviewing the safety procedures. During a September test run, rust particles were removed that had accumulated inside pipes during the long shutdown, and other equipment was checked, including parts of the reactor that had suffered wear during its operation. Following the accident, Kepco had several briefings for families of the victims and promised support for education and employment of children who lost a parent. Most of the victims' families are opposed to the reopening, but the utility brushed aside their objections, arguing operations

should restart soon because of the plant's maintenance schedule.

Japan Times, 11 January 2007

Canada: CNSC refuse new licence SRB tritium use, at last

In an unprecedented move, the Canadian Nuclear Safety Commission says that because of concerns over the company's tritium releases, SRB Technologies (Canada) Inc. will not be granted a licence renewal allowing it to process or use tritium for making signs. The decision, given to the company on January 31, is tantamount to a long-term manufacturing shutdown order. The CNSC, which oversees nuclear facilities, says it is the first time it has taken such action against a major user of radioactive material. The CNSC said it will issue SRB a licence allowing it to undertake only limited activities, such as storing tritium at its site, for the next 18 months to give the company time to develop a business strategy that would win back the support of regulators. In making its decision, the commission said SRB's operations have been "consistently below requirements" and the regulator had little confidence the company would be able to protect the environment if it were allowed to continue manufacturing. SRB makes products such as emergency-exit signs for buildings and runway lights that are able to glow without electricity. The tritium is extracted as a waste product from Ontario's nuclear power reactors.

The action is a dramatic about-face for the CNSC, which had regularly renewed the company's licence, even as local citizens became increasingly vocal about radioactive releases from its factory. As early as 1999, nearby residents had discovered that cucumbers grown in gardens contained tritium, as did the ice of a local hockey rink and human urine. At the time, concentrations of tritium, a radioactive form of hydrogen, were up to 1,500 higher than levels in rainwater, and the results were reported to the CNSC.

Globe and Mail, 2 February 2007

2006 Illicit Trafficking Database: 149 incidents. The IAEA Office of Nuclear Security has released preliminary information on reports to its Illicit Trafficking Database (ITDB) during 2006. The database includes reported incidents of illicit trafficking as well as reports of other unauthorized activities involving nuclear and radioactive materials.

All told, 149 incidents were reported and confirmed that actually occurred in 2006. Another 103 incidents were reported that occurred in previous years.

Of the 149 incidents that actually occurred in 2006, fifteen involved the seizure of nuclear and radioactive materials from individuals who possessed them illegally. Some of these individuals were attempting to sell the material or smuggle it across national borders. Six of these incidents involved nuclear materials. Five involved materials such as natural uranium, depleted uranium, and thorium and one involved high-enriched uranium (HEU). In the latter case, the Republic of Georgia reported that, in February 2006, 79.5 grams of uranium enriched to 89% was seized from a group of criminals in Tbilisi. The other incidents of illegal possession reported to the ITDB involved radioactive sources.

The other 134 incidents reported by States to the IAEA that occurred in 2006:

* 85 reported incidents involved theft or loss of nuclear or other radioactive materials, mainly radioactive sources. In about 75% of the cases, the materials lost or stolen had not been recovered at the time of reporting.

* 49 reported incidents involved other unauthorized activities, primarily unauthorized disposal of radioactive sources and radioactively contaminated materials and discovery of uncontrolled, or orphan, radioactive materials.

The ITDB was established by the IAEA in 1995 to facilitate exchange of authoritative information related to trafficking in nuclear and other radioactive materials among Member States. To date, 95 countries and organizations are members of the ITDB. A more complete report on the ITDB is expected later this year, in advance of the IAEA General Conference of Member States which meets in September.

http://www.iaea.org/NewsCenter/News/2007/itdb_update.html

US: Watts Bar Tritium for nuclear weapons.

Using material from the Watts Bar nuclear power plant, the federal Savannah River facility in South Carolina introduced to the nation's nuclear weapons supply chain the first tritium gas produced in the United States in nearly 20 years. Tritium, a radioactive isotope of hydrogen, is an essential component of nuclear weapons. With a relatively short half-life of 12.3 years, tritium in the nation's nuclear stockpile must be replenished regularly. Since 1988, when the last heavy water reactor at Savannah River shut down, the nation's weapons stockpile has relied on recycled tritium gas from dismantled nuclear weapons.

TVA (owner of Watts Bar) has a contract with the Department of Energy to produce irradiated rods at Watts Bar. Those rods are trucked to the Savannah River Site, where tritium gas is extracted from the rods at the recently completed \$500 million Tritium Extraction Facility.

TVA is the sole source of tritium for DOE under a plan drafted in 1999. The federal utility's role in producing tritium has sparked controversy for bucking the tradition of keeping the nation's military.

During its first production cycle, TVA informed the Nuclear Regulatory Commission, that the process released more tritium than expected into Watts Bar's reactor water system, although the levels did not exceed limits allowed by the NRC.

Knox News, 1 February 2007

FMKK and WISE invite you to participate in an international conference

'coping with nuclear waste',
April 27 -29, 2007, Sweden

FMKK and WISE invite you to participate in an international conference 'coping with nuclear waste', April 27 -29, 2007, Sweden

This timely conference will bring together people from all over the globe to discuss issues and come up with new strategies to counter the relapse of the nuclear industry. Science, activists and representatives of NGO's and government will come together to learn, exchange and listen.

With a focus on radioactive waste as a result of each part of the nuclear chain speakers will be presenting cases on

uranium mining, the so-called recycling of nuclear waste, decommissioning, military use of nuclear waste, the future of spent fuel, the role of Euratom and the IAEA in finding an international waste storage, et cetera. There will be speakers from Africa, Europe and the United States. The conference ends with a special closed NGO-session which will discuss possible future strategies.

Interested to come?
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WISE/NIRS NUCLEAR MONITOR

The Nuclear Information & Resource Service was founded in 1978 and is based in Washington, US. The World Information Service on Energy was set up in the same year and houses in Amsterdam, Netherlands. NIRS and WISE Amsterdam joined forces in 2000, creating a worldwide network of information and resource centers for citizens and environmental organizations concerned about nuclear power, radioactive waste, radiation, and sustainable energy issues.

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