

# NUCLEAR MONITOR

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## MONITORED THIS ISSUE:

## PELIGRO NUCLEAR: NEW LAW REMOVES 40 YEAR NPP OPERATING LIFE LIMIT

The Spanish government has ratified a law removing a statutory 40-year limit on nuclear power plant operating life. The wide-ranging Sustainable Energy Act, known by its Spanish acronym LES (Ley de Economía Sostenible), was approved by 323 votes to 19, with one abstention, in the lower house of the Spanish government on 15 February. The amendment on nuclear energy within the LES was approved by 334 votes to 10, with no abstentions. The law had already passed through the upper house.

(723.613) WISE Amsterdam – The nuclear energy amendment states that the government will determine nuclear's share in Spanish generation and also the lifetimes of existing nuclear plants based on a variety of considerations including regulatory requirements for nuclear safety and radiological protection as advised by the Spanish nuclear regulator, plus trends in demand, the development of new technologies, security of supply, costs of electricity production and greenhouse gas emissions.

Previous legislation imposed a 40-year operating life on Spain's nuclear reactors, which would have seen all of Spain's eight operating reactors facing closure between 2011 and 2018. However, in 2009 the Spanish government granted a four-year life extension to the Garona nuclear power plant, extending its life to 42 years and signaling the start of a political shift from earlier plans by the ruling PSOE (Socialist Party) to progressively phase out nuclear.

### 'Peligro nuclear'

'Nuclear Danger' is the message Greenpeace Spain took to the country's Cofrentes nuclear energy plant on February 15, as activists scaled one of the plant's cooling towers. Greenpeace are demanding that Spain's Nuclear Security Council refuse to renew the plant's permit to operate - which expires on March 19 - because of the extremely poor levels of security at Cofrentes. The

aging Cofrentes reactor is in bad shape. It has an endless list of bugs and unresolved security issues. Among the many weaknesses it has identified, Greenpeace has expressed concerns about the fire-fighting systems, access to the control room, the increasing radioactivity received by maintenance workers, and delays in the analysis of events and incidents.

Meanwhile, take a look at the renewable energy sector in Spain. According to a study by the Institute for Energy Diversification and Saving of Energy released in November last year, the number of current direct jobs provided by the renewables industry is more than 75,000. Taking into account the official renewable growth forecast, Spain can expect to see a further 128,000 created by 2020. On the other hand, the nuclear sector in 2005 had just 4,124 employees, of which 52.8% were the permanent staff at nuclear power plants. Spain is a leading nation when it comes to the production of renewable energy. It is showing we can live in a world without nuclear energy.

**Sources:** Greenpeace.org, 16 February 2011 / World Nuclear News, 17 February 2011.

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# RUSSIAN “NUCLEAR RENAISSANCE” DELAYED AGAIN

**On February 17, the Russian government decided to delay investment into large-scale program aimed at construction of new nuclear reactors and large hydro plants. Russian deputy prime minister Igor Sechin proposed to re-direct governmental funding to other areas with federal budget deficit. Russian government expect to save around 15 billion rubles (US\$500 million; 365 million euro) by delaying new nuclear reactors and hydro plants. No detail was given so far about how it will affect projects of new nuclear plants which are already under construction.**

**(723.6114) WISE Russia** - The decision to re-direct government funding, corresponds with earlier statements by Russian Government' Accounting Office (GAO) which suggested most of the reactors will not be built on time. In March 2010, Russian GAO released results of its inspection of the Ministry of energy. GAO concluded that 60% of new reactors scheduled to come on-line before 2015 will not be built in time. Russian state nuclear corporation Rosatom did not comment on this, but in other statements it said reactors may come on-line later than planned because the economic crisis affected energy demand.

In 2008 Russian government approved "General scheme for energy generating capacities" which included detailed plan for construction of all types of power plants during the next two decades. This scheme suggested 13GWt of new reactor capacity will be installed by 2015 (equal to 13 VVER-1000 units or 11 VVER-1200 units). Then in 2010 GAO admitted only 5,2GWt will be installed by 2015. But this figure is far from reality too, according to Russian anti-nuclear campaigners.

“Russian government is supporting Rosatom in any way it can. It's completely blind when it comes to nuclear industry ignoring democratic norms in the process of site selection and licensing of reactors; also when local population is protesting and the site is geologically inappropriate for construction. But even then, it is unlikely that Rosatom will install 5,2GWt until 2015 in Russia. They can rather hope for 2-3 new reactors”, said Russian environmental group Ecodefense in its press-statement following decision of Russian government on February 17.

Vladimir Milov, former deputy minister for energy in Russian government and presently one of the opposition leaders, told the 'Nuclear Monitor' that for two years, it was clear that the number of

new reactors will be reduced because the consequences of economic crisis in Russia are big.

Currently, there are several reactors under construction in Russia: two light water units of the new VVER-1200 design at Novovoronezh-2 nuclear complex, same design at Leningrad-2 nuclear power plant, one older light water reactor VVER-1000 at Kalinin and a fastbreeder BN-800 at Beloyarsk. Construction of last two units started well over 20 years ago while newer units' construction started just 3 years ago.

At two more sites in North-West and Central Russia the construction of reactors may start in 2011 and 2012. At the site of Baltic nuclear power plant in the Kaliningrad region, near the border with Lithuania, preparatory work is going on since February 2010. It is planned that first unit of VVER-1200 design will be put in operation by 2016. According to nuclear industry sources, active reactor construction may start as soon as Spring 2011.

Another site located close to the ancient city of Murom, 300 km east of Moscow, is under controversial development. At the end of 2010, Russian state nuclear corporation Rosatom obtained license allowing preparatory work on-site. That license came only on the condition that Rosatom will spend one year to conduct research which will bring better understanding of the site' geological condition. Russian regulatory attempted to both satisfy Rosatom with permit for nuclear plant construction and opponents of the project who criticized poorly prepared documentation and site selection process.

In 2010, reports were published several times about large-scale corruption at the construction site of Novovoronezh-2, which leads to lower safety and may possible slow down the project. Reports were published mostly

by 'ProAtom', the pro-nuclear internet forum close to a group of influential former nuclear professionals.

Another report on the risk of corruption in Rosatom-operations came from “Transparency International – R” and Ecodefense in November 2010. The two groups analyzed open trade operations by various branches of Rosatom and concluded that the risk of corruption is very high because of poor governmental regulation and the control over the state company is very weak. Rosatom publicly denied the conclusion in a statement for the media. But then it invited “Transparency International – R” to a private closed-door meeting in which (according to sources in TI-R) it confirmed that some corruption exist on lower level and proposed various joint activities.

Lack of governmental funds, corruption, growing criticism over Rosatom's activities among the Russian public – it is clear that all these reasons will play a role in slowing down reactor construction in Russia. It may be hard to predict today the exact number of new reactors which will appear across Russia during the next decade, but it is clear that a new, much more difficult epoch has arrived for Rosatom.

**Source and contact:** WISE Russia

# SELLAFIELD: STILL THE DIRTY OLD MAN OF EUROPE – DISCHARGES SET TO BREACH MARINE POLLUTION TARGETS

**A report published February 17 by CORE (Cumbrians Opposed to a Radioactive Environment) exposes Sellafield's plans for substantial increases in radioactive discharges to the Irish Sea over the coming decade.**

**(723.6115) CORE** - The rate of discharge from planned reprocessing operations, and subsequent concentrations of radioactivity in the marine environment, will breach international commitments and targets agreed by the UK Government in 1998 at an OSPAR (Oslo-Paris) Convention meeting in Portugal. As a contracting party, the Government committed to the *'progressive and substantial reduction in radioactive discharges so that by the year 2020, concentrations of (man-made) radioactivity in the marine environment, above historic levels, were 'close to zero'*.

CORE's report reveals that, despite an awareness of the threat posed to those commitments by its current plans for Sellafield – including the threat of legal action by international governments - site owner the Nuclear Decommissioning Authority (NDA) has been prepared to adopt contingency plans if necessary, including an agreement *'not to meet the OSPAR deadline'*.

Spokesman for CORE, Martin Forwood said: *"The NDA's cavalier hit or miss approach to meeting UK commitments is breathtakingly complacent. Unless action is taken now, simple arithmetic dictates that if its work program is to be completed by the reprocessing plants' scheduled closure dates, the rate of reprocessing must be significantly raised above anything achieved recently - with a correspondingly progressive and substantial increase in radioactive discharges that contravenes the commitment made in 1998 to reduce discharges"*.

Radioactive discharges to the Irish Sea, including plutonium, are dominated by those from Sellafield's two reprocessing plants B205 and the Thermal Oxide Reprocessing Plant (THORP), particularly the former. The accepted correlation between annual reprocessing rates and subsequent radioactive discharge levels is amply demonstrated by the recent reduction in discharges from the site following several years of unusually low

reprocessing rates.

This recent reduction however will be completely reversed by NDA plans that include the reprocessing of some 4700 tons of spent fuel from the UK's magnox reactors in B205 in the next 6 years - requiring a rate more than double that achieved over the last 5 years – and the reprocessing of at least 3700 tons of spent fuel, mostly from the UK's Advanced Gas Cooled reactors (AGR) but also including 600 tons of overseas fuel in THORP whose operational life has now been extended by 10 years to 2020.

CORE's assessment also highlights the extra pressure piled on the ageing B205 reprocessing plant, already under the tightest of schedules, by the extensions recently approved for the Wylfa and Oldbury power stations – a complete U-turn on earlier decisions, and one that means more magnox fuel than necessary must now be reprocessed.

The assessment further shows that, coupled with NDA indecision on whether or not to reprocess part or all of thousands of tons of AGR fuel not specifically contracted for reprocessing, a range of technical issues currently restricting Sellafield operations - particularly the lack of capacity to treat the highly radioactive liquid wastes produced by reprocessing – could see reprocessing extended beyond its scheduled end-date of 2020.

CORE's spokesman added: *"The rise in radioactive discharges from what increasingly resembles a crash program of reprocessing will not only breach UK commitments to OSPAR but also pose a potent threat to international waters. Meeting its commitments and reducing that threat could be resolved by the urgent adoption of alternatives to reprocessing – though Government and NDA addiction to reprocessing has so far prevented positive action on alternatives being pursued - and only then as a contingency in the event of a chronic failure of the reprocessing plant rather than as a constructive means of reducing discharges"*.

The Government view, that the UK is 'on course' to meet its commitments is made in its 2009 UK Radioactive Discharge Strategy report, mirrors OSPAR's view that progress is being made towards meeting its targets of discharge reductions. Based almost entirely on the reductions that have followed Sellafield's recent poor reprocessing performance, both views ignore, or are oblivious to, the implications of the NDA's escalated reprocessing plans. Further, weaknesses in OSPAR procedures for monitoring and sampling the marine environment could, if unresolved, provide convenient loopholes through which claims of success in meeting targets might be made when OSPAR's final analysis is undertaken in 2020.

Martin Forwood further commented that: *"The political will and courage needed to honour UK's international commitments is conspicuous by its absence. Officialdom is sleepwalking towards a situation which, unless avoiding action is taken now, will see commitments broken and the UK once again earning the Dirty Old Man of Europe tag"*.

## Note

At the 1998 meeting of OSPAR at Sintra in Portugal, the then UK Minister John Prescott signed up to what were described as groundbreaking commitments for action on radioactive discharges, stating *"I was ashamed of Britain's record in the past but now we have shed the tag of Dirty old Man of Europe and have joined the family of nations"*.

The CORE report 'Sellafield – Breaching International Treaty Targets on Radioactive Marine Pollution' is available via CORE

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# CHERNOBYL BIRDS HAVE SMALLER BRAINS

**Birds living around the site of the Chernobyl nuclear accident have 5% smaller brains, an effect directly linked to lingering background radiation. The finding comes from a study of 550 birds belonging to 48 different species living in the region, published in the journal PLoS One.**

**(723.6116) Møller et al.** - Impaired brain development is linked to oxidative stress because of the high lipid content of brains. Large-brained individuals must be capable of continuously supplying the brain with high levels of oxygen for neuronal ion pumping, synthesis of neurotransmitters and protection from toxic compounds. This makes brain maintenance a highly oxidizing process that requires large amounts of antioxidants, in particular glutathione. Therefore, any environment with low antioxidant levels and/or high rates of use of antioxidants will provide a challenge to normal brain development. One such extreme environment is Chernobyl because high levels of background radiation increase oxidative stress cause high rates of use of antioxidants, and hence reduce levels of circulating and stored antioxidants.

Evidence for developmental errors in the nervous systems of people exposed to radiation is widespread, including reduced head size and brain damage. Low levels of ionizing radiation cause changes in both central and autonomous nervous systems and can cause radiogenic encephalopathy. Electroencephalographic studies revealed changes in brain structure and cognitive disorders. Indeed Yablokov et al. summarized an extensive literature on the effects of radiation on cognitive performance as a consequence of the Chernobyl disaster. However, psychological effects of radiation from Chernobyl have recently been attributed to post-traumatic stress rather than developmental errors, and

increased levels of neural tube defects in contaminated areas may be ascribed to low-dose radiation, folate deficiencies or prenatal alcohol teratogenesis. Surprisingly, studies of high school performance and cognitive abilities among children from contaminated areas in Scandinavia that were in utero during the Chernobyl disaster show reductions in high school attendance, have lower exam results and reduced IQ scores compared to control groups. These cognitive effects are assumed to be due to developmental errors in neural tissue caused by radiation during early pregnancy. These differences in Scandinavia cannot readily be attributed to changes in social conditions during recent decades. Such social changes have characterized the now independent countries formerly belonging to the Soviet Union, where negative effects of post-traumatic stress have been suggested to account for psychological problems among children living in contaminated areas near Chernobyl.

Here, we tested whether brain size was reduced in birds living in areas differing in background radiation level due to fallout from Chernobyl. A second objective was to test whether brain size increased with age, as expected if there is viability selection against reduced brain size. The key advantage of this study stems from the fact that any observed differences in brain mass in birds associated with radiation cannot be attributed to post-traumatic stress as suggested for humans.

## Study sites

We captured 546 birds using 35 12 m mist nets in woodland that exhibit severe reductions in species richness and density of invertebrates and vertebrates in eight different sites around Chernobyl, Ukraine during 25 May – 5 June 2010. 35 mist nets was the maximum that we were able to monitor in the areas with highest density. Each site was used for capture on two consecutive days thus ensuring a similar capture effort in all sample sites. Because the density of birds has been found to decrease with increasing background radiation level, we expected to catch fewer individuals at sites with high level background radiation. In addition, we captured barn swallows at farms where we have followed the population since 1991. Capture of birds was conducted under permission from the authorities of the Chernobyl Exclusion Zone.

**Source:** Møller AP, Bonisoli-Alquati A, Rudolfson G, Mousseau TA (2011) Chernobyl Birds Have Smaller Brains. PLoS ONE 6(2). Available at: <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0016862>

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## OEPS! Mistake !

In Nuclear Monitor 722 (Austria: Referendum on Euratom membership) we stated that in Austria a referendum will take place late February, early March. In fact we were wrong in the exact phrasing:

It is not a referendum that will be laid before

the Austrian people for signing/voting or not from Feb 28 through Mar 7. For a referendum is a binding vote Parliament and the government have to abide by. Since the Austrian constitution does not allow others than the Parliament to launch a referendum, what is now coming up is a Volksbegehren (sometimes translated as popular or people's petition), which has to make 100.000 yes

votes or more to be then put on the Parliament's agenda. In the present Volksbegehren, a referendum is demanded.

Furthermore, the Lisbon Treaty is in force since December 2009 (and not 2010 as mentioned).

Our apologizes for any inconvenience.

# CENTRAL EUROPEAN NUCLEAR RENAISSANCE STALLING

Much of the nuclear renaissance talk of the last years was targeted at the EU new member states in Central Europe. The combination of centralized energy structures based on the pre-1989 planned economy, short links between politics and nuclear lobby and the need for re-powering because of the end of life-time of much of the current electricity generation capacity looked like the perfect backdrop for reviving old nuclear dreams.

**(723.6117) Greenpeace EU Unit** - Most of Central Europe, with the notable exception of Hungary and the Baltic States, survived the recent financial crisis quite well. Nevertheless, nuclear projects and plans are confronted increasingly with delays. Projects and plans in Poland, Slovakia, Lithuania, the Czech Republic, Romania and Bulgaria faced important complications and delays in the first months of 2011.

## Visaginas, Lithuania – the ghost of Russia

Rosatom from Russia announced the start of construction in 2011 of the Kaliningrad and Belarus nuclear power stations. Even though these projects will probably be hit with a recently announced cut-back in Russian nuclear expansion, this has pushed plans for the Visaginas nuclear power station in Lithuania further backwards. The Lithuanian government fiercely protested the quality of Environmental Impact Assessments (EIAs) of both neighboring projects but this has not helped wooing strategic investors for Visaginas after Korean KEPKO withdrew from the project on December 6, 2010.

## Cernavoda, Romania – strategic investors withdraw, fate of EIA uncertain

On 24 January, CEZ, GdF-Suez / Electrabel, RWE and Iberdrola officially withdrew from the project during the shareholder meeting of ElectroNuclear, the holding company of the project. This leaves only Romanian state utility Nuclearelectrica, ENEL from Italy and the Romanian branch of steel-giant Arcelor Mittal involved.

Three consortia were accepted in the tender for construction of this project: one led by US / Canadian engineering giant Bechtel, the second led by SNC Lavalin, the Canadian engineering company practically taking over much of what Canadian state owned AECL was involved in, and a Russian consortium led by Atomtehnoprom. Given the problems Bechtel is currently facing with a high-way project in Romania and the lack of experience of the Russian consortium with both the CANDU

design as with EU regulatory practices, this looks like a pre-determined tender for SNC Lavalin.

In the mean time, Romanian NGO Terra Mileniul III discovered that EnergoNuclear contracted several consultants for the development of parts for “an adequate Environmental Impact Assessment”. This sheds doubt over the fate of the EIA that started in 2006 and that still has not been approved.

## Energy for the Future?

A new publication from the Heinrich Boell Stiftung, WISE Brno and Hnutí DUHA / FoE CZ describes the nuclear lobby and its influence on energy policies in Central Europe (Czech Republic, Slovakia, Poland, Hungary and Bulgaria).

It is available for download at: <http://www.boell.cz/navigation/65-962.html>

## Belene, Bulgaria – power games with Russia

On 6 February, a memo from the head of Atomstroyexport Sergej Kiriyenko leaked to the French daily La Tribune in which he advised Rosatom to withdraw from the Belene project. He argued that the 200 million Euro compensation payment would be larger than the 150 million Euro Rosatom was expected to profit. A day later, however, Atomstroyexport declared during a conference in Bulgaria that it expects to start pouring concrete in September of this year and denied the relevance of the leaked document. Bulgarian Prime Minister Borissov announced that when Russia will not back down on the inflation correction it agreed with his predecessor, Bulgaria will not continue with Belene. Borissov asked journalists “Are we going to lose 200 M or 2.5 B – this is the question. What funds do we have left then for construction, for providing better life to Bulgarian citizens – money for pensions, education, increase of wages, infrastructure?” Also resistance in Serbia is growing over participation in the Belene project.

## Mochovce, Slovakia – construction continuing with invalid licenses

After a groundbreaking ruling of the Aarhus

Convention Compliance Committee declared three permits for changes in the Mochovce 3,4 design in breach with the Aarhus Convention because the Slovak regulator UJD had not waited for the conclusion of the ongoing EIA (see Nuclear Monitor 722), Slovenske elektrarne and ENEL continue construction. The European Commission is investigating how the ACCC ruling should be implemented and Slovakia

has taken the unprecedented step to send a complaint about the ruling to the UNECE – the secretariat of the Aarhus Convention. This means that it might seek to have the judgment overturned during June's Meeting of Parties to the Convention in Chisinau, Moldova. The involved NGOs, Greenpeace Slovakia, Za Matku Zem, Global2000 and Ökobüro Wien are currently contemplating legal steps to force a halt of construction of

Mochovce 3,4 and a new public participation procedure.

## Temelín, Czech Republic – Five years delay in planning

The Czech electricity giant CEZ announced a five year delay for the Temelín 3,4 project. Ladislav Kriz, spokesman for CEZ that operates Temelín, said it was rather an administrative measure and that CEZ expected the project to be completed earlier.

## Nuclear Energy Program, Poland – SEA confronts nuclear government with reality

On 27 December, the Polish Ministry of Economy announced a three week public consultation on Strategic Environmental Assessment of the Polish Nuclear Energy Program, to start on the 30th of December. A fast intervention from Greenpeace, followed by other NGOs, made clear to the Polish Government, that three weeks was too little under the Aarhus Convention and the EU SEA Directive for proper public participation on the basis of the 1205 pages of documentation issued by the Ministry. It also pointed out a trans-boundary assessment had to be made. The Ministry not only had to extend the term for public input to three months

(ending 31 March 2011), but also announced a transboundary procedure, though no time-line has been published for this so far.

The delivered environmental assessment fails among others to properly address alternatives, the issue of radioac-

tive waste and is inadequate concerning the possible effects of large accidents and security, so that further delays can be expected.

The potential operation date for the first Polish nuclear power plant already has been postponed from 2020 to 2022.

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## BATTLE OF THE GRIDS

**In 'Battle of the Grids' a report released on January 18 by Greenpeace, researchers claim that solar energy in Europe's south and wind energy from the north could supply 68 percent of the 27-nation EU's electricity needs in 2030 and 99.5 percent by the middle of the century. However, that would require governments to change policy tack and favor investments in green energy to the tune of 70 billion euros (94 billion US\$) by 2030 and another 28 billion euros over the following decade. "It's a question of choice."**

**(723.6118) Greenpeace International** - Europe's electricity grid is characterised by big, polluting power stations pumping out constant energy, regardless of consumer need. Climate policy and consumer demand are hurtling us towards a smarter, more efficient Europe-wide grid opening up vast new technological, business and consumer opportunities. Taken with Greenpeace's 2010 Energy [R]evolution report, Battle of the Grids builds on Greenpeace's earlier Renewables 24/7 study. It is a manual for the kind of system we need to deliver 68 percent renewable energy by 2030 and nearly 100 percent by 2050

### **Battle of the Grids: what's the big barrier?**

Power from some renewable plants, such as wind and solar, varies during the day and week. Some see this as an insurmountable problem, because up until now we have relied on coal or nuclear to provide a fixed amount of power at all times. The title of this report refers to the struggle to determine which type of infrastructure or management we choose and which energy mix to favour as we move away from a polluting, carbon intensive energy system.

Some important facts include:

- electricity demand fluctuates in a predictable way.
- smart management can work with big electricity users, so their peak demand moves to a different part of the day, evening out the load on the overall system.
- electricity from renewable sources can be stored and 'dispatched' to where it is needed in a number of ways, using advanced grid technologies.

Wind-rich countries in Europe are already experiencing conflict between

renewable and conventional power. In Spain, where a lot of wind and solar is now connected to the grid, gas power is stepping in to bridge the gap between demand and supply. This is because gas plants can be switched off or run at reduced power, for example when there is low electricity demand or high wind production. As we move to a mostly renewable electricity sector, gas plants will be needed as backup for times of high demand and low renewable production.

Effectively, a kWh from a wind turbine effectively displaces a kWh from a gas plant, avoiding carbon dioxide emissions. Renewable electricity sources such as thermal solar plants (CSP), geothermal, hydro, biomass and biogas can gradually phase out the need for natural gas. The gas plants and pipelines would then progressively be converted for transporting biogas.

### **Baseload blocks progress**

Generally, coal and nuclear plants run as so-called baseload, meaning they work most of the time at maximum capacity regardless of how much electricity consumers need. When demand is low the power is wasted. When demand is high additional gas is needed as a backup. Coal and nuclear cannot be turned down on windy days. Instead, wind turbines will get switched off to prevent overloading the system. The fall in electricity demand that accompanied the recent global economic crisis revealed system conflict between inflexible baseload power, especially nuclear, and variable renewable sources, especially wind power, with wind operators told to shut off their generators. In Northern Spain and Germany, this uncomfortable mix is already exposing the limits of the grid capacity. If Europe continues to

support nuclear and coal power alongside a growth in renewables, clashes will occur more and more, creating a bloated, inefficient grid.

Despite the disadvantages stacked against renewables, they have begun to challenge the profitability of older plants. After construction costs, a wind turbine is generating electricity almost for free and without burning any fuel. Meanwhile, coal and nuclear plants use expensive and highly polluting fuels. Even where nuclear plants are kept running and wind turbines are switched off, conventional energy providers are concerned. Like any commodity, oversupply reduces price across the market. In energy markets, this affects nuclear and coal too. We can expect more intense conflicts over access to the grids over the coming years. One example is the tension in Germany over whether to extend the lifetime of nuclear reactors by 8-14 years. The German renewable energy federation (BEE) has warned its government that this would seriously damage the further expansion of renewable energy. It predicts that renewable energy could provide half of Germany's supply by 2020, but this would only make economic sense if half the nuclear and coal plants were phased out by that date.

This explains why conventional utilities are growing increasingly critical of a continued and stable growth of renewables beyond 2020.

### **Planned phase out of nuclear and coal**

If we want to reap the benefits of a continued and speedy growth of renewable energy technologies, they need priority access to the grid and we urgently have to phase out inflexible nuclear.

The Energy [R]evolution is a detailed market analysis which shows that we can reach 68 percent renewable electricity by 2030 and almost 100 percent by 2050. It also lays out a future scenario where electricity demand keeps growing, even with large-scale efficiency, because of electric vehicles displacing cars. This 2030 renewables target requires:

- an almost entire (90 percent) phaseout of coal and nuclear power by 2030.
- continued use of gas plants, which emit about half the CO<sub>2</sub> per kWh compared to a coal plant.

The result: CO<sub>2</sub> emissions in the electricity sector can fall by 65 percent in 2030 compared to 2007 levels. Between 2030 and 2050 gas can be phased out and we reach an almost 100 percent renewable and CO<sub>2</sub>-free electricity supply.

### **Six steps to build the grid for renewable Europe 24/7**

#### **1- More lines to deliver renewable electricity where it is needed:**

The first step in our methodology to develop a 100 percent renewable electricity system is to add more electricity lines to the base-line of the existing high-voltage grid of 2010. Lines will be needed especially from areas with overproduction, e.g. south of Europe in the summer, to areas with a high demand like Germany. This allows a more efficient use of the installed solar power. In winter months, the opposite could happen, when a large oversupply of wind power is transported from the north of Europe south to population centres. It is common for both wind speeds and solar radiation to vary across Europe concurrently, so interconnecting the variable renewables in effect 'smooths out' the variations at any one location. Adding more grid infrastructure increases security of supply and makes better use of renewable energy sources. It also means backup capacity in Europe can be used more economically because biomass, hydro or gas plants in one region can be transferred to another region. In this first step, lines are added to a point that is called the Base Model, electricity supply is secured in the whole of Europe 24 hours a day, seven days a week.

#### **Long distance transport to stop energy loss**

The Base Model focuses only on securing the supply of electricity around

the clock. Our model revealed the unexpected problem that very large amounts of variable renewable sources cannot always be delivered because of bottlenecks in the grid. This problem occurs when periods of high wind or sun combine with low demand locally. Because this oversupply cannot be used in the same region, wind turbines or solar plants have to be shut down. In the Base Model, renewable losses total 346TWh per year, or 12 percent of what these energy sources could have produced without any constraints in the grid. This represents economic losses of 34.6bn€/year.

However, renewable losses can be reduced by transporting electricity over longer distances in Europe from areas of oversupply to those with a net demand for electricity. The illustration below shows a large oversupply of renewable sources at an Italian node, while there is an undersupply in the UK over the same period. Electricity transmission from the Italian node to the UK will smooth the differences and make better economic use of the installed renewable sources.

#### **2- Priority for renewable energy on the European grid to reduce losses**

The Base Model assumes a clear priority access for renewable energy at each of the nodes. This reflects the situation in many European countries which give some level of priority at the national level. However, there are no clear priority rules at the European level, including on the interconnections between countries. For example, wind turbines in Germany currently do not have a priority over nuclear power plants in France in providing energy to the European grid. This study also examines the effect of changing the rules to give priority to renewable sources throughout Europe, including on all interconnections, which does not require any additional investment. Under this scenario, the use of renewable sources would increase dramatically and constraining losses would be massively reduced. Just by improving regulation this way, without putting security of supply at risk, renewable losses can be reduced from 12 to 4 percent, which would mean an annual saving of 248TWh of electricity or 24.8bn€/year.

Under such a new dispatch method, energy production from solar PV and wind would increase by 10 percent and 32 percent in 2030 over the base scenario without priority dispatch. And with increased generation from clean sources,

generation from fossil-fuel sources will drop even more. This is particularly noticeable for power generated by gas, which would be 5 percent lower than in the Base Scenario. For a 100 percent renewable 2050, priority rules are needed between renewable sources. Variable renewables such as wind and solar PV will get priority over dispatchable renewables such as stored hydro or biomass, which will serve as back-up.

#### **3- Additional lines to allow renewable energy through the bottlenecks**

Even with a clear priority dispatch of renewable sources at the European level, there is still a significant level of renewable losses, especially for offshore wind which loses 17 percent of what could be produced without any bottlenecks in the grid. For all renewable sources this loss represents 98TWh, 4 percent of total, and an economic loss of almost 10bn€ per year. To channel these oversupplies out of their regions would require further grid extension, in particular strengthening lines between the north and the south of Europe. There is also a need for more lines between large cities, such as London, and the offshore wind grid. To deal with this effect, Energynautics studied what level grids should be upgraded to in order to limit the losses of renewable electricity production due to bottlenecks. By 2030, an upgrade of 28bn€, assuming the most expensive option) would reduce the losses from 4 to 1 percent, or a net saving of 66TWh per year or 6.5bn€ per year. This level of additional investment in the grid would be recovered in just a few years. Offshore wind losses would be most significantly reduced, from 17 percent to only 4 percent. A similar approach is followed for 2050. Total investment required would be around 98bn€ up to 2030 and an additional 74bn€ or 581bn€ up to 2050 under the low and High Grid scenarios. This allows for the more expensive approach of underground lines and new technologies such as high-voltage direct current. Infrastructure like this has a 40 year lifetime, so for 2030 this investment equates to less than 1 percent of the total electricity cost.

#### **4- Demand management and smart grids to reduce transmission losses (2030 only)**

Demand management and storage (step 5) have a very similar impact on the electricity system. Demand-management shifts some demand from periods with a low supply of variable renewables to periods with a higher supply,

while storage can store electricity from oversupply of variable renewables to be used during periods with an undersupply. Also referred to as demand-side management (DSM), this approach makes use of the range of technology in a smart grid. Demand management is already common practice in many areas of industry, but could be further extended to households through grids management technologies. For example, it is possible to communicate with refrigerators so they don't run compressors during the typical peak demand of 6pm. Across whole districts this can make a difference to the demand or load curve. Demand-side management also helps to limit the losses in transporting electricity over long distances (which escapes as heat). Demand management simulations in this study are only done for 2030. For 2050, storage simulations are used to study different levels of demand management. Given the similarities between simulations for demand-management and storage, this simplification is legitimate.

#### **5- Adding storage in the system (2030 and 2050)**

Another essential way to even supply and demand is to add storage capacity, for example through pumped hydro plants, batteries from electric vehicles or molten salt storage for concentrating solar power. While storage is relatively expensive, this study optimised the cost balance between investing in storage and extending the grids. There needs to be a balance between extending the grid and adding more storage. This study used cost optimisation to determine that point. As mentioned under step four, storage simulations are also used to study the impact of demand-management in 2050. Storage is factored at the European level, thus oversupply at one node can be stored at another, and this stored electricity can then be used as backup at any node in the European grid, as long as transport capacity is available. Storage and demand-management combined have a rather limited impact on the 2030 high-voltage grid. We can assume some impact at the distribution level (the more local grid), but this is not studied in this report. This relatively low impact by 2030 is a consequence of the 98bn€ investment in grids, as modelled in this report, which allows the smooth integration of up to 68 percent renewables, as long as 90 percent of 'baseload' coal and nuclear are phased out. However for 2050, integration of close to 100 percent renewable power is far more

challenging for the electricity system than 68 percent in 2030, and storage and demand-management play a substantial role in balancing supply and demand. Especially in the low Grid scenario, which emphasises a high regional production close to demand centres, storage and demand-management can decrease the curtailment of renewable electricity from 13 percent to 6 percent. We assume that by 2050, it will be possible to use a significant part of this curtailed electricity either for storage or other electricity use.

#### **6- Security of supply: electricity 24/7 even if the wind doesn't blow**

Adding lines, storage and demand management all increase security of supply because even under an extreme weather event of low wind combined with low solar during winter, excess wind power from another region can be imported. To test the modelled system, the most extreme weather events over the last 30 years were identified and applied to the calculation. This is typically a winter period with low wind, when solar radiation is also low and demand is typically high. The model can then tell if the optimal system can withstand the test or if more electricity lines would have to be added. For the 2030 and 2050 models, the simulations prove that the optimised model is robust enough to withstand even the most extreme climatic events.

#### **Spanish case study**

The Spanish renewable electricity sector has grown impressively in recent years. Wind power capacity more than doubled in four years from 8.7GW in 2005 to 18.7GW by the end of 2009. Wind produced 16% in 2010, and all renewables together produced more electricity (35%) than nuclear power (21%) and coal (8%) together. It is projected that if renewable sources continue this growth rate, they would supply 50 percent by 2020.

However, while the market still showed a very dynamic growth over 2005 and 2006 with around 3GW of wind power installed each year, growth since has slowed down. For 2010, it is expected to remain at around 1GW. A combination of government caps on new installations and high uncertainty of regulation is to blame.

The actions of the Spanish government to slow the growth of renewables came after criticism from the large utilities.

These companies have experienced a drop in profits of their coal and gas plants through a combination of a decreasing electricity demand due to the economic crisis, growth of new renewable supply and an inflexible nuclear baseload production. While gas plants capacity increased by 6 percent in 2009, their annual output was reduced by 14 percent, thereby lowering their average load factor to 38 percent.

The inflexibility of nuclear power output is clearly illustrated by the Nov. 9th 2010 event with a record-high wind production reaching almost 15GW of power and covering almost half of all Spanish electricity demand. As can be seen in the graph representing the electricity production of that day, the strong increase of renewable energy production was confronted with an inflexible (unchanged) nuclear baseload production which forced gas plants to constrain almost all of their energy output. Repeating similar events over the last two years, wind turbines had to be stopped, not because of grid limitations to transport wind power to demand centres, but because of oversupply caused by the 'must run' status of Spain's nuclear plants. It is estimated that for 2010, some 200GWh of wind electricity will be curtailed by giving priority to nuclear power.

This problem caused by the inflexibility of nuclear plants will inevitably increase over the next years with the further growth of wind and solar power. As demonstrated in our simulations for 2030 in the report, a swift phase out of baseload power is needed to avoid economic losses in the electricity system. If this does not happen, it is the free, clean renewable electricity which has to be constrained.

The report *Battle of the grids*, is written by Jan Van De Putte and Rebecca Short. It is available at:

<http://www.greenpeace.org/international/en/publications/reports/Battle-of-the-grids/>

# INDIA: STATE REPRESSION IN JAITAPUR

**A year ago, the Jaitapur-Madban area in Ratnagiri district of western Maharashtra turned into a hotbed of anger and protests when it became known that the area had been selected for the establishment of a massive nuclear power complex. The French company Areva is scheduled to develop six such reactors, each of 1,650 MW, which are to be operated by the Nuclear Power Corporation of India Limited (NPCIL). If the 'nuclear park' comes up in the area it will be the largest integrated nuclear power complex in the world.**

**(723.6119)** - From 2005 onwards the government of Maharashtra has been acquiring land for a nuclear power plant, the site having been identified for a plant as far back as the late 1990s. Yet, the people of the area still do not know how much land will be needed and how many thousand families will be displaced. So far nearly 2,335 farmers have lost their lands to the project, with 938.026 ha acquired mainly from Madban, Karel, Mithgavane and Nivelil villages. Other than a small number, the landowners have refused to accept the compensation that has been offered to them.

The issue came to a boil in December when, on the eve of French President Sarkozy's visit to India, the NPCIL proposal was given a conditional environmental clearance. With landowners and villagers of the area taking to public protests, worried as they are about what the future is to bring, the government's response has been to resort to intimidation and repression and to belatedly organize a public meeting in, of all places, Mumbai (nearly 400 km away), to address the apprehensions of the people.

In the entire process the state government's role has been marked by a lack of transparency and increasingly by intolerance. The government has lathi (baton)-charged protestors, promulgated Section 144 of the Criminal Procedure Code (CrPC, relating to unlawful assembly) and Section 37(3) (1) of the Bombay Police Act (prohibiting different kinds of assembly), slapped cases on the agitators, including for an attempt to murder, and intimidated the local people against expressing their anger.

To the villagers already incensed at the government's failure to address their anxieties about the project's impact on their livelihoods and the environment, the police repression is further proof that the government is dumping a harmful project on them. The pre-emptive action by the police has prevented them from even registering their protest on issues crucial to them. A number of leaders of the Konkan Bachao Samiti, the Konkan Vinashkari Prakash Virodhi Samiti and the Janahit Seva Samiti have been arrested or simply prevented from entering the district. The 70-year-old former judge of the Mumbai High Court, B G Kolse-Patil, was jailed for defying prohibitory orders while former Supreme Court judge P B Sawant and retired chief of Naval Staff Admiral L Ramdas were prohibited from entering the district.

All the signs, as in a number of large 'development' projects elsewhere in the country, are of a rising tide of discontent in the area to which the government has no answer other than the use of force. Going by

## **Jaitapur nuclear park**

The proposed nuclear 'park' at Jaitapur, with six reactors, each of 1,650 MW, made by the French company Areva, will displace thousands of people, affect thriving agriculture, fruit cultivation and fishing activities, and permanently harm the region's vulnerable ecosystem. Ratnagiri is home to the world's best-known mango, the delicate and rare Alphonso, and to cashew, jackfruit, coconut, arecanut and kokum. It lies in the Sahyadri mountains, one of India's biodiversity hot spots, with stunning lush natural beauty and stupendous plant and animal genetic resources. The Sahyadris are one of India's great water towers, the source of the Krishna and the Godavari and of streams vital to life in the surrounding valleys. The plateaus around Jaitapur are extremely biodiversity-rich. According to the Botanical Survey of India, they are, for their size, India's richest repository of endemic plant species. It would be criminal to destroy these in the name of 'development'.

The local people also know of the sad experience with rehabilitation faced by the repeatedly uprooted population of Tarapur, the site of India's first nuclear reactors, for which land was acquired in the early/mid-1960s. Tarapur is not far from Jaitapur, and there has been exchange of information between the people. Tarapur once had flourishing fisheries. Now, these are crisis-ridden because of a drop in the catch around the plant's hot-water outflow channel into the sea. Three fishing harbors have vanished altogether as have hundreds of livelihoods. Once prosperous farmers and fisherfolk around Tarapur have become casual menial laborers often tasked with hazardous jobs, such as removing leaked radioactive water from reactor buildings. The plant authorities claim to monitor the local people's health but refuse to give them their medical records.

The Jaitapur Environmental Impact Assessment (EIA) prepared by the National Environment Engineering Research Institute (NEERI) is deeply flawed. It ignores the local ecosystem's unique specificities and carrying capacity, the vital issue of biodiversity, and the cumulative environmental impact. NEERI self-confessedly lacks the competence to assess radiological hazards and their impact. It does not even mention the crucial issue of storage and disposal of radioactive waste, which remains hazardous for centuries. Nor does it address the project's nuclear-specific safety issues. (This Column has repeatedly highlighted them, including nuclear reactors' unique potential for catastrophic core meltdowns.) The EIA also certifies that the temperature of the plant's discharge, which is 5° Celsius higher than the sea temperature, is safe. The claim has been convincingly demolished by the well-respected Bombay Natural History Society (BNHS), which argues that even a 0.5°C rise would seriously harm marine life, including fish, mangroves and micro-organisms.

**Praful Bidwai, Frontline Magazine, 29 January 2011**

the number of charges slapped against the protestors and their leaders, the police intend to keep them 'busy' and ensure that there is hardly any time to plan, mobilize and participate in the movement. The villagers, aware that the government intends to wear down opposition by 'harassment', are prepared for a long battle. The police have gone to the absurd extent of informing the media that all agitations in the state are being monitored for 'possible links with Naxalites' and that the Jaitapur agitation is also being closely watched. (Naxalite is a generic term used to refer to militant Communist groups operating in different parts of India).

The state government is using another time-tested intimidatory tactic. Police presence in the area along with a large number of the force's vehicles is overwhelming. All this however has led to developments that perhaps the government did not envisage. Professionals who would not ordinarily have joined in the agitations have taken the initiative to do so. In Sindhudurg, appalled by the legal repression, 46 lawyers have signed a collective vakalatnama in favor of the protestors. Similarly, doctors, whose lands have been acquired, are supporting the agitation.

Envisaged as the centerpiece of Indo-French commercial cooperation in the 21st century, the Jaitapur nuclear park is instead fast becoming a symbol of people's anger against an infrastructure project.

**Source:** The Economic and Political Weekly, January 22, 2011

**Contact:** South Asians Against Nukes (SAAN)  
<http://s-asians-against-nukes.org/>

## IN BRIEF

**Criticism South Korean UAE contract.** A news program has belatedly exposed the fact that the South Korean government agreed to provide a loan covering approximately half the construction costs for the exportation of a nuclear power plant to the United Arab Emirates. While the government explained that this was part of ordinary power plant export financing, controversy has been flaring up as this revelation couples with previous controversies over inflation of the order amount and the deployment of troops to the UAE as a condition for receiving the order. A Jan. 30 episode of the MBC program 'News Magazine 2580' revealed that in the process of signing a contract with the UAE for the power plant export in December 2009, the South Korean government agreed to provide a loan for approximately US\$10 billion (7.25 billion euro) of the total order amount of US\$18.6 billion through Korea Eximbank. In addition, the program reported that the repayment period was set at 28 years, and that the transaction generates a loss due to the fact that South Korea, which has a lower credit rating than the UAE, has to borrow the money at high interest rates and lend it at low interest rates. The program also reported that the construction has encountered setbacks, including a delay in the groundbreaking ceremony from its originally scheduled date in late 2010, as the Korean government has encountered difficulties coming up with the promised US\$10 billion loan.

**Hankyoreh, South Korea, 1 February 2011**

**URÂNIO EM MOV(E)MENTO**, the 1st International Uranium Film Festival is Latin America's first film festival to highlight nuclear and radioactive issues. It is an annual event with 2 international competitions.

The Uranium Film Festival wants to inform especially the Brazilian and Latin American societies and stimulate the production of independent documentaries and movies about the whole nuclear fuel cycle, about the dangers of radioactivity and especially about the environmental and health risks of uranium exploration, mining and processing. The Uranium Film Festival will be held from May 21th to 28th 2011 in the city of Rio de Janeiro and from June 2nd to 9th in the city of São Paulo

The first 18 films have been selected: look for the list at:

[http://www.uraniumfilmfestival.org/html/selected\\_films.html](http://www.uraniumfilmfestival.org/html/selected_films.html)

**Germany: Complaints against runtime extensions to Constitutional Court.** In cooperation with citizens living close to Germany's seven oldest nuclear power plants, Greenpeace has submitted a complaint to Germany's Constitutional Court (Bundesverfassungsgericht). While Greenpeace Germany generally argues that the runtime extensions endanger each citizen's right of being protected against bodily harm, the new constitutional complaint is specifically directed at the latest Nuclear Energy Law's paragraph 7d. The new §7d tells reactor operators, in rather poetic language, to reduce risks threatening "the population". This is, according to Greenpeace's law experts, a significant point. It means that individual citizens who have lately filed complaints (with support from Greenpeace) against the extension of the licenses for reactors in their neighborhood will be denied the right of action. In other words, the old Nuclear Law was designed to protect citizens and gave them the right to complain in local courts against the risks caused by the local polluter, and the new law withdraws this right.

Parallel to Greenpeace's action, two other complaints against the new Nuclear Law will be filed at the Constitutional Court later this year. One is by a number of states of the German federation and the other is by groups of members of the federal parliament.

**Greenpeace press release (in German), 3 February 2011**

**Norway: severe consequences of Sellafeld accident.** An accident at the high-activity liquor storage at Sellafeld would have severe consequences for Norway's wildlife, agricultural industry and environment. The Norwegian Radiological Protection

Authority has published a second report on the consequences of an accident that releases just one per cent of the high-level liquid waste at Sellafield. This report looks at the consequences to the environment and animals, while the first report considered the fallout likely from a similar accident. The report uses the typical weather experienced in October 2008 and only considers the release of caesium-137. An actual accident would release other radionuclides, particularly strontium.

It is estimated the amount of caesium-137 deposited on Norway would be about seven times that from Chernobyl. Direct costs from Chernobyl on agriculture and reindeer in Norway have been over 665 million kroner (US\$118 million; 86 million euro) and there are still annual costs of 15 million kroner. Up to 80 per cent of all lambs in Norway would be expected to have excess radiation levels and restrictions apply for decades. The report is available at [www.nrpa.no/dav/0942d3dc93.pdf](http://www.nrpa.no/dav/0942d3dc93.pdf)

**N-Base Briefing 681, 25 January 2011**

**Canada: White Elephant 'Pointless Lepreau' reappears in New Brunswick.** The Point Lepreau nuclear generating station provides the quintessential definition of a white elephant. The aging nuclear plant opened its doors three times over budget in 1983. The Energy and Utilities Board refused to support spending on refurbishing it beyond its expected lifetime, but politicians went ahead anyway. Today, costs for the touch-and-go overhaul are already over Cdn\$1.4 billion (1.4 bn US\$, 1 bn Euro). The latest guess at a completion date is May 2012, a delay of almost three years. Damage to public and worker health and the environment have yet to be calculated and the final costs for taxpayers may not end for generations.

An alliance of public interest groups in New Brunswick, known as the Point Lepreau Decommissioning Caucus, is spreading a simple, but powerful message: Point Lepreau is a white elephant, we don't need it. Pointless Lepreau is old, sickly and on its last legs: Do Not Resuscitate. To underline the foolishness of refurbishing Lepreau, the groups are holding surprise events featuring their newest member, an actual white elephant costume aptly named Pointless Lepreau.

**Press release, 19 January 2011**

**When the dust settles.** The International Coalition to Ban Uranium Weapons (ICBUW) and IKV Pax Christi have been working on a joint project to create an animated short film on the hazards of depleted uranium and the international campaign against its use and are happy to announce that the English language version has now been completed. We have sought to render down a complex issue into six and a half minutes and at present the animation is available in English and Dutch, we hope that additional languages will be available in future.

Both versions are available from our Youtube channels at the links below. ICBUW can also provide copies for use at events and to help support your national campaigns.

English version: <http://www.youtube.com/user/ICBUW>

**UK Gov't sending papers down the memory-hole.** The UK government and its agencies like the Nuclear Decommissioning Authority (NDA; successor to Nirex) are trying to airbrush out the history of the attempt to find a nuclear waste repository in West Cumbria. Documents and scientific papers which were formerly available on their websites have been removed; the Nirex documents have been transferred to the safe keeping of the British Geological Survey, where they may be 'consulted' at Keyworth, Nottinghamshire. But nothing remains online, not even an index of the documents and reports. Now, David Smythe has re-scanned much of the material and collected links of other parts.

Sellafield (West-Cumbria) was disqualified for several reasons, but now NDA and government is looking again at that region for final disposal.

Papers are available at: <http://www.davidsmythe.org/nuclear/nuclear.htm>

**Monju: accident delays startup with 3 more years.** The task of removing a device that accidentally fell into the prototype fast-breeder reactor Monju in August will delay its full startup about a year to 2014 or later.

The Japan Atomic Energy Agency, the operator of the 280 MW Monju reactor in Tsuruga, Fukui Prefecture, is expected to remove the device next summer or later and then conduct checkups, delaying the test operation initially scheduled to start next spring and subsequent full-fledged run. Removing the 3.3-ton device, which was used for fuel exchange before it fell into the reactor vessel in the Aug. 26 accident, requires special equipment, approval from the Nuclear and Industrial Safety Agency under the Ministry of Economy, Trade and Industry and a followup inspection.

Monju resumed operations with limited power output in May 2010 after 14 years and five months(!) of suspension due to a sodium coolant leak and a resultant fire and coverup attempt in 1995.

**Kyodo, 17 December 2010**

**Extended operation for Paducah enrichment plant?** US uranium enrichment company USEC said that it is working to extend the operation of its Paducah plant in Kentucky beyond May 2012, when the old and inefficient gaseous diffusion plant had been expected to shut down. The company said that it will "base its decision to extend operations upon economic considerations and the ability of the plant to operate profitably." The Paducah plant – currently the only operating uranium enrichment facility in the USA – is set to be replaced by USEC's planned American Centrifuge Plant (ACP) project in Piketon, Ohio.

The full ACP plant was originally expected to commence commercial operation in early 2010 and achieve full annual capacity at the end of 2012. However, early in 2009 the whole project was slowed pending funding through the Department of Energy (DoE) loan guarantee program, and in July 2009 it was suspended due to the DoE refusing to award a US\$2 billion (1.5 billion euro) loan

guarantee, and asking USEC to withdraw its application. USEC refused to do this, and in July 2010, it submitted an updated loan guarantee application to the DoE. In October 2010, DoE informed USEC that it has largely completed its initial technical review of USEC's application and is proceeding to the next stage of the loan guarantee process.

Although USEC earlier secured investment of U\$200 million from Toshiba and Babcock & Wilcox to support the ACP, the company maintains that additional financing is needed to complete plant construction.

**World Nuclear News, 12 January 2011**

**Italy: referendum on relaunching nuclear power.** Italy's constitutional court ruled on January 12, a national referendum could be held against the construction of nuclear power plants, dealing a potential blow to government plans to relaunch the sector. Prime Minister Silvio Berlusconi wants nuclear plants to generate a quarter of the country's electricity in the future. The court allowed a request by opposition politician Antonio Di Pietro for a referendum, which will take place between on a Sunday between April 15 and June 15.

Antonio Di Pietro is leader of Italia dei Valori (Italy of Values) a centrist political party and an outspoken opponent of nuclear power. An April 2010 petition by the party successfully gathered the 500,000 signatures of Italian voters needed for the referendum to proceed through the Italian legislative system. This was presented to the Constitutional Court for its final ruling on the admissibility of the proposed referendum.

Public opinion in Italy has been generally hostile to nuclear energy, and a 1987 referendum following the Chernobyl disaster in Ukraine in 1986 closed all plants and phased out production.

**Reuters, 12 January 2011, Rete Nazionale Antinucleare (RNA) International, 13 January 2011**

**International IPPNW Congress, Urania, Berlin, Germany. April 8 – 10, 2011**

## **Chernobyl: 25 Years After**

### **Stop the Nuclear Timebomb – Abandon Nuclear Power Now!**

25 years ago, the Chernobyl catastrophe changed the world. Millions of people were affected. 180,000 kilograms of highly radioactive material from inside the reactor were released into the air. The radioactive cloud did not stop at borders, it circled the world. Even now, the effects of the accident are still being suppressed.

Chernobyl opened our eyes to the dangers of nuclear technology. Nuclear energy kills. Not only when there is an accident but also all along the nuclear chain from uranium mining to nuclear waste. Even before one single kilowatt of electricity is produced, people are dying. The technology required for nuclear energy also provides the wherewithal for the development of nuclear weapons. Thus, more reliance on nuclear energy increases the risk of proliferation and causes the number of states possessing nuclear weapons to grow.

Peace is dependent upon the abandonment of nuclear energy and converting to a decentralised system that supplies renewable energy – wars cannot be fought over the sun and the wind!

The Congress in Berlin aims to:

- provide information on the effects of Chernobyl
- analyse the risk potential of the nuclear chain
- offer solutions for a world free from the nuclear threat
- present possibilities for action.

You can get more information about the Congress, the speakers and how to register at:

<http://www.chernobylcongress.org/>

We hope to see you in Berlin!

## 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.

The WISE/NIRS Nuclear Monitor publishes international information in English 20 times a year. A Spanish translation of this newsletter is available on the WISE Amsterdam website ([www.antenna.nl/wise/esp](http://www.antenna.nl/wise/esp)). A Russian version is published by WISE Russia and a Ukrainian version is published by WISE Ukraine. The WISE/NIRS Nuclear Monitor can be obtained both on paper and in an email version (pdf format). Old issues are (after two months) available through the WISE Amsterdam homepage: [www.antenna.nl/wise](http://www.antenna.nl/wise).

Receiving the WISE/NIRS Nuclear Monitor

US and Canada based readers should contact NIRS for details of how to receive the Nuclear Monitor (address see page 11). Others receive the Nuclear Monitor through WISE Amsterdam.

For individuals and NGOs we ask a minimum annual donation of 100 Euros (50 Euros for the email version). Institutions and industry should contact us for details of subscription prices.

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See: <http://www.plage.cc> (not available in English (yet))

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