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FUKUSHIMA IN THE NUCLEAR MONITOR

The devastating 9.0-magnitude earthquake and resultant tsunami in north-eastern Japan on March 11, 2011, resulted in the death of over 20,000 people; 114,000 buildings destroyed; 79,000 buildings partially destroyed; and over 373,000 partially damaged buildings. Most of the partially damaged buildings are due to the earthquake, and most of the destroyed buildings are due to the tsunami.

On March 11 2011, while sending the *Nuclear Monitor* special issue '*Chernobyl – Chronology of a disaster*' from our Amsterdam office, it became clear that not all Japanese nuclear reactors safely switched off after the devastating earthquake and following tsunami.

In the following days four explosions took place at reactors at Fukushima Daiichi, resulting in three meltdowns and large emissions of radioactivity. Meanwhile, evidence is still growing that Reactor 1's meltdown was initiated by the earthquake and only exacerbated by the ensuing tsunami.

On November 30, Tepco released a document that acknowledged, for the first time, that 100% of the fuel in Reactor 1 melted, dropping through the containment vessel and melting through 75% of the vessel's concrete base. Using computer simulations, the utility estimates that 67 cm of the concrete was eroded, leaving only 37 cm between the melted fuel and reactor container's steel wall. Tepco also estimates that 57% of the fuel in Reactor 2 melted and dropped to the bottom of reactor vessel, and 63% in Reactor 3.

The findings are the latest in a series of increasingly grave scenarios presented by Tepco about the state of the reactors. The company initially insisted that there was no breach at any of the three most-damaged reactors; it later said that there might have been a breach, but that most of the nuclear fuel had remained within the containment vessels.

On December 16, the Japanese authorities stated that Fukushima is in a state of "cold shutdown".
The industry definition of "cold shutdown" means that the temperature inside a nuclear reactor has stabilized below 95 degrees Celsius from the hellish temperatures of the nuclear fission process. In the case of Fukushima, this suggests the crisis is over. But that is not the whole truth.
In fact, the Japanese authorities have cheated by redefining "cold shutdown" to suit the situation at Fukushima.
Only operating nuclear reactors can be put into a state of "cold shutdown". Reactors that have suffered meltdowns – like those at Fukushima – cannot be. The 260 tons of nuclear fuel inside the Fukushima reactors melted and burned through the steel floors of the containment vessels and into the thick concrete under pads. The melted fuel is far from under control. This means the temperature inside the reactor can't be regulated by conventional means.

This special issue is compiled of articles published in the *Nuclear Monitor* in the past 9 months about Fukushima and its consequences. That is: most articles, because left out of this special issue is *Nuclear Monitor* 725, March 25, consisting of "quotes from nuclear proponents about how safe nuclear power is, how non-existent the chances of a major incident resulting from a loss-of-coolant accident and the fact that even then, no off-site consequences would be possible."

MONITORED THIS ISSUE:

Yokohama special issue.

This is a special issue of the Nuclear Monitor, compiled of articles published in the last nine months about the nuclear disaster at Fukushima and it's (worldwide) consequences in the Nuclear Monitor.
This special issue is produced for the 'Global Conference for a Nuclear Power Free World' to be held in Yokohama in Japan, on 14 and 15 January 2012.

The Nuclear Monitor is a unique international newsletter serving the worldwide movement against nuclear power.
Produced 20 times per year, it gives an anti-nuclear perspective on what is happening in the nuclear power industry and the resistance against it.

First published in *Nuclear Monitor* 726, May 13, 2011:

JOINT STATEMENT ON THE FUKUSHIMA DAIICHI NUCLEAR DISASTER

On the Occasion of the 25th Anniversary of the Chernobyl Nuclear Disaster, April 26, 2011

The Fukushima Daiichi nuclear disaster, precipitated by the huge earthquake and ensuing tsunamis that hit eastern Japan on March 11, has created fear of radiation exposure and radioactive contamination not just in Japan, but throughout the world.

The Japanese Government, electric power companies and academics who served them boasted that Japan's nuclear power plants were completely safe, that a nuclear accident would not occur. Their responsibility is heavy indeed. Many people had long warned of precisely the situation that is now in progress - of the danger of a huge earthquake and tsunami, of an accident caused by a loss of power supply, of the danger of concentrating several plants on a single site, of the problems facing suicide squads required to respond to a major accident, of the defects of emergency response preparations which only covered a 10 kilometer radius - but these warnings were not taken seriously. The attitude of promoting nuclear energy no matter what is one of the reasons why the response on this occasion by the Japanese Government and Tokyo Electric Power Company has at each stage been too late. To nevertheless claim that this was 'beyond expectations' is both immoral and criminal.

Reactors at the Fukushima Daiichi Nuclear Power Station have not achieved cold shut down. The situation continues to be unpredictable. It is important to maintain cooling function and to take measures to prevent further contamination from releases and leaks of radioactive material. It goes without saying that in doing so sufficient consideration must be given to the safety of the workers. Radiation exposure standards for residents should not be set excessively high to meet accident circumstances. Rather, it is necessary to rapidly take all steps to enable the earliest possible adherence to the original standard of less than 1 millisievert per year. Decommissioning and disposal of the huge heap of radioactive waste that Fukushima Daiichi has become will probably be a long battle extending over decades.

We have continued to oppose nuclear power and nuclear facilities, calling for a phase out of nuclear energy through activities throughout Japan. Hoping for the earliest possible end to the crisis at Fukushima Daiichi, whatever we are able to do together we wish to do it now.

As a first step we are issuing this joint statement today, 25 years after the Chernobyl accident. At an appropriate time we will launch a large national action demanding a formal decision to permanently close down the Fukushima Daiichi and Fukushima Daini Nuclear Power Stations, to cancel the nuclear fuel cycle program, to cancel plans to build new nuclear reactors and to shut down aging nuclear reactors and we will propose a process for achieving a steady phase out of nuclear energy.

We refuse to allow the earth to be further subjected to radioactive contamination and radiation exposure. For the sake of all living beings, let us walk together towards the achievement of a nuclear-free society.

April 26, 2011, endorsed by 87 Japanese NGOs

First published in *Nuclear Monitor* 726, May 13, 2011:

TEPCO: 'LEAKAGE HAS NOT STOPPED COMPLETELY'

Japanese Prime Minister Naoto Kan announced on May 10, that Japan is scrapping plans to build 14 new nuclear reactors and instead will rethink its energy policy with a focus toward renewable energy sources and efficiency. Three months earlier, on February 7, the Japanese Ministry of Economy, Trade and Industry gave unit 1 of Fukushima-I permission to continue operations beyond 40 years of commercial operation. Just over one month later the Fukushima I Unit 1 was wiped out by an earthquake and tsunami.

(726.6121) WISE Amsterdam - The May 10 decision to abandon plans to build more nuclear reactors and "start from scratch" in creating a new energy policy, will mean the end for a plan that the Kan government released last year to build 14 nuclear reactors by 2030 and increase the share of nuclear power in Japan's electricity supply to 50 percent. Japan currently has 54 reactors that before the earthquake produced 30 percent of its electricity. But 13 of those could well be closed permanently after the March 11 earthquake: six at Fukushima-I, four at Fukushima-II and three at Hamaoka.
Could the Chernobyl 1986 accident be characterized as a Soviet accident in a unique type of reactor, the Fukushima accident occurred in a high-tech nation with broad international cooperation and a common reactor type. Even more, the accident as a result of the earthquake happened in one of the most active earthquake zones in the world, in a society prepared for massive earthquakes.

After initially rating the accident Level 5, on April 12, Japan's Nuclear and Industrial Safety Agency uprated the ongoing accident to Level 7, the highest level on the International Nuclear Event Scale (INES), indicating a major accident with significant environmental consequences. Helmut Hirsch, a

consultant to Greenpeace Germany, already published an analysis two weeks earlier (March 25), saying the Fukushima events should be rated at Level 7, or even three Level 7s for the three damaged core's, based on releases up to March 25.

On the same day, April 12, an official from Tepco (world's #4 power company) told a press briefing that radiation leakage “has not stopped completely and our concern is that it could eventually exceed Chernobyl.” The phrase "leakage has not stopped completely" turned out to be the understatement of the year, given the fact that late April and early May enormous peaks in releases occurred, and it can take months before (accidental) radioactive release stop.

In uprating the accident to Level 7, however, the government appears to be downplaying the actual radiation releases, with several media reports quoting government officials as saying releases have been about 10% of those from Chernobyl. However, the Austrian weather service, which has been monitoring radiation across the world and advising the International Atomic Energy Age
ncy, said on March 23 (!), that releases of Cesium-137 at that time could amount to about 50% of the Chernobyl source term of Cesium-137 and Iodine-131 releases were at 20%. It is true however that prevailing winds blew the vast majority of the radioactivity onto the sea, but in several periods the emissions were transported inland.

Meanwhile, the world’s largest nuclear companies are trying to capitalize on the nuclear catastrophe: they are forming consortia to bid for work to stabilize and clean up the Fukushima I nuclear power plant. Tepco and the Japanese government face the challenge of managing a huge project that will dwarf the Three Mile Island-2 cleanup. “TMI took 10 years and a billion dollars, and this is a lot bigger,” one industry source said.
Hitachi is leading one group of companies, including reactor business partner General Electric, seeking Fukushima I work. Toshiba has formed another consortium with several US companies. Areva is in talks with Tokyo Electric Power Co. The consortia could divide the work by unit or by task; the remediation of contaminated air, water and solids are different areas requiring different work.

On May 9, Chubu Electric Co. agreed to Prime minister Kan’s request that the three operational reactors at the Hamaoka nuclear complex be closed, at least until seismic upgrades can be performed and a new seawall to protect against tsunamis be built. The betting here is that these reactors, which sit atop probably Japan’s most dangerous earthquake fault, will not reopen.

IAEA Director General Yukiya Amano has announced a post-Fukushima Ministerial Conference on Nuclear Safety to be held in Vienna June 20-24.

Sources: Nucleonics Week, 31 March and 14 April 2011; NIRS Update; Nuke Info Tokyo 141, March/April 2011

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THE LIQUIDATORS OF FUKUSHIMA

There are many signs that Tepco is facing great difficulties in finding workers in the titanic struggle to bring to contain the dangerous situation at Fukushima. At present, there are nearly 700 people at the site. As in ordinary times, workers rotate so as to limit the cumulative dose of radiation inherent in maintenance and cleanup work at the nuclear site. But this time, the risks are greater, and the method of recruitment unusual.

(726.6122) Job offers for Fukushima come not from Tepco but from Mizukami Kogyo, a company whose business is construction and cleaning maintenance. The description indicates only that the work is at a nuclear plant in Fukushima prefecture. The job is specified as three hours per day at an hourly wage of 10,000 yen (US$123 or 86 euro). There is no information about danger, only the suggestion to ask the employer for further details on food, lodging, transportation and insurance.

Those who answer these offers may have little awareness of the dangers and they are likely to have few other job opportunities. A rate of US$122 an hour is hardly a king's ransom given the risk of cancer from high radiation levels. But Tepco and the Nuclear and Industrial Safety Agency (NISA) keep diffusing their usual propaganda to minimize the radiation risks.

Rumor has it that many of the cleanup workers are burakumin (a minority group dating from Japan's feudal era and still often associated with discrimination). This cannot be verified, but it would be congruent with the logic of the nuclear industry and the difficult job situation of day laborers. Because of ostracism, some burakumin are also involved with yakuza, or organized crime groups. Therefore, it would not be surprising that yakuza-burakumin recruit other burakumin to go to Fukushima. Yakuza are active in recruiting day laborers of the yoseba (communities for day laborers): Sanya in Tokyo, Kotobukicho in Yokohama, and Kamagasaki in Osaka. People who live in precarious conditions are then exposed to high levels of radiation, doing the most dirty and dangerous jobs in the nuclear plants, then are sent back to the yoseba. Those who fall ill will not even appear in the statistics.

On March 14, three days after the earthquake and tsunami that caused the damage at Fukushima, the Ministry of Health and Labor raised the maximum dose for workers to 250 mSv a year, where previously it was set at 100 mSv over five years (either 20 mSv a year for five years or 50 mSv for two years, which is in itself a strange interpretation of the recommendations of the International Commission on Radiological Protection's guideline stipulating a maximum of 20 mSv a year. The letter that the ministry sent the next day to the chiefs of labor bureaus to inform them of the decision justifies it on the grounds of the state of emergency, ignoring the safety of the workers.

This could be a measure to avoid or limit the number of workers who would apply for compensation. Stated differently, it has the effect of legalizing illness and deaths from nuclear radiation, or at least the state's responsibility for them. Usually, in case of leukemia, a one year exposure to 5 mSV is sufficient to obtain occupational hazards compensation. The list of potential applicants could be very long in light of the number of workers already on the job, or who are likely to be recruited

to dismantle the reactors. The project proposed by Toshiba to close down and safeguard the reactors would take at least 10 years.

In short, the state's concern appears to be less the health of employees and more the cost of caring for nuclear victims. The same logic prevailed when, on April 23, the government urged children back to the schools of Fukushima prefecture, stating that the risk of 20 mSv or more per year was acceptable, despite the high vulnerability of children. Can the state be prioritizing the limitation of the burden of compensation for TEPCO and protection of the nuclear industry at large over the health of workers and children?

Source: Paul Jobin, Asia Times Online, 4 May 2011

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FUKUSHIMA: THE ONGOING DISASTER

The most remarkable thing about the response so far to the ''gempatsu shinsai'' (nuclear-earthquake disaster) that has engulfed Japan is that there are still people who think nuclear power has a future. Should this be attributed more to the dependence of modern industrialized societies on massive inputs of energy, or to a collective lack of imagination?

(726.6120) Philip White - We do not yet know how this unfolding catastrophe will end, but we can be sure that if most of the radioactivity in the Fukushima Daiichi Nuclear Power Plant remains on site, then the true believers will claim that this is as bad as it gets and that the risk is worth taking. The environmental damage of localized contamination and releases to sea will be discounted and long-term health impacts from exposure to low levels of radiation will be denied. Even those workers who suffer from acute radiation sickness will not find their way into the most commonly quoted statistics, unless they die promptly.

The truth is that even in the best-case scenario the environmental and human consequences of this disaster will be enormous. The potential impact of a worst-case scenario is beyond most people's comprehension. To give an indication of the amount of radioactive material involved, the total capacity of the three reactors that were operating at the time of the earthquake was double that of the Chernobyl number 4 reactor that exploded 25 years ago in the Ukraine. To this you have to add the radioactivity in the spent fuel pools of all 6 units and of the shared spent fuel pool.

All of this is at risk and, due to the long-term heat-generating properties of the fuel, the situation will not be stabilized any time soon. Even if the radioactivity does not travel far, the release of just a fraction would have incalculable consequences for human beings and the environment.

Besides the true believers, there are also those who regard nuclear energy as a necessary evil. They don't particularly like it, but they see no alternative. But is it true that there is no alternative? For those who can't see beyond the current centralized, supply-driven electrical power systems and who assume an eternally increasing demand for energy, then perhaps it is difficult to imagine how modern societies could survive without nuclear power. But if you allow the possibility of decentralized systems that reward the efficient provision of energy services, rather than the supply of raw energy, then hitherto unimagined options open up.

After last year's oil spill in the Gulf of Mexico and now the Fukushima Daiichi ''gempatsu shinsai,'' people must realize that business as usual is not an option.

To claim that nuclear energy has a future represents a colossal failure of our collective imagination -- a failure to imagine the risks involved and a failure to imagine how we could do things differently. If future generations are to say that there was a silver lining to the cloud of the Fukushima Daiichi disaster, it will be because human beings now looked beyond their recent history and chose to build a society that was not subject to catastrophic risks of human making.

(Philip worked as the International Liaison Officer of the Tokyo-based Citizens' Nuclear Information Center in Tokyo, Japan. He now returns to Australia)

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FUKUSHIMA DAIICHI AND DAINI

The 9.0-magnitude earthquake and resultant tsunami in northeastern Japan on March 11, affected more than 31,800 megawatts (MW) of generating capacity. In the immediate aftermath of the earthquake 11 nuclear reactors with 9,674 MW of capacity at four sites shut down automatically, while three other reactors with 2,700 MW of capacity which were closed for maintenance were also affected.

(726.6124) WISE Amsterdam - The Japan Atomic Power Company's 1,100-MW Tokai Daini boiling water reactor (BWR) in Ibaraki prefecture shut down without apparent problems, although JAPC said on March 13, that two of three diesel generators used for emergency cooling had failed.
Meanwhile a fire occurred immediately after the disaster in a turbine building at one of the three BWRs at Tohoku Electric Power Company's 2,174-MW Onagawa plant in Miyagi prefecture. It was extinguished without indications at the time of radioactive leakage.

Tohoku Electric subsequently said on March 12 that radiation levels at Ona-

gawa had surged. But by March 14 radiation had fallen to normal levels, with the International Atomic Energy Agency (IAEA) saying that "the current assumption of the Japanese authorities is that the increased level may have been due to a release of radioactive material from the Fukushima Daiichi nuclear power plant."

Fukushima, which has experienced by far the worst problems, comprises two plants located 11.5 kilometers apart. Fukushima Daiichi (Fukushima-I) and Fukushima Daini (Fukushima-II) are both owned and operated by the Tokyo Electric Power Company (Tepco), with the Fukushima-I complex comprising six BWRs with 4,700 MW of capacity, while Fukushima-II comprises four BWRs with 4,400 MW of capacity.

All four Fukushima-II reactors were operating at the time of the earthquake and shut down automatically, as did three units at Fukushima-I. The remaining three reactors at Fukushima-1 were already shut for scheduled maintenance.

The automatic shutdown of the Fukushima-II reactors ran into cooling problems when emergency generators failed, apparently as a result of the impact of the tsunami on the generators or their diesel stocks. But much worse loss of coolant incidents occurred at Fukushima-I. Nevertheless, early may Tepco, perhaps bowing to reality, said that it may never restart its four Fukushima II (Daini) reactors.

Fukushima I (Daiichi)
Reactor 1 [BWR, 439MWe, March 1971] - Possible hydrogen explosion March 12, outer building is damaged and there was a partial meltdown. When fuel rods heat up due to insufficient cooling, the zirconium alloy in the fuel rods reacts with steam and produces a large amount of hydrogen. Radioactivity has been vented and leaked. Probably 70% of fuel rods are damaged. Operators have trouble cooling down the reactor. The reactor has 400 fuel assemblies and the spent fuel pool has 292. Update May 12: possible 100% of fuel rods damaged

Reactor 2 [BWR, 760MWe, July 1974] - The fuel and the reactor core severely damaged. Some fuel may have leaked out of the reactor vessel into the primary containment vessel, which was damaged in an explosion on March 15. Broken fuel rods have been found outside the reactor, probably from the spent fuel pool. The reactor has 548 fuel assemblies and the spent fuel pool has 587. Probably 30-40% of the fuel rods have been damaged.

Reactor 3 [BWR, 760MWe, March 1976] - The reactor used uranium and plutonium (MOx), which may produce more toxic radioactivity. The reactor containment vessel may have been damaged due to the March 14 explosion, and the spent fuel pool may have become uncovered. The reactor had 548 fuel assemblies and the spent fuel pool has 514. About 30% of fuel rods have been damaged. A remarkable early May video of the fuel pool at Unit 3 has been released. It shows the pool is now underwater, but also a picture of complete devastation. There is no actual visual evidence any fuel remains in the pool -certainly not in racks as designed. However, some fuel must remain, as NHK TV reports on May 11, radiation readings taken May 8, inside the pool of "140,000 becquerels of radioactive cesium-134 per cubic centimeter, 150,000 becquerels of cesium-137, and 11,000 becquerels of iodine-131." The presence of short-lived Iodine-131 indicates that either the pool has become contaminated from melting fuel in the Unit 3 reactor or there has been inadvertent fissioning inside the fuel pool itself. An inadvertent criticality is believed by many to have caused the enormous explosion at Unit 3.

Reactor 4 [BWR, 439MWe, March 1971] - Spent fuel rods in a water pool may have become exposed to air, emitting radioactive gases. On March 15, a hydrogen explosion created by chemical reactions with the spent fuel rods, and fire have damaged the building and probably also the spent fuel pool. There are no fuel assemblies in the reactor; 548 were removed for maintenance and are part of 1,535 in the spent fuel pool.

Reactor 5 [BWR, 760MWe, October 1978] - The reactor is shut down at the time of the earthquake and the building is not damaged. But the concern had been about spent fuel in the building becoming exposed to air. With power restored to the building, that concern has abated. The reactor has 548 fuel assemblies and the spent fuel pool has 946.

Reactor 6 [BWR, 760MWe, April 1978] - The reactor was shut down at the time of the earthquake and the building is not damaged. But the concern had been about spent fuel in the building becoming exposed to air. With power restored to the building, that concern has abated. The reactor has 764 fuel assemblies and there are 876 in spent fuel pools.

General: New joint U.S.-Japanese aerial monitoring results of the area have been posted and show significant Cesium contamination well beyond the government's evacuation zone. Cesium levels above 600,000 becquerels per square meter are indicated more than 60 kilometers (30 miles) northwest of the Fukushima Daiichi site. After Chernobyl, the Soviet Union evacuated areas above 550,000 becquerels per square meter. Maps are posted on the DOE website at http://blog.energy.gov/content/situation-japan/

Sources: Wim Turkenburg, Power point presentation Copernicus Institute Utrecht, NL; April 26, 2011); NIRS Updates; TEPCO updates; Japan, coming to terms with the power crisis (Platts, April 2011)

Nuclear reactor residual heat generation over time from shut down

Time after reactor stop	Residual power (% of operating power)
1 second	17%
1 minute	5%
1 hour	1.5%
1 day	0.5%
1 week	0.3%
1 month	0.15%
1 year	0.03%

Source: Autorité de Sûreté Nucléaire (ASN)

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IN BRIEF

OPPOSITION TO NUCLEAR IN JAPAN

The crisis at the Fukushima Daiichi nuclear power plant has spawned antinuclear protests in Tokyo on a scale not seen for decades, raising hopes among activists that Japan's future is geared toward a revolution in renewable energy. Japanese media estimated that 17,000 people calling for immediate closure of all the country's nuclear plants marched through Tokyo's Koenji neighborhood on April 10, and many thousands again on similar demonstrations early May.

30 Years of resistance against proposed Kaminoseki reactors. Tradition matters at Iwaishima Island. People do things just like their great-great-grandfathers once did, each day venturing out to sea to haul in seaweed, octopus and red snapper. Villagers are proud of their tightknit camaraderie and historical harmony with nature. But a utility company plans to build a nuclear power plant just across the bay, at the tip of the Kaminoseki peninsula. After receiving compensation, several nearby communities have hesitantly embraced the project.
Not Iwaishima. Many residents are convinced that the twin reactors will threaten not just their way of life but the long-term survival of the Inland Sea, a national park known as Japan's Galapagos for its range of sea life. They say the plant's warm water discharge will raise sea temperatures, altering the ecosystem.
So for three decades, since the Chugoku Electric Power Co. unveiled its plans in 1982, islanders have taken an unusually aggressive stand, turning their backs on efforts at negotiation. Graying residents, mostly in their 70s, have in recent years formed an alliance with young antinuclear activists. Together, they have staged hunger strikes, picketing and sit-ins, using a flotilla of fishing boats and kayaks to block company construction cranes from reaching the site.
After the Fukushima accident, the utility temporarily suspended plant construction after local officials expressed safety concerns. "Without our protests, that plant would already be running," said Masue Hayashi, 59, who began her opposition to the project when she was 30. "Those people near Fukushima could have been us."
LA Times, 5 May 2011

Farmers protest nuclear power. Angry Japanese farmers working and living up to 60 kilometers away from the crippled Fukushima nuclear plant have protested in the country's capital Tokyo that their businesses are in jeopardy. More than 200 farmers including cereal, vegetable and livestock growers demanded redress for farm products contaminated by radiation spewing from the crippled Fukushima nuclear plant.
Agra Europe, 3 May 2011

Protest against increase permissible radiation levels. On May 2, furious parents in Fukushima delivered a bag of radioactive playground earth to education officials in protest at moves to weaken nuclear safety standards in schools. Children can now be exposed to 20 times more radiation than was previously permissible. The new regulations have prompted outcry. A senior adviser resigned and the prime minister, Naoto Kan, was criticised by politicians from his own party. Ministers have defended the increase in the acceptable safety level from 1 to 20 millisieverts per year as a necessary measure to guarantee the education of hundreds of thousands of children in Fukushima prefecture.
Guardian (UK), 2 May 2011

Shareholders call for disinvestments in nukes. Some of the shareholders of a Japanese electric power company say they want the utility to close its nuclear power plants. On May 2, a group of 232 individual stockholders of Tohoku Electric Power Company submitted the documents needed for their proposal to scrap its nuclear power plants. The proposal is expected to be put to a vote in an annual shareholders' meeting at the end of June. Tohoku Electric Power has 2 nuclear power plants in Japan's northeastern region, one in Higashidori Village in Aomori Prefecture and another in Onagawa Town in Miyagi Prefecture. The group is also calling for the company to end its investment in spent nuclear fuel reprocessing businesses, including a reprocessing plant at Rokkasho.
NHK, 2 May 2011

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FINLAND: BACK TO BASICS – FUKUSHIMA REMINDS OF NUCLEAR RISKS

Finland has always been a country where people rely on engineership. Despite the techno-optimistic views the Finnish parliament was still far-sighted enough to turn down an industry application for a fifth nuclear power reactor in 1992.

(726.6125) Finnish Association for Nature Conservation - Even if mushrooms and reindeer meat still contained traces of extra radioactivity, the memory of the Chernobyl disaster faded in the '90s when climate discussion drew attention.

Throughout the '90s, the Finnish industry was in a good position to make breakthroughs in the development of new wind and solar technologies. This was not utilized, however, because the industry was already preparing ground for a new nuclear reactor application.

In the turn of the century, the nuclear industry saw its chance. It came out with a message that we cannot fight climate change without a full array of non-carbon energy sources, i.e., renewables and, of course, nuclear power. The industry's sudden worry showed clear signs of greenwashing. After all, until then the industry had been telling us that if they are forced to fight the climate change then they loose their competitiveness.

Despite the suspiciousness of this sudden climate worry, the industry message bore fruit. This was partly because of a wrong campaign analysis by the anti-nuclear movement. The environmentalists thought they can be stronger at the renewables debate than the heavy industry, and went along with this debate. They abandoned the traditional nuclear risk debate.

It became apparent that the anti-nuclear movement had the wrong strategy. The Finnish parliament believed the industry, and the application for the fifth reactor was passed in the parliament in May 2002.

There were several reasons why the anti-nuclear movement did not use the risks of nuclear power as the key campaign message. Most importantly, the memory of Chernobyl had faded. The media was not at all interested in the debate about the risks of nuclear power, and neither were some of the younger generation activists who had a climate activist background.

The Fukushima accident changed the nuclear debate entirely. Again, it is politically credible to stress the risks of nuclear power. The major Finnish media have written more about the nuclear risks than they have done in the whole millennium so far.

The nuclear industry keeps fairly quiet. Currently, they cannot ignore people who discuss the numerous risks of the life cycle of nuclear power.

The energy industry's response has been to wait and see, and to talk positively about the need to test the safety technology in the existing reactors. Most probably, however, the industry is already making plans on how to "normalize" the situation.

Source and contact: Jouni Nissinen, Head of Environmental Protection, Finnish Association for Nature Conservation
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SWITZERLAND: CLOSER TO A NUCLEAR PHASE-OUT OR TACTICAL PAUSE ?

A referendum on the construction of three new 1600 MW nuclear power plants (NPP) was to be held in 2013, for a planned grid connection in 2025. That was before the Fukushima catastrophe. Since then the federal department in charge of energy decided to uphold the entire consultation process to "learn more" from the Japanese catastrophe.

(726.6126) 'Sortir du nucléaire' - When the nuclear catastrophe started to unfold at Fukushima-1 on march 11, the Minister for energy and infrastructures, Ms Doris Leuthard, a former nuclear lobby board member, decided to uphold the non-decisionary consultation process - mandatory under the new nuclear energy law - that was to lead to a decisionary referendum expected for 2013 (see Nuclear Monitor 676, 4 September 2008). The reason given for this decision was to analyse 3 new nuclear power plants projects using new knowledge gained at Fukushima.

A country without sea coastline has no tsunami warning zone, but other residual risks exist, such as major breaches in large mountain dams that could drown nuclear installations, earthquakes or human errors.

The federal council ordered new studies, on the security of the 5 existing nuclear reactors and on future energy scenarios, including nuclear phase-out plans. At first the antinuclear campaign was relieved by this, until doubts started clouding the federal decision. Had Ms Leuthard been genuinely shocked by the new nuclear catastrophe, enough to halt a process that was supposed to lead to the building of at least one new nuclear power plant that she backed until then? Or was it a tactical decision, namely, a momentary suspension, not a grounding? Was she afraid Swiss citizens wouldn't vote according to plan this time, and simply decided to postpone the vote until momentary emotional considerations receded back to normal? Since 1984, three votes on nuclear phase out initiatives (formal proposals) have been put to vote. Each one failed to phase out nuclear power, apart

from a 1990 vote, 4 years after Chernobyl, that imposed a 10 year moratorium on nuclear power plant constructions.

What are the current prospects for change on the energy issue outside of the federal council?
The Swiss Green party launched a new federal initiative, gaining political and NGO support. If voted into the constitution (in 3 to 5 years), it would bar construction of new nuclear power plants and limit life cycles of existing reactors to 40 years, with a last closure in 2024. The Socialist party, also in competition for new green votes, announced parliamentary initiatives to phase out nuclear power.
Major editorialists and conservative politicians have taken position against nuclear energy, before Fukushima this wouldn't have been expected. In June the Swiss parliament will hold sessions dedicated to future energy scenarios; will the anti-nuclear drive lose momentum or will this catastrophe act as a catalyst for change? Two weeks after Fukushima, a poll showed 87% of the population wanted a progressive nuclear phase out.

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CHINA RETHINKS ITS NUCLEAR FUTURE

The Fukushima nuclear crisis has had an enormous impact on China. Given its geographical proximity to Japan and with a large Chinese population living and working in Japan, the Chinese government and a great many Chinese citizens have been keeping a close watch on the unfolding events.

(726.6128) Wen Bo - On March 16, the Chinese government held a high level State Council meeting to discuss the Japan nuclear crisis and to consider China's own nuclear planning. At the meeting, the government made three major decisions on nuclear power. Firstly, the government decided to halt its plan to build new nuclear power plants. Secondly, it ordered a re-examination of the safety risks of nuclear power stations currently under construction. Any safety faults discovered will lead to construction being stopped. Thirdly a decision was made to enhance the management of safety aspects of nuclear power stations currently in operation in China.

In a rare stand, the Chinese government indicated that the utmost priority should be attached to nuclear safety. China will also step up its process of drafting nuclear safety planning and adjust its middle and long term nuclear development plan. Any new nuclear plan will be shelved, including preliminary work.

Chinese media nuclear frenzy
Due to the fact that this is a nuclear crisis in Japan, Chinese media were allowed to report freely. Such a rare media freedom for coverage of nuclear issues offers a rare opportunity for Chinese media to introduce concerns over nuclear power and its related hazards and risks. Though some nuclear specialists, indeed most of them, are supportive of nuclear power, were invited to give comments on television programs; as a result, mounting concerns amongst the general public have emerged, largely making clear that they would rather not have nuclear power at all. Other scholars indicated this is a golden opportunity to popularize the issue and to increase knowledge amongst the public on nuclear radiation and safety measures.

The Chinese language newspaper Southern Metropolitan Daily also published a map outlining names and locations of all proposed Chinese nuclear plants, plants under construction, and those in operation. This is the first publicly released information on China's nuclear industry and planning. For the first time the Chinese public is able to know about many of these new nuclear plants and their locations. These revelations will surely generate a huge outcry and opposition from the public.

China Dialogue, a bilingual website featuring China environmental and development issues, also published a special series on China's nuclear power, *titled China's Nuclear Future.*

Caijing magazine also published a special edition on China's nuclear development and reexamined China's nuclear policies and management challenges.

NGO Reactions.
Chinese environmental group Green Earth Volunteers organized a journalist salon which included a briefing from a nuclear safety official Zhao Yamin on China's nuclear development on March 16, 2011. The event drew a large audience. Many journalists and attendants raised sharp questions over China's nuclear power plan and safety measures.

On March 25, the Heinrich Böll Foundation organized a seminar in Beijing, aiming at briefing Chinese journalists on nuclear safety issues.

On April 26, upon the 25 year anniversary of Chernobyl disaster, a local NGO Blue Dalian organized nuclear awareness activities at different campuses in Dalian and an evening candle visual activity to commemorate the tragedy. The activities have drawn official attention from Liaoning provincial government and subsequently, a number of student activists have been interrogated by their respective university authorities on their motivation and social links.

Chinese netizens have also been active in highlighting potential risks of nuclear power plants under construction or planned. For example, netizens in Dalian discovered Hongyanhe nuclear power plant in Liaoning province is built on Tan-Lu fault line. Such facts have not been mentioned before in official documents or public media. (A Netizen -from internet and citizen- or cybercitizen is a person actively involved in online communities).

Internal politics.
While most power companies are state owned, debates on nuclear power exist within Chinese government. Hydropower lobbyist and the like have criticized China nuclear power sector as "falling into a trap of American nuclear sales". They are quick in using Fukushima crisis as new reasoning for more state investment and favorable policies on hydropower sector.

While investments in nuclear construction are high, local governments in China are strong advocate for their nuclear

power projects and often use tactics of hijacking -- that is to ask for more funds, either bank loans or governmental investments, by threatening the loss of initial investment; or to force government to approve their nuclear plans by claiming potential financial loss of preliminary investment.

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THREE MELTDOWNS AT FUKUSHIMA; EVIDENCE SEVERE DAMAGE BEFORE TSUNAMI HIT REACTORS

Despite the lack of coverage in the international media, the situation at the Fukushima Daiichi nuclear plant in Japan remains, in the words of the International Atomic Energy Agency's weekly bulletin, "very serious". Meanwhile, it's becoming more and more clear that, contrary to earlier assumptions, the reactors were damaged by the earthquake rather than the tsunami, although the earthquake "did not exceed design base values significantly".

(727.6132) WISE Amsterdam - According to the Tepco 6-9 months scheme to stabilize the Fukushima Daiichi reactors, announced on April 17, the utility expected a sustained drop in radiation levels at the entire plant by July. Following that, a cold shutdown of reactors No. 1, 2 and 3 may take place as early as October, the utility announced then.

But that was predicated on the notion that it could efficiently cool the fuel in several reactors – a harder task if water is leaking out. The company had long suspected that the containment vessels at two other reactors were breached and leaking, but it had hoped the No. 1 reactor was intact and therefore easiest to bring under control.

Tepco was able to better access the reactor on May 12, because workers had recently been able to get close enough to fix a water gauge. It showed that the water level in the reactor was much lower than expected despite the infusion of tons of water. Previous readings had shown the water level to be at 1.6 meters below the top of the fuel rods in the reactor core. As it turned out, these measurements were false. The actual water level was five meters below the top of the fuel rods, leaving them fully exposed.

Tepco has been pumping water into the pressure vessels of reactors 1, 2 and 3 for weeks in a bid to lower temperatures. The low level of water in reactor 1 indicates that the molten fuel might have created a hole in the bottom of the steel pressure vessel. Tepco general manager Junichi Matsumoto told a press conference: "There must be a large leak... The fuel pellets likely melted and fell, and in the process may have damaged... the pressure vessel itself and created a hole."

Fukushima's temporarily sarcophagus.
According to an article in the Daily Mail (U.K.) polyester tents will be placed over the Fukushima Daiichi nuclear reactors in a bid to try and contain the escape of radioactive substances into the atmosphere. In June Tepco will start work on installing the first cover at the Daiichi No.1 reactor. The Japanese government plans to erect a steel framework and place a giant polyester tent-like cover around the reactor building - similar covers will be placed around units 3 and 4. Work on the huge protective tents is expected to be completed by the end of the year.

The discovery that the pressure vessel is leaking certainly complicates efforts to permanently stabilise the reactor and prevent the further spread of radiation.

Earthquake main reason for failures?
Meanwhile, evidence is growing that Unit 1's meltdown was initiated by the earthquake and only exacerbated by the ensuing tsunami. Bloomberg reports that a radiation alarm inside Unit 1 went off before the tsunami even arrived, indicating coolant already had been lost and fuel melting had begun. If true, this could also require a re-assessment of how quickly reactors can melt down. Tepco said May 16, that radiation levels inside Unit 1 were measured at 300 MilliSieverts/hour within hours of the earthquake - meaning that fuel melting already had begun. For melting to have begun that early, coolant must have been lost almost immediately. It's now believed that fuel melted and dropped to the bottom of the containment - melting a hole into it, within 16 hours. Most likely, a major pipe carrying cooling water to the core was damaged by the earthquake, which should lead to a new evaluation of the ability of key reactor components to withstand seismic events.

According to Arnie Gunderson (a former nuclear industry senior vice president, and energy advisor with 39-years of nuclear power engineering experience) of Fairewind Associates, who is citing a report by Siemens, Unit 4's fuel pool cracked from the earthquake, not from the tsunami.

The Nuclear and Industrial Safety Agency has so far said (as has the international nuclear industry) that the reactor withstood shaking but tsunami of an unexpected scale caused power loss, which led to an explosion.

On May 16, Tepco disclosed internal documents and data indicating the isolation condenser may have been manually shut down around 3 p.m. March 11 following the massive quake at 2:46 p.m. The plant was hit by tsunami around 3:30 p.m. The isolation condenser is designed to inject water into the reactor for at least eight hours after the main coolant system loses power, as happened March 11. "It is possible that a worker may have manually closed the valve (of the isolation condenser) to prevent a rapid decrease in temperature,

as is stipulated by a reactor operating guideline," Tepco spokesman Hajime Motojuku told The Japan Times. A worker may have stopped the condenser to keep cold water from coming into contact with the hot steel of the reactor to prevent it from being damaged.

However, nuclear reactors are designed to withstand this procedure in case of an emergency, said Hiromi Ogawa, a former nuclear plant engineer at Toshiba Corp. According to Tepco, the isolation condenser's valve was confirmed open at 6:10 p.m. March 11 but it is unknown whether it was open between 3 p.m. and 6:10 p.m. The valve was confirmed closed at 6:25 p.m. and confirmed open again at 9:30 p.m. Finally, the condenser was shut down due to a pump malfunction at 1:48 a.m. March 12, roughly eight hours after the tsunami, matching the battery life of the isolation condenser.

Radiation leak before Tsunami?
Only a few days after the revelations about the failure of the cooling before the tsunami hit the plant, another revelation, with possible grave consequences, hit the media.
A radiation monitoring post on the perimeter of the Daiichi plant about 1.5 kilometers from the No. 1 reactor went off at 3:29 p.m., minutes before the station was overwhelmed by the tsunami that knocked out backup power that kept reactor cooling systems running, according to documents supplied by the company. The monitor was set to go off at high levels of radiation, an official said.

“We are still investigating whether the monitoring post was working properly,” said Teruaki Kobayashi, the company’s head of nuclear facility management. “There is a possibility that radiation leaked before the tsunami arrived.” Kobayashi said he didn’t have the exact radiation reading that would trigger the sensor.

Until recently Tepco said the plant stood up to the magnitude-9 quake and was crippled by the tsunami that followed. This early radiation alarm has implications for other reactors in Japan, one of the most earthquake prone countries in the world, because safety upgrades ordered by the government since March 11 have focused on the threat from tsunamis, rather than earthquakes.

So it's becoming more and more clear that, contrary to earlier assumptions, the reactors were already severely damaged by the earthquake before the tsunami hit the reactors. And that is despite the fact that the earthquake "did not exceed design base values significantly", according to an important Dutch nuclear lobbyist of the Technical University Delft Jan Leen Kloosterman, before news of damage before the tsunami even hit the reactors became public. He put it this way in a meeting on May 13: "If seismic data can be confirmed, practically all damage at Fukushima-Daiichi would have to be contributed to the tsunami." That would suit them well. Gunderson: "This wasn't, at Fukushima, that big an earthquake. It was, out at sea a nine, but by the time it got to Fukushima, they should have been able to ride out that storm, at least the seizmic issues of it. But what that says is that what we have been relying on in analyzing these plants may not be working. Two out of the four plants developed cracks from an earthquake and they should have been able to get through this."

On May 24, Tepco confirmed finally what everybody except Tepco and the international pro-nuclear community already knew: that fresh data from Units 2 and 3 indicate that fuel rods in those reactors are “in a similar state as that in reactor number 1”. That is: fallen into a lump at the bottom of the pressure vessel. Three melt downs confirmed.

More evacuations; and more to come?
More than 2 months after March 11, residents of Kawamatamachi and Iitatemura, both in Fukushima Prefecture, began evacuating on May 15, to avoid high-level radiation. Farewell ceremonies were held in both municipalities. About 1,200 residents in Kawamatamachi will evacuate from their homes. In Iitatemura, about 4,500 residents will move from the village to accommodations in Fukushima city, such as housing for local government officials and hot spring hotels. Most of Iitatemura is located more than 30 kilometers from the Fukushima No. 1 power plant.

Around 70,000 people, including 9,500 children aged up to 14, live in the area, "the most contaminated territory outside the evacuation zone," according to a report by France's Institute for Radiological Protection and Nuclear Safety (IRSN). Updating its assessment of the March 11 disaster, IRSN highlighted an area northwest of the plant that lies beyond the 20-km zone whose inhabitants have already been evacuated. Radioactivity levels in this area range from several hundred becquerels per square meter to thousands or even several million becquerels per square meter, the IRSN report, issued May 23, said. "These are people who are still to be evacuated, in addition to those who were evacuated during the emergency phase in March," Didier Champion, IRSN’s environment director, told AFP.

Internal contamination after visiting Fukushima
The engineering details of the Fukushima tragedy are beginning to be admitted publicly, while the biomedical details are still being glossed over. With fuel melting, vastly greater amounts of radio-active materials are released from the core than occur with the lesser types of fuel damage that had been postulated earlier.

Dozens of different species of radioactive materials were released in the form of vapours or particulates, susceptible for inhalation or ingestion by humans and animals, likely to be tracked into homes, schools and offices after being deposited in clothing, skin or hair.

The discovery that almost 5000 nuclear workers have now shown signs of internal radioactive contamination after simply visiting the Fukushima site guarantees that Japanese citizens of all ages from the nearby areas have also experienced some degree of internal deposition of radioactive materials in their bodies. Nursing mothers are now showing measurable amounts of radioactive contamination from Fukushima in their milk.

The decision of the Japanese government to allow children in dozens of schools to be exposed to levels of atomic radiation up to 20 millisieverts per year is irresponsible and deserves to be denounced. Not only are children much more susceptible to the harmful effects of radiation exposure than adults, but they are much more likely to track radioactive contaminants into their homes and schools in the form of dirt and dust, soiled hands and fingernails, and dirty play-clothes.

June 11: Global Day of Action
Meanwhile, anti-nuclear protest continue. On May 23, furious parents from the Fukushima region and hundreds of their supporters rallied in Tokyo against revised nuclear safety standards in schools (see also Nuclear Monitor 726). Japanese children can now be exposed to 20 times the radiation that was permissible before the March 11

earthquake and tsunami that caused meltdowns at Fukushima Daiichi. Around 400 protesters, many from areas around the stricken plant, flocked to the education and science ministry to demand a rethink on the new limit, which allows exposure of up to 20 millisieverts a year. A group of Fukushima residents submitted a letter for the education minister demanding the ministry do all it can to lower radiation levels at schools and offer financial support.

Many citizens and groups in Japan have started organizing June 11 actions like demonstrations or parades. The day marks three months after the Fukushima nuclear disaster triggered by the earthquake and tsunami. The plants are still spewing radioactive materials. No one wants such dirty electricity harmful to human and nature.

"Join Japanese groups on June 11th with million-people action throughout the world and let our voice be heard. We need your support to spread our message and hear from as many people on Earth as possible. We appreciate it if you decide to organize your own demonstrations, parades, gatherings, or anything on June 11th or 12th.
Our solidarity, if you are in Japan, in Asia, in Europe, in Americas, or anywhere in this world, will soon end this dark age of nuclear power generation".
Please, endorse the June 11 actions and list your own action at:
http://nonukes.jp/wordpress/?page_id=137
Endorsing groups or organizations will be publicized on the website.

Sources: Mainichi Daily News, 15 & 21 May 2011 / Godon Edwards CCNR, 24 May 2011 / AFP, 24 May 2011 / Japan Times, 17 May / Bloomberg, 12 & 19 May 2011 / Japan Today, 24 May 2011 / http://www.fairewinds.com/content/implications-fukushima-accident-worlds-operating-reactors / Daily Yomiuri Online, 16 May 2011 / NIRS updates / Jan Leen Kloosterman, presentation Fukushima 2011 on 13 May, The Hague, Netherlands, available at: http://www.nrg.eu/docs/kivi/2011/20110513-fukushima-ongeval.pdf (in English)
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FUKUSHIMA'S BLAST WAVE IN FRENCH NUCLEAR DEBATE

A few months ago, any foreigner would have described France as the ever-lasting kingdom of the atom. In the French Republic, nuclear power appeared as one of the most representative remainders of absolute monarchy: only the case of the Prince and His close advisers, and not to be called into question. A broad political consensus maintained the status quo. From conservatives to the communists (except the Greens and some small left-wing parties only), the whole political class would support nuclear power, in the name of national independence, industrial pride or faith in technology.

(727.6133) Reseau 'Sortir du nucleaire' - Many local antinuclear groups were active in local resistance, but without being taken seriously, and their influence was by no way comparable with the powerful nuclear lobby and its propaganda. Decades of nuclear brainwashing had succeeded in making the population, if not supportive, at least passive and resigned. After the tale of "the energy of the future", loads of "all-your-appliances-are-nuclear-and-so-what?"-advertisements in the nineties, the widely-spread myth of climate-friendly nuclear power, and even a 20-million-Euro luxurious animated movie ending with sexy young people dancing on *Funky Town* in a nuclear-powered party… no wonder that many people would think "Nuclear power ? Well, maybe it's not all clean, but we just cannot do without it!". Chernobyl? Well… it was in Soviet Ukraine, in a remote and backward state; it couldn't happen now in a modern country…"

A tsunami over nuclear France
And then the unexpected happened. On March 11, the tsunami and the earthquake did not crippled only the Fukushima nuclear power plant. The blast wave also hit the French media and public opinion.

Unlike after the Chernobyl accident, the media focused immediately on the catastrophe and on the internet information coul;d be found, which made it not possible for the nuclear lobby to set a information black-out. The usual nuclear promoters made a quite low profile, official safety authorities did not really denied the seriousness of the accident… while antinuclear groups and independent organizations like CRIIRAD (the Independent Research and Information Commission on Radioactivity, founded in 1986 just after the Chernobyl accident) were suddenly bombarded with enquiries by journalists. As a result, French nuclear issues were addressed: what about the safety of our facilities? Are they earthquake-proof? Shouldn't the older plants be closed? By the way, are there any plans to phase-out nuclear energy in France?

Suddenly, the myth of safe nuclear power broke into pieces, people realizing that the accident, after all, was possible everywhere. The latent feeling of being lied to by the political elite, which was already very strong, swelled again. Many people who had never been activists, or who had withdrawn themselves from any commitment, felt the need to take action. In the very week-end following the catastrophe, and in the days and weeks there after, antinuclear gatherings and protests proliferated.

A few months earlier, a call for action had been sent by the French antinuclear network "Sortir du nucléaire" to commemorate the 25th Chernobyl anniversary. With the Fukushima accident, this call got an echo like never before in the late history of the French antinuclear movement, with 366 actions all over the country. This bears no comparison with the huge demonstration happening in Germany at the same time, but in the French nuclear kingdom, it represents a lot.

Nuclear power becomes a political issue

With the Fukushima accident, the political class felt that it had to take a new stance on nuclear power. Of course, the ruling right-wing Union pour un Mouvement Populaire stuck stubbornly to the nuclear option. President Sarkozy (also UMP), one of the most enthusiastic nuclear power advocates, even made a trip to Japan only three weeks after the beginning of the catastrophe, to express clearly that nothing would change its plan to promote nuclear power worldwide. He even claimed that phasing out nuclear power would be like cutting one's arm, vilifying the fools who wanted to "go back heating themselves with candles".

On the other hand, the debate divided the social-democratic Socialist Party. The few antinuclear voices got more self-assured, and First Secretary Martine Aubry even expressed herself in favour of nuclear phaseout within 20 to 30 years. However, some other heads of the party, reacting quite violently, immediately tried to marginalise this point of view, claiming it not to be representative of the Party. The socialist program for the 2012 presidential elections therefore appeared as a battlefield where the few energy experts had tried to push nuclear phase-out in, before more influential elected representatives re-wrote it, adding long praises to an industrial flagship that should not get lost. This conflict reflects the growing gap between party elites and their electoral basis, now mostly supporting the end of the nuclear age.

However, possible change could happen in the coming months. The Strauss-Kahn affair put offside the "natural" socialist candidate, maybe leaving a chance for Martine Aubry and the more antinuclear wing of the party. Above all, the bargaining phase between the Socialists and the rising Green party Europe Ecologie-Les Verts, in the perspective of legislative elections next year, could play a key role. Some may have told that, for some years now, the nuclear issue did not stand in the forefront of the Green program, with the rise of newer issues like global warming and the party's attempt to address people with no specific environmental background in the frame of "Europe Ecologie". But it seems that this era is over now: nuclear phaseout has become the main point, strongly endorsed by all potential candidates. It is now seen as the very issue on which Europe Ecologie-Les Verts won't give in, in any agreement with the socialists.

Is France "resilient"?

Finally, another thing that is still not clear is the question whether, after the shock, nuclear power will remain an important issue in French political debates, given that environmental problems have never been allowed a big place in France. If the media slowly forgets the still ongoing catastrophe and other issues come in the forefront, like unemployment or the ugly arguments about "national identity" pushed by the extreme-right, then the need to phase-out nuclear power could shift to the background again. In late March, a leaked Powerpoint presentation from Areva mentioned a "resilient public opinion". It is now up to the French antinuclear organizations to make sure that a nuclear phase-out does not remain only an environmental issue, but becomes a social issue.

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THE ONGOING FUKUSHIMA NUCLEAR DISASTER AND THE CONTINUING IMPACT

Four months after the earthquake and the resulting tsunami damaged the Fukushima Daiichi Nuclear Power Plant senior engineers at Tokyo Electric Power Co. (Tepco) admit that they knew that a potentially dangerous design flaw in five of the nuclear reactors weren't fully upgraded, the Wall Street Journal reported on July 1. Meanwhile the nuclear power plant continues to leak large amounts of radioactive substances. After initially problems and failures, workers succeeded in setting up a machinery to clean contaminated water and then use it to cool the reactors, while other workers had to repair a leaking hose in reactor 5 and to double the amount of water being injected into unit 1 after the water level decreased. Tepco said it will soon begin injecting nitrogen into reactor 3 to prevent a hydrogen explosion. Medical tests in Fukushima prefecture reveal that almost half of the children tested positive for thyroid exposure. High levels of cesium were found in the soil at four locations of Fukushima city, 60 km away. The scientist who coordinated this soil survey says that these areas have to evacuated.

(730.6151) Laka Foundation – In what could be an attempt to distract attention from generic unsafe nuclear reactors to 'specific unsolved safety problems at Fukushima', former senior and current engineers at Tepco, including those who were involved when the design decisions were made in the 1970s, stated that Tepco knew for years that five of its Fukushima nuclear reactors had a potentially dangerous design flaw. The company, however, didn't fully upgrade them, dooming them to failure when the earthquake hit, according to the statement. Tepco used two different designs for safeguarding its 10 reactors in Fukushima Daiichi and Daini. After the March 11 quake, the five reactors with the newer design withstood the resulting 12-meter tsunami without their vital cooling systems failing. Those reactors shut down safely. The cooling systems of four units with older designs, however, failed, and the backup generators and other equipment for switching were flooded, ultimately causing melt downs in three reactors.

Some of the engineers declared that Tepco had opportunities to retrofit the

oldest reactors in the past decades. They blame a combination of complacency, cost-cutting pressures and lax regulation for the failure to do so (not extra-ordinary for Tepco, considering it's history). However, spokesman for Tepco declined to comment for this story, citing the Japanese government's ongoing investigation into the cause of the accident.

Because Tepco's first reactor buildings were small, the generators had to go somewhere else. They put them into neighboring structures that house turbines. The reactor buildings had thick concrete walls and dual sets of sturdy doors. The turbine buildings were far less sturdy, especially their doors. “Backup power generators are critical safety equipment, and it should have been a no-brainer to put them inside the reactor buildings,” one of the senior engineers says. Kiyoshi Kishi, a former Tepco executive in charge of nuclear-plant engineering, says that people thought a large tsunami on Fukushima's Pacific coast was “impossible.” Later Tepco adjusted some parts of the plant to address tsunamis less than half the height of the one that hit in March. “Some of us knew all along and were concerned about the inconsistent placements of diesel generators at Fukushima Daiichi between reactor No. 6 and the older reactors 1 through 5, and their potential vulnerability,” says one of Tepco's top engineers who has guided the company's nuclear division. In 2001, when the original 30-year operating permit for Daiichi's unit 1 reactor was set to expire, Tepco applied for and received a 10-year extension. It got another one earlier this year, just five weeks before the accident. Regulators never reviewed whether the basic blueprint of the older reactors was flawed, the abbreviated minutes of government deliberations show.

Ongoing problems at Fukushima NPP

Meanwhile the crisis at Fukushima Daiichi NPP is far from over. Tepco and the Japanese government have admitted to three 100 percent meltdowns, but can't confirm with any reliability the current state of those cores. There's reason to believe one or more have progressed to “melt-throughs” in which they burn through the stainless steel pressure vessel and onto the containment floor. The molten cores may be covered with water. But whether they can melt further through the containments and into the ground remains unclear. At least three explosions have occurred, one of which may have involved criticality. Unit 4 is cracked and sinking. The status of its used radioactive fuel pool, which has clearly caught fire, is uncertain. Also unclear is the ability of the owners to sustain the stability of reactors 5 and 6, which were shut when the quake/tsunami hit.

Angry Tepco shareholders.

On June 28, angry shareholders lashed out at Tepco, demanding a retreat from nuclear power and the chairman's resignation over the crisis at the Fukushima nuclear plant.

Anti-nuclear groups rallied around the Tokyo hotel where Tepco's meeting was held, foreshadowing the complaints that would be heard inside. Although the meeting was scheduled to begin at 10 a.m., shareholders were still registering to enter at that time. As of 3:30 p.m., 9,302 shareholders had shown up, far exceeding the previous high of 3,342 who attended last year's Tepco meeting. Many could not enter the room where Tepco management was seated and were forced to use separate rooms with video monitors displaying the meeting.

A proposal submitted by 402 shareholders called on Tepco management to stop operations and decommission nuclear reactors starting with the oldest ones and not to construct new ones. However, the proposal failed to gain the approval of the required two-thirds of shareholders in attendance.

Three other electric utilities had similar experiences at their shareholders' meetings.

Asahi.com, 29 June 2011

Workers have now finally set up a system to clean contaminated water and then use it to cool the reactors. Establishing a closed cooling system is a key step to bringing the crisis under control. Hosing down the reactors from outside has left the facility with 100,000 tons of irradiated water. Tepco said cooling was lost temporarily on July 3 in reactor 5. A shutdown of the cooling system became necessary in order to replace a leaking plastic hose. The cooling operation resumed a few hours later. The temperature of the reactor was 43.1 degrees Celsius at the time of the cooling system shutdown. It continued to rise during the few hours that it took to replace the hose, but did not exceed 48 Celsius degrees overnight, Tepco said. If the leak had not been spotted, the reactor would have reached the boiling point within 24 hours, causing all the water to evaporate, which would expose the rods, placing the reactor in danger of a core meltdown. According to the utility the crack was the result of hydraulic pressure caused by tides and seawater. It plans to install a support structure to prevent the hose from rocking. The leaking hose was the first of two incidents in early July. Workers at the plant had to double the amount of water being injected into unit 1 after the water level decreased from 3.7 tons of water to 3 tons, setting off an alarm. The problem was suspected to be caused by debris that had accumulated inside the hoses resulting in a clog that reduced the water flow.

Meanwhile, Tepco said July 3 that it installed about 50 iron sheets on the floor of the reactor 3 building to shield against radiation. While the inside of the building has high levels of radiation mainly due to a hydrogen explosion on March 14, which is hampering reconstruction work, the utility said it aims to reduce radiation levels by one-third or more. High levels of radiation were detected on the first floor of the reactor building, measuring 58-178 mSv/hr as of June 24. In an effort to lower radiation levels, Tepco used a robot to clean the floor on July 1, but the radiation levels as of July 3 remained as high as 50-186 mSv/hr. On July 9, Tepco said it will soon begin injecting nitrogen into reactor 3 to prevent a hydrogen explosion. Tepco says it could achieve stable cooling of all the crippled reactors by mid-July as initially planned. The injection of nitrogen into reactor 3 will be carried out as soon as Tepco gets the green light from the Nuclear and Industrial Safety Agency and local governments. Tepco has already began injecting nitrogen into reactors 1 and 2. Tepco began injecting nitrogen in unit 1 in April. This wasn't possible for unit 3 because excessively high radiation prevented workers from laying the necessary groundwork. The utility said it can start the injection after connecting hoses to the necessary pipes at the reactor. Still, high levels of radiation at reactor building 3 could prevent workers from carrying out the nitrogen injection, a Tepco official said.

Thyroid exposure to radiation

About 45 per cent of the children in Fukushima prefecture have experienced thyroid exposure to radiation, according to an investigation led by the Japanese

Nuclear Safety Commission. In late March, the Commission conducted the testing on 1,080 kids from infants to 15 year-olds and maintains the exposure is minimal and doesn't warrant further examination. Among children who tested positive for thyroid exposure, the amounts measured 0.04 microsieverts per hour (μSv/hr) or less in most cases, while the largest exposure was 0.1 μSv/hr, equivalent to a yearly dose of 50 mSv for a one-year-old baby.

Hot spots in Fukushima

A soil survey at four locations in Fukushima city found all samples were contaminated with cesium-137, measuring 16,000 to 46,000 becquerels per kilogram (Bq/kg), exceeding the official limit of 10,000 Bq/kg, citizens groups said. Measured in sieverts the survey showed radiation levels exceeding 13 mSv/yr, more than six times natural levels. The city of 300,000 is located far from the 20-km zone around the plant, about 60 km from Fukushima NPP. The group detected as much as 931,000 Bq/m2 at one location, above the 555,000-Bq limit for compulsory resettlement ordered by Soviet authorities following the 1986 Chernobyl nuclear disaster in Ukraine. Samples from the other three locations measured between 326,000 and 384,000 Bq/m2. The citizens' groups - the Fukushima Network for Saving Children from Radiation and five other non-governmental organizations - have called for the evacuation of pregnant women and children from the town. Kobe University radiation expert professor Tomoya Yamauchi conducted the survey on June 26 following a request from the groups. “Soil contamination is spreading in the city,” Yamauchi said in a statement. “Children are playing with the soil, meaning they are playing with high levels of radioactive substances. Evacuation must be conducted as soon as possible.”

Increasingly panicked residents take matters into their own hands. They scoop up soil from their gardens and dump it in holes dug out in open spaces in the surroundings, scrub their roofs and refuse to let their children play outside. They are scrambling to cope with contamination on their own in the absence of a long-term plan from the government. Experts, however, warn that their do-it-yourself efforts to reduce contamination risk making matters worse by allowing radiation to spread without monitoring and by creating hotspots of high radioactivity where soil is piled high. They say the longer it takes Japanese authorities to organize a clean-up the greater the risk of additional, long-lasting damage. “Such clusters of radiation can also leak into the groundwater and pose more health hazards for a sustained period,” said Takumi Gotoh, a cancer specialist. “That's why Japan urgently needs a comprehensive, long-term plan to deal with the issue,” Gotoh said.

The International Commission on Radiological Protection (ICRP) has issued guidelines that urge governments dealing with a nuclear emergency to set up a radiation monitoring system with a detailed read-out on hotspots and a health monitoring system for the affected population. While checking radiation in schools is now commonplace, health check-ups have only started in the worst-affected areas. Tokyo has promised that the radiation hotspot map will be ready by October - seven months after the disaster.

High levels of cesium in tea leaves

Besides Fukushima prefecture, excessive levels of cesium-137 have been detected in samples of tea leaves in Chiba prefecture. The health ministry asked the Chiba prefecture authority to expand a restriction on shipments of tea leaves produced near Katsuura city in addition to six areas in the prefecture restricted on June 2. Dried leaves from Katsuura city, 78 km from Tokyo, had radiation levels exceeding safety standards, the health ministry said. The leaves had 2,300 Bq/kg, more than the government safety standard of 500 Bq/kg, according to a statement on July 1 by the local government. The country’s tea production, including fresh and dried leaves, was worth 102.1bn yen (US$1.3bn) in 2009, according to the agriculture ministry. Tea from Japan’s Shizuoka prefecture had above-standard cesium levels three months after radiation leaked from the plant about 360 kilometers from the area. Shizuoka, which accounts for about 40 percent of the nation’s tea output and lies southwest of Tokyo, asked farmers in June to recall products and halt shipments. Other products including spinach, mushrooms, bamboo shoots, milk, plums and fish have been found to be contaminated with cesium and iodine as far as 360 kilometer from

UK government 'in bed with nuclear industry'

Officials from the UK government approached nuclear companies to draw up a co-ordinated PR strategy to play down the Fukushima nuclear accident just two days after the earthquake and tsunami and before the extent of the disaster was known. At least 80 e-mails seen by The Guardian are described as “Orwellian”. Two UK government departments were working with nuclear companies to spin one of the biggest industrial catastrophes of the last 50 years, even as people were dying and a vast area was being made uninhabitable for generations. The e-mails show how the business and energy departments worked closely behind the scenes with the multinational companies EDF Energy, Areva and Westinghouse to try to ensure the accident did not derail their plans for a new generation of nuclear stations in the UK. “This has the potential to set the nuclear industry back globally,” wrote one official at the Department for Business, Innovation and Skills (BIS), The Guardian reported. “We need to ensure the anti-nuclear chaps and chapesses do not gain ground on this. We need to occupy the territory and hold it. We really need to show the safety of nuclear.”

The e-mails makes clear how a weak government is controlled by a powerful industry colluding to misinform the public and the media. We now know Fukushima is at least on the same scale as Chernobyl, and likely to be the most expensive accident in the history of industrial accidents. Yet industry and government here want to dismiss it as “not as bad as it looks”. Much more than the facts coming out of Japan, the emails now make the situation far worse for the industry caught with government trying to manipulate the truth.

Or, as John Vidal puts it in his July 1, Guardian article: "These guys –industry and government (Laka)- were not just cosy. They were naked, in bed and consenting. Their closeness now raises questions such as what influence could the industry have had on the chief nuclear inspector's report on Fukushima, and whether speeches by David Cameron, Chris Huhne and other ministers wefre informed or even written by the industry. Can we ever trust government to tell us the thruth on nuclear power, or should we just accept that the industry and government are now as one."

The Guardian, 30 June 2010: Revealed: British government's plan to play down Fukushima (amended 1 July 2011); The Guardian, 1 July 2011: Fukushima spin was Orwellian

Fukushima Daiichi nuclear power plant and the London-based World Nuclear Association has warned that prolonged exposure to radiation in the air, ground and food can cause leukemia and other cancers.

Cesium found in Tokyo's tap water
Cesium-137 was found in Tokyo's tap water. The level discovered, 0,14 Bq/kg, was below the safety limit set by the government. According to the Tokyo Metropolitan Institute of Public Health no cesium-134 or iodine-131 was detected. In March, after radioactive iodine was found in the city's supply at levels twice the allowable limit for infants, Tokyo's metropolitan government warned residents not to give tap water to small children.

Compensation and reconstruction budgets
Japan's government has approved a second budget of 2tn yen (US$24.7bn) for reconstruction. The money will be spent on rebuilding, and on compensating victims of the Fukushima nuclear crisis. About 85,000 people have been forced to evacuate the area around the plant. This emergency budget will be sent to parliament for approval this July. In June, Prime Minister Naoto Kan survived a no-confidence motion brought by MPs critical of his handling of the reconstruction process. Mr Kan, who is just over a year into his post, has vowed to step down soon, but only once several key bills on disaster recovery and renewable energy are passed.

Japanese families who had to flee their homes because of the nuclear disaster will receive additional compensation of up to US$3,700 per person. The money, following earlier payments of US$12,300 per household, is meant to compensate the radiation refugees for their “mental suffering”, Industry Minister Banri Kaieda said, according to the Kyodo News agency. Tepco estimates that the new round of payouts will total up to 48 billion yen (US$592m). The utility will give the new payments to 160,000 people who have fled from a 30-km radius around the NPP, including a 20 km legal no-go zone, and from other radiation hotspots further afield. The new payments take into account the time families have spent away from their homes so far, and amount to 100,000 yen (US$1,234) per person per month. Those who have returned home will be paid for the period they were gone.

Avoiding power shortages
Japan will conduct new safety tests of all its nuclear reactors, the nation’s top energy official said. After the start of the Fukushima nuclear accident, reactors had to be shut down and delays in restarting others already undergoing regular maintenance checks mean that only 19 of Japan's 54 reactors are currently operating, hindering the county's effort to recover. Trade Minister Banri Kaieda said Japan's reactors would undergo "stress tests" to determine how well they can withstand major disasters. The government is worried that unless more rectors are restarted the country could soon experience power shortages. Although safety checks are already being carried out on all of Japan's nuclear reactors, the government said the new round of testing would focus on their resilience to extreme and multiple disasters. The chief cabinet secretary, Yukio Edano, said the tests would be modeled on those under way at 143 reactors in the European Union. Speaking on Japanese television, Mr Kaieda said: "We are planning the stress tests to gain the understanding of local residents. We will get further confidence from the people and will restart operations at some plants." He did not say when the stress tests would begin; however, he promised there would be enough energy available for the peak usage during the summer months.

As said, only 19 of Japan's 54 reactors are currently operating. On July 1, the government imposed restrictions on electricity consumption by large-lot users in eastern and northeastern Japan to avert power shortages. Major companies in Japan began operating on weekends to avoid the concentration of electricity use on weekdays. Although the government's curb on power consumption applies only to large-lot users in the service areas of Tokyo Electric Power Co. and Tohoku Electric Power Co. in eastern and northeastern Japan, respectively, some factories and companies in other regions will also operate on the weekends as the automobile industry's supply chain is spread across the country.
Large-lot users in the areas are required in principle to reduce peak-time electricity consumption by 15 percent from a year earlier. Hospitals that provide emergency treatment and shelters for evacuees from the March 11 disaster are exempted, while the reduction target will be relaxed to up to 10 percent for medical, nursing-care and transportation service providers.

What was that again about nuclear power being necessary for energy security reasons?

Sources: The Asahi Shimbun, 5 July, 2011: Leaky hose temporarily halts reactor cooling system; VPR News, 5 July, 2011: What Went Wrong In Fukushima: The Human Factor; NTI, 5 July 2011: New Equipment Cleaning Japan Plant Coolant; The Huffington Post, 5 July 2011: Fukushima Spews, Los Alamos Burns, Vermont Rages and We've Almost Lost Nebraska; Harvey Wasserman; UPI, 4 July 2011: Fukushima reactor cooling problem fixed; Digital Journal, 5 July 2011: Cooling of Fukushima nuclear reactor interrupted; Wall Street Journal, 1 July 2011: Design Flaw Fueled Nuclear Disaster; Moscow Time, 6 July 2011: Fukushima-1: secrets revealed; International Business Times, 4 July 2011: Fukushima: Radioactive cesium-137 found in Tokyo’s tap water; The Hindu, 5 July, 2011: 45 per cent of Fukushima children had thyroid exposure to radiation; Kyodo, 4 July, 2011; Business Insider, 5 July, 2011: Almost Half The Kids In Fukushima Have Thyroid Radiation Exposure; AFP, 5 July, 2010: Japan Soil Found Radioactive Outside Evacuation Zone; Bloomberg News, 05 July 2011: Japan expands tea restrictions as more radioactive samples found; Reuters, 4 July 2011: Fukushima residents dump radiated soil in absence of plan; BBC News, 4 July, 2011: Life on the edge of Japan's nuclear contamination zone; Channel News Asia, 5 July 2011: Japan radiation refugees to get more compensation; The Japan Times, 9 July 2011: Tepco to soon inject unit 3 with nitrogen; International Business Times, 6 July 2011: Fukushima nuclear crisis: Japan faces power shortages; BBC News, 6 July 2011: Japan to hold stress tests at all nuclear plants; New York Times, 7 July 2011: Japan Plans Safety Tests of Nuclear Plants; Mainichi Daily News, 2 July 2011: Major firms begin operating on weekends to save power
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TAIWAN AFTER FUKUSHIMA

Since the Fukushima disaster, NGOs hosted two major demonstrations, on March 20 and April 30, as well as many ongoing nationwide activities. Two days after the Fukushima disaster, Deputy Chair of the Atomic Energy Council, Taiwan's regulatory body, assured the Legislators that Taiwan's six operating nuclear reactors are as safe as "Buddha sitting comfortably on her lotus platform".

(731.6157) Taiwan Environmental Protection Union - NGOs and some Legislators called for abolishing the construction of the 4th nuclear power plant, and immediate stopping the 6 operating reactors for thorough safety check-ups. Taiwan has three operating nuclear power plants: Chinshan, Kuosheng, and Maanshan, with two reactors each. The fourth plant, Lungmen, two 1300MW ABWR, is under construction.

On March 15, President Ma, of the pronuclear KMT party, said there is no need to change the current nuclear policy. "The existing 6 reactors will keep running till serious incidences emerge. Since no signs of emergency occurs, no need to stop these reactors." "Once real serious incidences occur, reactors will be abandoned immediately to protect the public". President Ma's announcements were criticized as "nonsense and stupidity" by non-governmental organizations. In addition, AEC officials said that radioactivity from Fukushima reaching Taiwan is impossible. Only a few days later they were forced to admit that vegetables in northern Taiwan were found to be contaminated.

One survey conducted by the opposition Democratic Progressive Party, DPP, on March 16, shows 50.6% of the Taiwanese population has little confidence in nuclear plant operation; 61.1% has little confidence in government's ability of handling the crisis and 76.5% agrees that the construction of the 4th nuclear power plant should temporarily be stopped till reactor safety are warrant. Another survey conducted by the Taiwan Thinktank, on March 17th shows 58% agrees that construction of 4th nuclear power plant should be stopped and should be re-evaluated; 65% worries about nuclear safety; 79% does not know how to evacuate and how to cope with a nuclear accident if it occurs in Taiwan; 56% suspect that radioactive nuclei from Fukushima can travel to Taiwan; and finally 74.6% of people in Taiwan do not accept AEC's analogy that Taiwan's nuclear plants are as safe as Buddha on her lotus seat.

On May 30, maybe concerned about possible influences of the nuclear issue on the Presidential and parliamentary elections next January, the Ministry of Economic Affairs announced "no lifetime extensions (after 40 years' operation) for current reactors" and "no 4th nuclear power plant operation unless safety is guaranteed". Before the Fukushima incident, the Ministry of Economic Affairs sent its energy policy to the Environmental Protection Agency for policy Environmental Impact Assessment. That particular energy policy was formed August 2010, with expansion of nuclear and coal at its core. One week before the May 30 announcement, the Ministry quietly retracted its energy policy from EPA.

As reported in the Nuclear Monitor 688, May 7, 2009, the Atomic Energy Council revealed that between January and November 2007, state-owned Taipower changed the 4th nuclear plant design in 395 places without applying permission from the Atomic Energy Council, as law requires. Taipower was fined 4 million NT dollars for misconduct (US$ 139,000 or 100,000 euro). However, additional more than 700 safety related design changes without approval were discovered in January 2011. On March 8, three days before the Fukushima disaster, AEC fined Taipower 15 million NT dollars, and sent the case to the prosecutor for violating "Nuclear Reactor Facilities Regulatory Acts". This is a bold and unprecedented act from the rather weak AEC. At the deadline of this article, July 25, one cannot be sure whether AEC will act as strong in the future, and eventually shut the 4th nuclear power plant, or if AEC is just a dummy testing political winds.

Source and contact: Gloria Hsu, Taiwan Environmental Protection Union, TEPU.
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SPAIN: LARGE ANTI-NUCLEAR CAMPAIGNS AFTER FUKUSHIMA

Fukushima has had a big impact in Spain, mainly in Catalonia, as this country is one of the most nuclearized countries of the world. In 2010, almost 50% of all the generated electricity in Catalonia was nuclear. The main issue is the extension of operational licenses of several reactors

(731.6158) Grup de Cientifics I Tecnics per un Futur No Nuclear - Despite the lack of serious information about the Fukushima nuclear accident in the main media, a coalition of anti-nuclear Catalan groups just after the Fukushima accident called for a sit-in in front of the Catalan government and City Council main buildings (17 March 2011). Also they succeed in organizing a big march (supported by more than 100 environmental, political, social and solidarity organisations), on Sunday 5 June 2011, the World Environment Day, from the Spanish Government Delegation building in Barcelona to the Endesa main office in the city. The Spanish Socialist Party won the elections with the commitment to establish a timetable to shutdown the nuclear reactors, but at present nothing has been decided and the only nuclear decision has been to extend the life of the oldest nuclear reactor operating in Spain (Santa María de

Garoña, GE BWR, similar to Fukushima number 1 unit).

Endesa was the former public utility that was privatized by the conservative government in 1998 and is now owned by Enel. Endesa, as public utility, played a main role in late seventies and early eighties buying shares of many Spanish private utilities engaged in building nuclear power plants that experienced big financial problems. And now Endesa owns 45.3% of all the nuclear power capacity in Spain (Iberdrola 44,9%, GasNatural Fenosa 7.5% and HC 2.1%). The antinuclear Barcelona march was attended by many thousands of people from all ages, showing a 250 square meter banner (15x15m) with a gigantic Smiling Sun logo.

The antinuclear march was a big success because since November 1989, just after the serious accident that Vandellos I reactor experienced on October of that year, not one antinuclear demonstration had been organized any place in Spain. Only the Barcelona based Group of Scientists and Technicians for a Non Nuclear Future (founded in Barcelona at the end of 1980 and registered as NGO just after the Chernobyl accident) was able to organize an annual event called the Catalan Conference for a Future Without Nuclear Power (since 1992 it was renamed as Catalan Conference for a Sustainable Energy Future Without Nuclear Power). During the last edition of the conference (the 25th) two main energy studies were presented: the SolarCat and the SosTec, the first showing two scenarios on how Catalonia could have a 100% renewable electricity system between 2030 and 2045 and the second exploring how to shutdown the three remaining nuclear reactors operating in Catalonia before 2020. As invited guests, Walt Patterson (author of many books on energy) and Javier García Breva (former IDAE director and now chairman of Renewables Foundation) were able to give lectures.

To understand the success of the present antinuclear events it is necessary to remember that on occasion of the 20th anniversary of Chernobyl accident (2006) in Barcelona a big antinuclear music festival around Earth Day was organized. In Barcelona, Catalonia Earth Day is organizing since 1996, an annual Earth Fair and the last editions of the Earth Fair were attended by 100.000 people). Also, in 2010, at the same event, a successful demonstration was organized to show the rejection of the proposal of the Spanish Government plans to build a Nuclear Waste Centralised Storage facility. Many thousands of people with antinuclear face-masks, showed the opposition to the project. And a few weeks before the June 5 march, another massive antinuclear event during the Earth Fair was organized and attended by many thousands of people.

After the Fukushima nuclear disaster other antinuclear demonstrations were organised in Madrid (8 May, supported by 27 political, social and environmental organisations) and Bilbao (Basque Country, 23 June, supported by 20 social and environmental organisations).

On July 26, 2010 the Spanish government renewed the operational license of Vandellòs 2 nuclear reactor until 2020. On March 10, 2011 (one day before Fukushima) it did the same with Cofrentes nuclear reactor, renewing the operational license until 2021. Next October 1, 2011 the operational license of Ascó nuclear plant (with two reactors, Ascó 1 and Ascó 2) will end. Now there is a strong campaign to ask the Spanish government not to renew the Ascó operational license because it is the nuclear plant experiencing almost 50% of all the nuclear irregular events in Spain. Last July 22, 2011 the Catalan Parliament rejected a proposal introduced by 'Solidaritat Catalana per a la Independència' (a coalition of 5 political parties, including the Catalan green party 'Els Verds – Alternativa Verda'), supported by the Socialist Party (PSC), the Republican Party (ERC) and the leftist party (ICV-EUA) asking the Catalan government to address a petition to the Spanish Government in order not to renew the operational license of Ascó, until the nuclear power plant will succeed with the stress tests adopted after the Fukushima nuclear catastrophe. The majority of votes from the Catalan center-rigth party CiU (ruling at present the Catalan government) with the support of the Spanish rightist party PP rejected the proposal, showing clearly their support for the nuclear industry.

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JAPANESE PRIME MINISTER: "NUCLEAR FREE FUTURE"

"We will aim to bring about a society that can exist without nuclear power," Japanese Prime Minister Naoto Kan said in a television address to the country July 13. The statement was Kan's clearest yet about the appropriate long-term energy goals for a country dealing with the consequences of the worst nuclear crisis in a quarter-century. More than two-thirds (70.3 %) of Japanese support Prime Minister Naoto Kan's call to do away with nuclear power, a media poll showed on July 24, underscoring growing opposition to atomic energy in the wake of the crisis at the Fukushima Daiichi plant.

(731.6156) WISE Amsterdam - It has now been more than four months since the accident began at Fukushima Daiichi and unfortunately no end is yet in sight although much of the major media moved on from Fukushima. But the accident continues, radiation continues to be released (though much lower amounts, of course, than initially), and the risk of new problems remains.

"Japan without nuclear power"
Japanese Prime Minister Naoto Kan's July 13, statement was his clearest yet about the appropriate long-term energy goals for a country dealing with the consequences of the worst nuclear crisis in a quarter-century: "We will aim to bring about a society that can exist without nuclear power." One day before that statement, Kan told lawmakers

that Japan must scrap a plan that calls for the country to increase its use of nuclear power to 53 percent by 2030, up from the pre-quake level of roughly 30 percent. And he took a stand against the government's long-peddled slogan about the safety of nuclear power ¬ the "safety myth" that allowed for the construction of 54 reactors over four decades. "Through my experience of the March 11 accident, I came to realize the risk of nuclear energy is too high," Kan said. "It involves technology that cannot be controlled according to our conventional concept of safety."

But Kan's energy plan faces numerous obstacles, from within his own government and from the utility companies that act as regional monopolies. There is also the matter of Kan's own domestic unpopularity and his waning authority to guide the country.

But the fact that public opinion is changing, was also highlightened by the fact that, also on July 13, the Asahi Shimbun, Japan's second-largest paper, ran a front-page editorial calling for the phase-out of nuclear energy. But the piece also warned against immediate abandonment. "If we go to zero suddenly, we will encounter power shortages, and our lives and economic activities will be hugely affected," the editorial said. "It is more realistic to not try too hard but to steadily decrease the dependency."

Nuclear establishment

But Naoto Kan's dream of creating a society free of nuclear power appears destined to die when his reign as prime minister expires. No politician considered a possible successor is taking up Kan's call to decommission all of Japan's nuclear reactors. In fact, almost all prominent Cabinet ministers and executives of the ruling Democratic Party of Japan who have supported Kan appear reluctant to go along with his nuclear-free idea.

Japan suspend nuclear talks

In what could be an important move, the Japanese government has decided to suspend negotiations with India and four other countries on civil nuclear cooperation following Prime Minister Mr Naoto Kan's call for Japan's eventual exit from atomic power, according to a media report. Any move to proceed with the talks now "could risk contradicting the Prime Minister's policy," an unnamed government source was quoted as saying by 'Kyodo' news agency.

The report said the government will suspend talks with India, Brazil, South Africa, Turkey and the United Arab Emirates on the sale of Japanese-made nuclear power equipment and technology. The decision concerns negotiations over completing separate nuclear power cooperation agreements with these countries.

The source also indicated the government will not schedule any high-level talks with the five prospective nations on completing nuclear cooperation accords without getting Mr Kan's nod, the report said.

Nuclear plant workers developed cancer despite lower radiation exposure than legal limit.

Of 10 nuclear power plant workers who have developed cancer and received workers' compensation in the past, nine had been exposed to less than 100 millisieverts of radiation, according to a Mainichi Daily News report. The revelation comes amid reports that a number of workers battling the crisis at the Fukushima Daiichi plant were found to have been exposed to more than the emergency limit of 250 millisieverts, which was raised from the previous limit of 100 millisieverts in March. The current guidelines for workers' compensation due to radiation exposure only certify leukemia among various types of cancer. In these cases compensation is granted only when an applicant is exposed to more than 5 millisieverts of radiation a year.

According to Health, Labor and Welfare Ministry (of Japan) statistics, of the 10 nuclear power plant workers, six had leukemia, two multiple myeloma and another two lymphatic malignancy. Only one had been exposed to 129.8 millisieverts but the remaining nine were less than 100 millisieverts, including one who had been exposed to about 5 millisieverts.

Mainichi Daily News, Japan, July 27, 2011

Turkey to cancel talks with Japan?

The Turkish government informed the Japanese government that it will cancel the preferential negotiations with Japan and start talks with other candidate countries on the project to build a nuclear power plant, if Japan does not make clear its intention to continue the negotiations by the end of July, (Japanese) government sources said.

Turkey plans to construct a power plant with four 1.4 million kilowatt-class nuclear reactors in the Black Sea coastal city of Sinop. It aims to start operating the plant around 2020. Toshiba Corp. hopes to win an order to construct the plant with the cooperation of Tokyo Electric Power Co.

The negotiations between Turkey and Japan have been suspended since the nuclear crisis began at TEPCO's Fukushima No. 1 nuclear power plant. Turkey ended negotiations with South Korea last December and gave the Japanese government the preferential negotiation rights. Turkey, which is also an earthquake-prone country, highly valued Japan's quake-resistance technology in awarding the priority rights, according to the sources.

After Kan's "denuclearization declaration" on July 13, it has been increasingly unclear whether Japan will be able to extend government-level support to Turkey, even if Toshiba won the order. Meanwhile, Japan's rivals, especially South Korea, are eager to extend such support.

"Stable cooling"

Tepco says it has achieved "stable cooling" of all of the reactors at the site. This might sound like good news until it is realized that Tepco does not mean the reactors are at cold shutdown. In fact, all 3 reactors with fuel in them remain above the boiling point of 100 degrees Centigrade, meaning that water continues to boil off and radiation continues to be released. Cold shutdown—bringing the temperatures below 100 degrees—is still not expected before January 2012. What Tepco really means is that it has more or less successfully set up a system for water to be recirculated through the reactors, so that constant water from outside is no longer needed. However, the recirculation system has been plagued with problems from the beginning and continues to not work at desired capacity. That is not the case for the Unit 4 fuel pool, which continues to receive water from outside. Temperature in the pool is said to be below boiling, at 80 degrees Centigrade.

Radioactive beef

The central government is considering buying all beef with levels of radioactive cesium exceeding government standards in an effort to try to address rising consumer concern and falling prices for Japanese beef. It would be the first time the central government has provided direct compensation for food products contaminated by the accident at Fukushima.

However, the current draft plan only envisages paying for beef that has been confirmed as contaminated in random tests. Meat from cows that have not been tested will not be bought. Farmers are demanding that all cows affected by shipment restrictions be bought up by the government to cover large losses from tumbling beef prices due to the radiation scare. The payment of compensation to beef farmers could lead to complaints from other farmers and fishermen of preferential treatment.

The issue of contaminated beef surfaced July 8, when meat from cattle shipped from a farm in Minami-Soma, Fukushima Prefecture, was found to have levels of cesium exceeding government standards. The contamination was caused by feeding the cattle contaminated straw. Investigators are looking into whether cattle in other areas have been similarly affected.
Industry minister Banri Kaieda said that Tepco should shoulder part of the costs of the government's planned purchase.

Iodine-131
But it's not just beef and straw. Very high levels of Cesium-137 and other radioactive elements have been detected in all manners of agricultural products and soils across the region. Of particular note are both the Cesium-137 levels far higher that allowable limits, but also the continued presence of high levels of Iodine-131. Because of its 8-day half-life, Iodine-131 released during the initial week of the accident, when extremely large amounts of radioactive materials were ejected from all the Fukushima reactors, already has decayed to background. The continued presence of high levels of Iodine-131 is a certain indicator of the radiation releases that continue at Fukushima and will continue for months to come.

State support Tepco
A bill aimed at keeping troubled utility Tepco solvent gained approval from a Japanese parliamentary committee on July 26, with both ruling and opposition party support, paving the way for its passage through both houses of Japan's parliament. The bill would create a state-backed entity to financially support Tepco, which is in desperate need of assistance to cope with the potentially staggering costs of compensating those affected by the nuclear accident at its Fukushima Daiichi plant.
But while approval of the bill may reassure financial markets concerned about Tepco's survival, revisions to the bill to secure its likely passage mean the key issue of who pays what to fund the compensation will be decided later. Japan's two leading domestic rating agencies have already warned that parliament needs to move quickly to avert a Tepco bond rating downgrade that could trigger a major selloff in the utility's bonds, hitting the broader market. Tepco shares have lost 76% since the accident while the yield on the utility's bonds has risen sharply, as has the cost of debt protection.

Sources: Washington Post, 13 July 2011 / The Statesman, 17 July 2011 / Asahi, 19 July 2011 / NIRS update, 19 July 2011 / Asahi, 23 July 2011 / Japan Times, 24 July 2011 / Reuters, 24 July 2011 / Nikkei.com, 26 july / The Yomiuri Shimbun, 27 July 2011
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THE AFTERMATH OF FUKUSHIMA IN INDIA

The three-in-one disaster at Fukushima has stirred human consciousness all over the world. On the one hand, it has prompted Germany's decision of phasing out nuclear energy by the year 2022, Italians' overwhelming vote against nuclear power in a national referendum, and some 20,000 Swiss citizens' rallying against nuclear power and so forth. Even the Chinese government put all its nuclear activities on hold and decided to do stocktaking before proceeding any further

(732.6163) WISE India - On the other hand, Fukushima has evoked a totally different and horrendous response from other quarters. India is a case in point. The chief of Department of Atomic Energy (DAE) tried to explain away Fukushima accidents as "chemical explosions" and the chief of Nuclear Power Corporation of India Ltd. (NPCIL) claimed that the Indian nuclear power plants were all away from earthquake-prone zones. The Prime Minister of India tried to reassure the nation that the Indian nuclear power plants were all safe. He did not elaborate on what made him feel so confident or what steps he had taken to evaluate the safety standards and procedures at the Indian nuclear power plants.

This kind of lame excuses and false promises only made the people of India wearier about the whole nuclear power program. To add insult to injury, Manmohan Singh cabinet chose April 26, 2011, the 25th anniversary of Chernobyl Day, to issue an official statement that they would persist with the nuclear power program. This slap on the face of every Indian on a sensitive day betrayed the real values and loyalties of the government.

The Congress party-ruled states such as Maharashtra and Andhra Pradesh where French and American nuclear power parks are coming up are working overtime to facilitate these anti-people but pro-corporate projects. But the chief minister Mamta Banerjee of West Bengal asked the central government to cancel the Haripur project with Russian collaboration and pronounced that they would not welcome any nuclear power plant anywhere in her state.

In Tamil Nadu, however, all the political parties tend to see the nuclear power project as a developmental project and have never raised their voice against the Koodankulam or Kalpakkam or the Neutrino project coming up in Theni district. The People's Movement Against Nuclear Energy has been protesting against the Koodankulam project from the very beginning. Although we enjoy much support and sympathy in coastal villages where people live in harmony with Nature and will be the first victims of any nuclear calamity, people in the interior areas and the middle class have been generally indifferent. But watching Fukushima plants explode and the Japanese citizens flee the triple-tragedy on their TV screens, our people realize the intensity of the danger we are facing.

When the Koodankulam authorities gear up to start the first unit of 1,000 MW plant within a few months of Fukushima, the local people do take offense. When the former tries to conduct a safety drill, the local people get alert and angry. Safety instructions ask them to cover their noses and mouths and to enter the nearest building and close the doors. While the state government claims that 0-5 km area is sterilization zone, the Koodankulam authorities say informally that nobody will be displaced. This kind of confusions and carefully-concealed decisions do not help the people to feel confident.

On August 11, 2011, thousands of people from Koodankulam gathered around the local Catholic Church and demonstrated against the nuclear power plant. A local activist, Advocate Sivasubramanian phoned me and asked me to go to Koodankulam immediately. We organized the demonstration as best as possible and asked people to be careful and nonviolent as we did not want the emerging uprising to be crushed by the state power. The crowd of thousands of people was very cooperative and responsible although the presence of several drunkards, police informers, friends of vested interests and the ever-growing strength of police was a cause to worry.

As this demo was going on in Koodankulam, we received a message that people in the neighboring fishing village, Idinthakarai were ringing the bell in their church and gathering around the parish priest's house. We were invited to go and talk to them. We arranged a group of young people to lead a hunger strike at Koodankulam, and a few of us rushed to that fishing village and held a discussion. People took decisions such as boycotting fishing, keeping children away from schools, a complete shut down of shops and facilities, hoisting black flags in front of the houses, returning the government ration cards (which serve as important Identity card) and passing a resolution at the Village Council on the Independence Day (August 15) against the Koodankulam plant.

We held a planning meeting at Nagercoil on August 13 and decided that our only demand was closing down the Koodankulam plants and that we would avoid processions and marches that carry a good degree of vulnerability and stick to nonviolent hunger strikes.

On August 14, we visited the villages of Koothankuli, Koodankulam and Idinthakarai and conducted planning meetings. On the Independence Day (August 15) the Village Councils of Koodankulam, Vijayapathi, Koothankuli and Levingipuram passed resolutions to close down the Koodankulam nuclear power plant. On August 16, more than 10,000 people gathered for the hunger strike and we also formed an administrative committee, finance committee, and legal cell to lead the struggle.

On August 17, we started our three-day hunger strike at Koodankulam and thousands of men and women gathered for that. Police had denied permission on the 16th midnight but we defied that and went ahead with the strike. We heard that police was planning to break up our peaceful demonstration by force and we contacted the authorities to protest against it. They invited us for talks and requested us to halt all our demos in return for the cancellation of the safety drills. We reached an agreement that we would not hold any massive campaigns until September 7. But on August 27, 2011 the DAE chief announced that they would start the first unit of Koodankulam nuclear power plant in September 2011. Since this nullifies the ongoing dialogue, we convened our administrative committee meeting on August 30 at Idinthakarai and decided to resume our struggle. After all, India is still a democracy and Indian citizens have been guaranteed the rights to life and livelihood by our Constitution.

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JAPANESE GROUPS DEMAND: "SAY GOODBYE TO NUCLEAR POWER"

"We will aim to bring about a society that can exist without nuclear power" Japanese Prime minister Kan said on July 13. But on August 26, Kan resigned after 15 turbulent months in office. His departure both as prime minister and as president of the Democratic Party of Japan, follows Diet passage the same day of two key bills he had set as a precondition for his exit: a bill to issue deficit-covering bonds to finance a large portion of the initial fiscal 2011 budget and legislation to promote use of renewable energy.

(732. 6164) WISE Amsterdam - On August 17, Tepco announced the level of radioactive contaminants escaping from damaged reactors at Japan's Fukushima Daiichi nuclear energy complex has dropped in the last month. The company said the monthly rate of contaminant emissions from the plant's No. 1, No. 2 and No. 3 reactors has fallen to 200 million becquerels per hour; the systems were previously leaking five times that amount, Kyodo News reported.

Water treatment
Japan in July announced it had completed the initial stage of the plant's stabilization. Completing the second phase is expected to require between three months and half a year. A high-level Japanese official at a press event avoided offering a more specific projection. Bolstering the efficiency of the plant's water treatment equipment is a "major challenge" in the stabilization effort. Huge amounts of water were poured into the plant to prevent overheating, resulting in radiation-tainted liquid pooling in large portions of the site. Recently installed equipment cleanses the water and recycles it for continued cooling efforts. The intent is to cut off the need to pour additional coolant into the plant that could become contaminated and then escape into the outside environment. Operation of the new fluid decontamination mechanism operation has been slowed by numerous technical errors since being activated in June. It has run at an average efficiency of

69 percent following its launch, Tepco indicated.

Cesium release

But meanwhile, Japanese government specialists project that the quantity of radioactive cesium 137 emitted to date from the crippled the Fukushima Daiichi atomic power plant equates to 168 times the amount of material released in the 1945 atomic bombing of Hiroshima, Agence France-Presse reported. Citing the work of nuclear experts, the Tokyo Shimbun reported the quantity of cesium that escaped Fukushima Daiichi was projected to be 15,000 terabecquerels. In comparison, only 89 terabecquerels were emitted by the detonation of the U.S. weapon dropped over Hiroshima near the end of World War II, according to the newspaper. The Kan administration provided the cesium projection to Japanese lawmakers.

The dropping of the atomic bombs on the cities of Hiroshima and Nagasaki in 1945 caused enormous destruction, brought about by the blast and by the fireball. It also caused massive radiation exposures, mainly neutron and gamma radiation, most of it delivered at the very instant of the explosion. But the fallout in the area of the bombed cities was relatively little, because in both cases the bombs were deliberately detonated high in the air so that the concussive shock wave would do the most damage on the ground. Thus no crater was created by the blast, and most of the fallout was carried high into the atmosphere by the heat of the fireball and the burning of the cities. It became global fallout more than local fallout.

Rehabilitation

On August 26, the Ministry of Education, Culture, Sports, Science & Technology (MEXT) announced their estimation of the first year doses (starting from the day of the accident), at the 50 representative spots within the 20 km "vigilance (off-limit)" zone in view of the government intention of allowing rehabilitation of the evacuees. According to their measurements, the dose rates are orders of magnitude different within the same zone in Fukushima Prefecture. Thirty five out of 50 locations exceeded the Government guideline of the first year dose of 20 mSv. (one location measured 503 mSv!). Being influenced by these facts, the Government is now saying that there will be some areas where rehabilitation will not be possible for an extended [number of] years, typically several tens of years.

The government estimates that radiation in a contaminated area drops by about 40 percent over two years naturally and it wants to speed up the process by another 10 percent through human effort, according to guidelines for the clean-up unveiled on August 26. "We aim to reduce radiation levels by half over the next two years in affected areas, and by 60 percent over the same period for places used by children," Japan's nuclear crisis minister, Goshi Hosono, told a news conference.

Tokyo, Sept. 19: "Goodbye to Nuclear Power Plants" Rally!

We, a large coalition of Japanese NGOs, are taking action for a "peaceful and sustainable society", reconsidering our lifestyles that exploit nature and waste limitless energy, and focusing on natural energy. For that purpose, we set the following goals:

1. Cancellation of construction plans for new nuclear power plants
2. Planned termination of existing nuclear power plants, including the Hamaoka nuclear power plant.
3. Abolition of "Monju" and nuclear reprocessing plants which use plutonium, the most dangerous radioactive material.

We will achieve these goals in order to save our own lives, and fulfill our responsibilities to the future children. We will hold the "Goodbye to Nuclear Power Plants" rally at the Meiji Park in Tokyo, Japan, on 19 September. In many countries all over the world that weekend demonstrations and other activities will take place against nuclear power and in support of the demands of the Japanese groups.

Furthermore, there is a '10 Million Signature Campaign to say Goodbye to Nuclear Power Plants' with a petition for the "Realization of Denuclearization and a Society Focused on Natural Energy". Please visit http://sayonara-nukes.org/english/ for more information and for signing the petition.

Another key government goal is to bring radiation below 20 millisieverts per year, the threshold level for evacuation, in areas that exceed this. Some places in the evacuation zone have levels that far surpass this. "Ultimately we want to achieve this goal in a shorter period. Technology is continuing to advance and with enough government funding and effort it can be done," Hosono said.

The total area in need of cleanup could be 1,000 to 4,000 square kilometers, about 0.3 to 1 percent of Japan's total land area, and cost several trillion yen to more than 10 trillion yen (US$130 billion), experts say. One major problem that the government faces is that the removal of farmland topsoil could ruin fertile agricultural areas. The government said it will take full responsibility for the soil and debris removed in the cleanup, but that as yet it does not have a permanent solution for storing the radioactive material and that they would have to be kept within local communities for the time being. According to Hosono "Fukushima prefecture will not become the final place of treatment for the debris."

Four days later, on August 30, the results of first comprehensive survey of soil contamination of 2,200 locations within a 100-km radius of the plant have been made public. In the 100km radius 33 locations had cesium-137 in excess of 1.48 million becquerels per square meter, the level set by the Soviet Union for forced resettlement after the 1986 Chernobyl disaster. Another 132 locations had combined amount of cesium 137/134 over 555,000 becquerels per square meter, the level at which the Soviet authorities called for voluntary evacuation and imposed a ban on farming. Cesium 137 has a half life of 30 years, meaning that its radioactive emissions will decline only by half after 30 years and affect the environment over several generations. Cesium 134 is considered somewhat less of a long-term problem because it has a half-life of two years.

Separating regulation from promotion

Also in August the Japanese cabinet decided to transfer the country's nuclear safety agency from the trade ministry, where it nestled in a department also dedicated to the expansion of nuclear power, to the environment ministry, where, at least in theory, there is some chance that its operations will not be subverted or manipulated by Japanese energy firms. After nearly half a century of producing nuclear power, Japan has finally separated regulation from promotion, but the move may well have come too late to restore public trust. The impulse to minimize the inherent risks of nuclear power, the tendency to conceal or

downplay accidents, the assertion that each succeeding generation of plants is foolproof and super safe, and the presumption, so often proved wrong by events, that every contingency has been provided for, all these have been evident again and again. In contrast, The Netherlands changed nuclear monitoring structures over the past year. The regulation agency is now part of the ministry most promoting nuclear power and responsible for licensing.

Nuclear exports
It looked like the Japanese government resumed its joint efforts with industry to export nuclear power plants, despite effectively halting reactor construction at home following the accident at the Fukushima nuclear power plant. Critics said the government is using a double standard--reducing the number of nuclear power plants at home and promoting exports. Facing difficulties in building reactors in Japan, reactor manufacturers—Toshiba Corp., Hitachi Ltd. and Mitsubishi Heavy Industries Ltd.--are renewing their emphasis on exports.

In mid-July, Hitachi and General Electric Co. won preferential negotiating rights for a nuclear power plant in Lithuania, edging out Westinghouse Co., a Toshiba unit, after Hitachi President Hiroaki Nakanishi traveled to the country for sales promotion. Industry officials said emerging economies have strong expectations on nuclear power generation to meet their growing demand for electricity. Among emerging economies, only Indonesia and Thailand have frozen plans to build nuclear power plants.

According to the Asahi newspaper, a senior official at a manufacturer said the government should take a greater initiative in promoting exports of nuclear power plants. "Winning projects in large countries, unlike Lithuania, requires government-to-government negotiations," the official said. "The government and industry need to work together closely."

Electric power companies, which provide support to plant operations, are an indispensable partner to reactor manufacturers in winning overseas projects. Emerging economies require not only plant construction but also operation, maintenance and fuel supply as part of a contract. So Tepco's situation has cast a cloud over Toshiba's bid to build a nuclear power plant in Turkey. Tepco was scheduled to provide support in the plant's operations. Turkey is asking Japan to choose a different company. If the selection is delayed, Turkey could start negotiating with other countries, such as France and South Korea.

The Japanese government, meanwhile, is trying to conclude nuclear energy agreements with a number of countries to establish a legal framework for exporting nuclear power plants. The Democratic Party of Japan-led government has signed agreements with four countries -Russia, Vietnam, South Korea and Jordan- over 18 months after it took power and is seeking Diet approval. The government has also entered negotiations with five other countries.

But in a somewhat surprising move, Diet decided to put off approval of four nuclear cooperation agreements. After hearing opinions from four experts on August 24 about an agreement between the Japanese and Jordanian governments, the Foreign Affairs Committee of Japan's Lower House decided to put off approval at a meeting of its executive advisory board the following day. Bilateral nuclear cooperation agreements with Russia, South Korea and Vietnam were also submitted for ratification at the current session of the Diet, but the Foreign Affairs Committee decided on August 31 to postpone the decisions on approval for those later as well.

Former-Prime Minister Naoto Kan played a leading role in signing a nuclear power agreement with Vietnam. But the March 11 disaster completely changed the environment. Kan called for ending dependence on nuclear power generation, halting government-to-government negotiations and Diet deliberations and exports of nuclear power plants were stalled.

New PM
On August 29, the ruling Democratic Party of Japan (DPJ) picked current finance minister Yoshihiko Noda as the new party head and imminent Japanese premier (the sixth PM in five years), who is likely to seek a prompt restart of safe nuclear reactors to revitalize the country's economic activity. Noda, a fiscal hawk, is expected to prioritize fiscal and debt reforms but also support Japanese utilities to restart reactors where their safety is confirmed to aid the country's rehabilitation efforts in the wake of March's devastating earthquake and tsunami. Noda has said that his country will continue to use nuclear power for the next 40 years in the wake of the Fukushima disaster, taking a swerve away from outgoing Prime Minister Naoto Kan's promise of a non-nuclear future in half that time after the worst international nuclear disaster in 25 years.

Meanwhile, more than a third of Japan's nuclear reactors will have to apply for license extensions within five years or face decommissioning at a time when the industry's safety record is in tatters. Japanese opinion polls show about 70 percent of the public wants to reduce reliance on nuclear power.

Sources: Atoms in Japan, JAIF 5 September 2011 / Bellona, 31 August 2011 / Nikkei, 30 August 2011 / Argus media, 29 August 2011 / Gordon Edwards, 29 August 2011 / Reuters, 26 August 2011 / Japan Times, 26 August 2011 / NTI Global Security Newswire, 25 & 18 August, 2011 / Asahi, 23 August 2011 / The Guardian, 16 August 2011
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SAYONARA TO NUCLEAR POWER

An estimated sixty thousand people took to the streets in Tokyo on September 19 to say Goodbye to nuclear power. It was the largest anti-nuclear demonstration ever in Japan. On September 11, exactly six months after the earthquake, tsunami and nuclear meltdowns, already many thousands had demonstrated all over Japan to vent their anger at the government's handling of the nuclear crisis. Three young men and a woman started a 10 day hunger strike in front of the Ministry of Economy Industry and Trade, the planner and sponsor of nuclear power.

(733.6166) WISE Amsterdam - In one of the largest protests on September 11, an estimated 2,500 people marched past the headquarters of the plant's operator, Tokyo Electric Power Company, and created a "human chain" around the building of the Trade Ministry that oversees the power industry. Protesters called for a complete shutdown of nuclear power plants across Japan and demanded a shift in government policy toward alternative sources of energy.

Japan can switch off all nuclear plants permanently by 2012 and still achieve both economic recovery and its CO2 reduction goals, according to a new Greenpeace report. Released on September 11, the Advanced Energy [R] evolution report for Japan, shows how energy efficiency and rapid deployment of renewable technology can provide all the power Japan needs.

The report - with calculations by the German Aerospace Center (DLR) and the Institute for Sustainable Energy Policies (ISEP) - shows that Japan's wind and solar generation capacity can be ramped up from the existing 3,500 MW to 47,200 MW by 2015. This represents around 1000 new wind turbines deployed per year, and an increase in the current annual solar PV market by a factor of five, supplying electricity for around 20 million households. At the same time, load reduction strategies would cut Japan's energy demand by 11,000 MW, equal to the capacity of 10 to 12 nuclear reactors.

Japan Prime Minister Yoshihiko Noda's effort to win public support for restarting nuclear reactors faces a setback after his minister in charge of the industry was forced to resign just nine days into the job. Yoshio Hachiro stepped down as head of the Ministry of Economy, Trade and Industry on Sept. 10, under fire for using 'towns of death' to describe the evacuation zone around the Fukushima Dai-ichi nuclear plant and joking about radiation.

The full Greenpeace Advanced Energy [R]evolution Report for Japan can be found at:
www.greenpeace.org/japan/Global/japan/pdf/er_report.pdf

Sources: Bloomberg, 11 September 2011 / Reuters, 11 September 2011
Contact: Citizens' Nuclear Information Center (CNIC). Akebonobashi Co-op 2F-B, 8-5 Sumiyoshi-cho, Shinjuku-ku, Tokyo, 162-0065, Japan
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International antinuclear conference, January 2012. Nongovernmental organizations, including Peace Boat, Greenpeace Japan and the Citizens' Nuclear Information Center, will hold an international conference in Yokohama on Jan. 14 to 15 to call for the elimination of nuclear power generation in the wake of the crisis at the Fukushima Daiichi power plant. Environmental groups from across the world as well as residents of Fukushima Prefecture who have been forced out of their homes due to radioactive contamination will be invited as guests to the meeting to draw up policy recommendations for Japan and the rest of the world toward phasing out nuclear power, the NGOs said.

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COLD SHUTDOWN REACHED AT FUKUSHIMA?

September 28, 2011 marked a milestone of sorts for the Fukushima Daiichi reactors: some six-and-a-half months after the onset of the accident, temperature levels at all of the reactors and fuel pools fell below the boiling point (100 degrees Celsius) for the first time since March 11. But there are some caveats to that statement. Meanwhile, hydrogen detected in a pipe will cause no explosion "in the immediate future". Plutonium has been found as far as 45 km from the plant.

(734.6173) WISE Amsterdam - The temperature at Unit 2 fell only to 99.4 degrees Celsius, and has been going up and down in recent days, so could quickly return to the boiling point. Moreover, while the reactor temperatures are measured at the bottom of the pressure vessel, it's not clear that is where the hottest temperatures are. Since fuel melted and containments failed, allowing fuel to go below the pressure vessel, temperatures below the vessel where the molten fuel has collected may remain higher than the boiling point.

Meanwhile, the cooling system that has brought down temperatures is a jerry-rigged system nothing akin to the normal cooling systems found in reactors, and its long-term reliability is in serious question. This is especially so because

the region continues to suffer earthquakes (a 5.6 earthquake struck the region on September 29), not to mention typhoons and other problems.

In other words, there remains some time before cold shutdown of the reactors can be proclaimed. And in the meantime, radiation releases continue, although they are reported to be a small fraction of earlier releases. They're now on the order of one million becquerels/hour (as opposed to a trillion/hour a few months ago and thousands of times more than that in March). Although, a caveat to that too: Tepco has admitted that it doesn't really know how much radiation is being emitted--it's estimating.

On Oct 2, Tepco announced that it had estimated that the interruption for about 38 hours of water injection into the cores would prompt their nuclear fuels to melt again. Unless water injection is restarted about 18 hours after being stopped, a massive amount of radioactive substances would be released into the environment. In the estimate for the No. 1 to No. 3 reactors at the March disaster-ravaged Fukushima No. 1 nuclear power plant, TEPCO assumed that their pressure vessels would have no water to cool nuclear fuels when water injection stops. The temperate of the nuclear fuels would rise by about 50 degrees Celsius every hour from 300 degrees at the time of the coolant loss and reach 2,200 degrees about 38 hours later, the power utility estimated. At that time, the nuclear fuel would start melting, and some would break through the pressure vessel to fall into the containment structure, according to the company.

A couple of reports have struck us recently. One widely reported is that Tepco seriously considering abandoning the Fukushima facility in mid-March when it reduced its on-site workforce to 50 people. Another, also widely reported, is that then-Prime Minister Kan was actively considering ordering an evacuation of Tokyo in mid-March as conditions deteriorated and foresaw a potential end to Japan as a functioning nation. It may go without saying that if Tepco actually had abandoned its efforts at the time, that's exactly what would have happened.

On September 23,Tepco said that hydrogen has been detected in a pipe at the No. 1 reactor, but there is no possibility it will cause an explosion "in the immediate future". According to Tokyo Electric Power Co., hydrogen of at least 10,000 parts per million was detected at two spots in a pipe passing through the containment vessel on the reactor building's first floor. This concentration was higher than Tepco had anticipated. Although Tepco is not certain how much hydrogen is still inside the vessel, the utility believes it is possible the concentration of the highly flammable gas is higher than had been assumed.
In air and liquid, 10,000 ppm is equivalent to 1 percent. Air containing at least 4 percent hydrogen and 5 percent oxygen is at risk of causing explosion. Tepco has been injecting nitrogen into the containment vessel since April so it is assumed there is virtually no oxygen. As a result, the utility ruled out the possibility of an explosion "in the immediate future."

Japanese officials said they have found, for the first time, small amounts of plutonium from the damaged Fukushima nuclear power plant as far as 28 miles (45 kilometers) away. At a October 2, Tokyo news conference, federal officials announced the first discovery plutonium outside the immediate vicinity of the power plant, as well as radioactive strontium in 45 spots as far as 50 miles (80km) from the reactors, The Wall Street Journal reported.

Largest trade union changes policy on nuclear power. The leadership of Rengo, Japan's largest trade union organization will rethink the body's energy policy in light of the Fukushima nuclear crisis, with a view to shifting from its stance of promoting nuclear power to one that aims for a society not reliant on atomic energy, according to Rengo sources on October 3. Since Rengo is the largest supporter of the ruling Democratic Party of Japan, the turnaround is expected to have an impact on the energy policy of the DPJ-led government. Rengo, which counts labor unions of power utilities among its members, has struggled to reconcile differences within the organization over nuclear energy policy. But its leadership has decided on the policy turnaround by taking into account the seriousness of damage brought by the Fukushima nuclear plant disaster, they said. In August 2010, Rengo decided for the first time to promote nuclear power generation and back construction of new nuclear power plants.
Japan Times, 5 October 2011

Meanwhile, Tepco is fighting to keep its pre-disaster emergency-response procedures a secret from politicians and the public, arguing they contain valuable trade information. In September the company angered members of a parliamentary committee when it handed over manuals outlining steps that its nuclear plant operators are meant to follow in the case of accidents. All but a few words of the texts were redacted with black ink.

The storm of controversy that followed – one newspaper columnist compared it to wartime censorship – seems not to have softened the company's stance. Early October it asked Japan's nuclear safety regulator, which had ordered it to resubmit the manuals without redaction, to allow it to keep much of the material secret. So far only the regulator, the Nuclear and Industrial Safety Agency (Nisa), has seen the originals, which run to thousands of pages. It has not passed them on to the lawmakers who originally requested them. Tepco has told Nisa that if the manuals are to be made public, 90 per cent of the content related to "severe accidents" such as that at Fukushima should be kept under black ink. "The manuals contain knowhow that we have built up over a long period of operation," a company spokesman said. "There are also issues of national security."

Sources: The Yomiuri Shimbun, 24 September 2011 / NIRS Fukushima Update, 29 September 2011 / Jiji Press, 2 October 2011 / UPI, 2 October 2011 / Financial Times (UK), 5 October 2011
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FUKUSHIMA EMISSIONS DOUBLE ESTIMATES – NEW INTERNATIONAL STUDY

A new study by an international team of researchers estimates that the emissions from the power plant started earlier, lasted longer and are therefore higher than assumed in most studies conducted before. The study estimates the emissions of the radioactive noble gas Xenon-133 and the aerosol-bound nuclide Caesium-137 from the Japanese Fukushima Daiichi nuclear power plant until April 20 (!) by combining a large set of measurements from Japan and worldwide, atmospheric transport model calculations, and available information and reasonable approximations on radionuclide inventories and accident events at Fukushima Daiichi.

(736.6188) WISE Amsterdam - The study led by Andreas Stohl, an atmospheric scientist at the Norwegian Institute for Air Research, was released on the website of Atmospheric Chemistry and Physics Discussions. The calculations are based on about 1000 measurements of activity concentrations and deposition conducted in Japan, USA and Europe. This is the most comprehensive investigation so far. There is no doubt that the Fukushima accident is, at least in terms of the isotopes Xenon-133 and Caesium-137, the most significant event after the catastrophe in Chernobyl 25 years ago, says Dr. Andreas Stohl from NILU - Norwegian Institute for Air Research, lead author of the study.

Regarding the radioactive noble gas Xenon-133, the results indicate an emission of 16.7 million terabecquerel (1 Becquerel is one radioactive decay per second, 1 terabecquerel equals one million times one million becquerels). This is the largest civilian noble gas release in history, exceeding the Chernobyl noble gas release by a factor of 2.5. Xenon-133 is neither ingested nor retained in the inhalation process and therefore of less health concern, but it is important for understanding the accident events.

This study confirms there is strong evidence that emissions started already on 11 March 2011 at 6:00 UTC, which is immediately after the big earthquake. So contrary to official assumptions (Japan's Nuclear and Industrial Safety Agency remains convinced the quake didn't cause significant damage to the plant, Tadashige Koitabashi, a NISA spokesman, said by phone to Bloomberg) it becomes more and more clear that the reactors and fuel pool were already severely damaged by the earthquake before the tsunami hit. And that is despite the fact that the earthquake "did not exceed design base values significantly", according to Jan Leen Kloosterman a Dutch scientist and important nuclear advocate from the Technical University Delft. But it was a big earthquake (magnitude 9.0) out at sea but not so big 130 km from the epicentre at Fukushima. NISA and Tepco blame the tsunami, which swamped backup generators, causing a loss of cooling and the meltdowns of the three reactors operating at the time of the disaster. Explosions at the plant sent radiation into the atmosphere.

Cesium-137

Regarding Cesium-137, which is of high relevance for human health due to its physical properties and the long half-life time of 30 years, the new estimate shows that emissions started earlier and ended later than assumed in most studies so far. The total release amounts to 36 petabecquerel (1 p-Bq is 1000t-Bq), which equals 42% of the Chernobyl emissions. 19% of the cesium was deposited on Japanese territory, while about 80% was deposited in the water.

While the winds transported most of the Fukushima emissions toward the Pacific Ocean, the plume headed inland during and following March 14-15, the period of highest cesium emissions, although "the situation could have been even much worse, as fortunately no rain occurred at the time." During a second episode March 20-22, even larger areas of Honshu were covered by the plume, from Osaka in the south to areas north of the Fukushima Daiichi plant, and heavy rains "nearly completely cleansed the atmosphere of 137Cs and again produced strong deposition of this radionuclide over Honshu, including Tokyo," the study said. "This episode again followed a period of high (though fortunately not as high as on 14–15 March) 137Cs emission fluxes on 19 March, which were transported to Japan on 20 March." There were "a few other periods" when the plume went over land, "but the areas affected were smaller and the emissions lower."

The study also suggests that, contrary to government claims, pools used to store spent nuclear fuel played a significant part in the release of the long-lived environmental contaminant caesium-137, which could have been prevented by prompt action. The levels of cesium-137 emissions "suddenly dropped" after Tepco started spraying water on the spent fuel pool of the No. 4 reactor, they said. Reactor 4 was idle

Sit-in outside Ministry of Economy

On October 28, close to two hundred women from Fukushima began a three-day sit-in outside the Tokyo office of Japan's Ministry of Economy calling for the evacuation of children from areas with high radiation levels and the permanent shut down of nuclear reactors in Japan currently switched off. Their peaceful protest is a powerful – almost radical - act in a country where standing up for something can often mean ostracism from one's community. These are not women who regularly participate in civil protest. These are mothers who fear for their children's safety and future. These are grandmothers separated from their families. The fact that they have put their own lives and families on hold for these three days reflects the harrowing situation these women and their families have found themselves in since the nuclear disaster.
Greenpeace International, 28 October 2011

before the quake and the fuel assemblies in the core had been placed in the spent fuel pool of the unit.
The radioactivity released into the atmosphere represented “nearly 2% of the available inventory of the reactor cores in units 1–3,” the study said, “and the spent-fuel pool [radioactive content] in unit 4 was discharged into the atmosphere.” Indeed, it was the spent fuel pools at Fukushima that contained the bulk of the offending material, according to the study, which looked only at the aerosol-bound cesium-137 and the noble gas xenon-133

Sources: Report "Xenon-133 and caesium-137 releases into the atmosphere from the Fukushima Daiichi nuclear power plant: determination of the source term, atmospheric dispersion, and deposition" by A. Stohl, P. Seibert, G. Wotawa, D. Arnold, J. F. Burkhart, S. Eckhardt, C. Tapia, A. Vargas, and T. J. Yasunari / Nuclear Monitor, 727, 27 May 2011 / Bloomberg, 27 October 2011 / Nuclear Intelligence Weekly, 13 October 2011 / Press release NILU, 21 October 2011

The full report is available at: http://www.atmos-chem-phys-discuss.net/11/28319/2011/acpd-11-28319-2011.html
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FOR A NUCLEAR POWER FREE WORLD

The Great East Japan Earthquake and Tsunami, and accident at the Fukushima Daiichi nuclear power plant, have had dramatic impact around the world. In response to this massive disaster and its tragic consequences for people's lives and environment, the people of Japan are trying to take steps towards recovery.

(737.6194) Organizing Committee - Meanwhile, the nuclear power plant is still unstable and workers are forced to continue working in life-threatening conditions. As the radioactive contamination spreads, many people including children are forced to suffer from prolonged radiation exposure, unable to evacuate due to lack of support from the government.

It is vital that we do not keep making the same mistakes. It is now time for humanity to put an end to the nuclear age that started with Hiroshima and Nagasaki. In Japan, well over half the population now supports the goal of breaking away from nuclear power. However, many people question whether it is practically possible to bring nuclear power to an end. For these reasons and more, a coalition of Japan-based organizations will hold the Global Conference for a Nuclear Power Free World in Yokohama, Japan on January 14-15, 2012.

This conference will create a venue for people from all around the world to gather in Japan and respond to the reality of Fukushima. At the same time, we will bring together the voices of people who suffer from radiation exposure all around the world, whether by nuclear power or nuclear weapons - in other words, Global Hibakusha - and learn from each other's experiences, thus illustrating the human and environmental consequences of the nuclear chain. Combining the experiences of countries around the world, the conference will also aim to demonstrate that it is realistically possible to create a society that is not dependent on nuclear power. Through learning from experiences from around the world, we aim to create a road map for the safe removal of existing nuclear power plants, and from there present alternative policies based on renewable energy and propose action plans that can be implemented by Japan and other countries.

The input of people from around the world is vital to the success of this conference. Join us to together take these steps towards a sustainable, nuclear free world!

Contact: Global Conference for a Nuclear Power Free World
Web: www.npfree.jp/english.html

NUCLEAR FREE NOW
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GLOBAL CONFERENCE FOR A NUCLEAR POWER FREE WORLD
2012 YOKOHAMA

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"We always appreciate and value the information contained in the Nuclear Monitor about the world outside of Japan. We also would like to pay respect to the staff of WISE for their efforts in maintaining and developing such a professional and powerful organization".
Citizens' Nuclear Information Center, Japan

Anyone in Japan or anywhere else who **wants to stand up against the relapse of nuclear power and needs fresh arguments should read the Nuclear Monitor.**
Its easy, its 100 euro (paper) or 50 euro (pdf) for 20 issues.

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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 ***Nuclear Monitor*** is a unique international newsletter serving the worldwide movement against nuclear power. Produced 20 times per year, it gives an anti-nuclear perspective on what is happening in the nuclear power industry and the resistance against it.
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