Ecodefense

Critical Review

Of the Environmental Impact Assessment (the EIA)
of the Baltic NPP Project

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SUMMARY

This paper indicates that the materials of the Environmental Impact Assessment of the Baltic Nuclear Power Plant (the EIA) developed by Atomenergoproekt (SPb) do not contain truly independent assessment and virtually present non-critical reproduction of Russian nuclear industry's advertisements.

The EIA materials lack full and unprejudiced scientific assessment of impact of construction, operation, possible accidents, and decommission of the plant.

The developers failed to ensure availability of up-to-date, complete, and reliable information on the planned activity and its effects for the environment and human health. Data provided on basic features of the project proposed, including those concerning natural resources to be consumed, waste volumes, technologies to be used, physical parameters, are not complete and often unreliable.

The most serious problem is underestimation of radioactive emissions at possible accidents in hundreds and even thousands times. The area to be affected by normal operation of the plant as well as by accidental escapes is estimated incorrectly. As a result, protective and accident consequences mitigation measures are not foreseen.

Decommission impact assessment is completely absent. The EIA authors misinform the public concerning spent nuclear fuel disposal, ignore known data on health risks caused by regular 'allowed' radioactive releases of NPPs. Cooling towers impact to the environment and human health is also not considered.

Description of potential factors of environmental impact by the planned activity is not complete, and assessment of the possible related consequences is underestimated.

The EIA misses descriptions of both radioactive waste treatment technology as well as impact of related accidents to the environment and health, and impact of waste storage sites.

Comparison with other options available is conducted incorrectly, resulting to unfounded denial of less dangerous and less expensive alternatives.

Transboundary impacts of the plant (located close to the border with Lithuania) are also lacking.

This misinforms both the public and the decision-makers.

If unbiased assessment of all the Baltic NPP impacts to the environment and human health is conducted, it will be clear that the dangerous project should be rejected and that the only mutually acceptable for the developer/owner and the public solution to prevent unfavorable effect to the environment is to cancel the plant construction.

THE NEED FOR THE CONSTRUCTION OF AN NPP IN KALININGRAD REGION IS NOT PROVEN

“Purpose and need for the activity planned” is described on p.9, chapter 1.6, as following:
“Implementation of the Baltic NPP construction ensures:
- sustainable coverage of growing basis electricity demand by prognosis…
- electricity generation … to provide for export supplies
- sustainable social and industrial development of the region”.

The chapter does not contain the main thing - quantitative data about the region’s demand for electricity and data about feasible imports of electricity. Without these numbers it is not possible to make conclusions about the need for an NPP. Possibly, these figures are not given since they can prove the fact that a 2.4GW NPP is in no way necessary here.

The contemporary consumption of electric power in Kaliningrad region is 3.9 billion kWh, and the proposed plant will produce 13-15 billion kWh per year.

ACCIDENT EMISSIONS ARE SUBSTANTIALLY UNDERSTATED

UNFOREESEN ACCIDENT EMISSIONS

The estimation of radioactive emissions with the so-called ‘unforeseen (beyond design basis) accidents’ is understated in at least 20 times in comparison with the world practice of the environmental impact assessment for nuclear power plants.

The comparison of unforeseen accident emissions of pressurized-water reactors, the VVER of various modifications, is justifiable in view of common physical principles of reactor operation, similar fuel and radioactive waste compositions. Therefore, for the comparison we took data of the EIA documentation for the NPPs in Finland and Lithuania (2008 both), and data on the accident occurred on the similar reactor in the USA in 1979.

P. 125 of the EIA says that in case of an unforeseen accident, emission of isotopes will be 50 TBq for iodine-131 and 5 Tbq (или $5*10^{12}$) for cesium-137.

For comparison, p. 24 of the Fennovoima NPP (Fennovoima, Helsinki, October 2008, ISBN 978-952-5756-05-0) says that in case of a rated accident emission of cesium-137 will be 100 TBq which is 20 times more that provided in the Baltic NPP EIA. Such scenario is set by the Finnish government (Resolution 395/1991) in order to keep the nuclear industry from underestimating consequences of unforeseen nuclear accidents. The Fennovoima NPP EIA gives assessment of probable accidents with reactors of the same type (pressured water reactor) and capacity as the Baltic NPP reactors.

On p. 509 of the Visaginas NPP EIA (Lithuania, August 2008), the limits for an unforeseen (heavy) accident (100 TBq of cesium-137) is used to estimate radioactive emissions, in accordance with the Finnish assessment.

Three Mile Island accident in the US, 1979, occurred with the similar to the VVER type of reactor and caused $4.8*10^{17}$ Bq of radioactivity released to the atmosphere. It should be considered this accident was not a case of “the worst possible unforeseen accident” since the reactor and the plant’s primary systems were not destroyed.

The abovementioned allows concluding that unforeseen accident emissions for the Baltic NPP are substantially underestimated.

THE MAXIMUM RATED ACCIDENT EMISSIONS

The maximum rated (within design basis) accident emissions are not estimated at all. P.124 says: "Maximum surface concentration of nuclides with the worst rated accident within and outside the Baltic NPP site is estimated to remain below permissible limits".

The VVER-1200 reactor type does not have sufficient experience of accident-free operation. Continuously repeated by the EIA authors claim that the proposed VVER-1200 reactor type has 'advanced security' is not backed with any operational experience and should only be considered as an advertising slogan.

"AES-2006 with the VVER-1200 type reactors is designed in a way that radioactive effects on people caused by accident emissions of radioactive gases in case of accidents within and outside the plant site are restricted in accordance with the Russian regulations" (p. 123).

Unfortunately, experience of radioactive accidents and catastrophes shows that it is impossible to design an NPP so that all the probable emergence situation scenarios are foreseen. Project shortcomings, human errors, and equipment failures can always combine this way or another causing many times worse effects that the designer would estimate. Accidents took place (Mayak 1957, Leningrad NPP 1975, Chernobyl 1986, Siberian Chemical Complex 1993) proved radioactive effects on humans and the environment with severe accidents is no way limited to the plant site and can extend for hundreds and thousands kilometers away around the radioactive unit.

Essentially, the developers themselves admit that their goal was to adjust "probabilistic analysis" to the desired result. Such calculations must not be trusted.

"The main purpose of analysis is to show that severe accidents probability of which is estimated at 10^{-7} per reactor a year, do not cause critical impact to the residents and do not restrict usage of vast land and water areas for long periods in accordance with Russian and international regulations" (p. 125).

THE AREA OF POSSIBLE IMPACT AND RADIOACTION BURDENS ARE SUBSTANTIALLY UNDERESTIMATED. MEASURES FOR THE PROTECTION OF THE RESIDENTS ARE NOT PROVIDED

Underestimations of accident scales lead to claims of no need for emergency planning and other protection measures. 4000-time underestimation of maximum rated accident emissions and tens and hundreds time underestimation of severe unforeseen accident emissions allow the EIA developers significantly decreasing the assessment of accident effects to the environment and human health.

Claims of "ensuring practical impossibility of an accident of severe radioactive effects" (p. 122) are groundless and dangerous as they lead the developers to the conclusion of no necessity for emergency planning and protection measures. Thus, page 123 suggests the area of required evacuation as 800 meter radius, i.e. the plant site. It is known that in case of severe accidents people have to be evacuated from areas located tens kilometers away from an accident point.

Declaration of no need for evacuation and relocation of the residents in case of accidents can lead to unavailability of emergency services and lack of necessary resources and facilities in case of a severe accident when evacuation will be inevitable.

Page 123 refers to the IAEA guidelines for the following range of emergency planning zones: protection measures zone (5-7 km); observation zone (15 km).

That contradicts the international practice. For instance, the Fennovoima NPP EIA (Fennovoima, Helsinki, October 2008, ISBN 978-952-5756-05-0), p. 24, says: "Impacts of severe accidents with the nuclear plant is possible within up to 1000 km distance. Short-term limitations, not longer that several

weeks, can be needed within 1000 km distance from the NPP site. … To limit the thyroid dose children should, according to the authorities' guidelines, take iodine pills within up to 100 km away from the accident point."

Because of the groundless underestimation of possible accident effects, the Baltic EIA does not even mention iodine preventive measures. That can lead to lack of iodine medicine and instruction to use them in possible affected area, like it happened back in 1986.

Figures provided in the EIA formally meet the regulations for distance between an NPP and inhabited areas. But Chernobyl town was located 16 km away from the NPP but nonetheless due to radioactive contamination evacuation of both Chernobyl and Pripyat was required. Settlements located within 50-60 km radius from the Chernobyl NPP were entirely or partly evacuated.

In absence of impact assessment of either maximum rated accident and reactor destruction with unfavorable combination of factors, radioactive security issues are not covered in the EIA. Estimation of unforeseen accident consequences does not consider probability of radioactive distribution in the environment by the landscape components, as it was with the Chernobyl accident emissions, and significant atmospheric transfer of nuclides.

THE AES-2006 TYPE OPTION IS NOT JUSTIFIED

The IEA authors do not provide data on failures of Russian design reactors and does not take critically advertisements of Russian nuclear industry.

All the EIA is made for the Russian AES-2006 with VVER-1200 type reactors project.

It says: "The closest prototype of the AES-2006 project was put on-line in 2007 in China (two units)". This means that reactors of this type do not long proven experience of operation.

The EIA developers do not mention that the Chinese side had repeatedly complaining poor quality of materials and equipment and that at the first year of exploitation the plant was put to maintenance shutdown.

The Russian nuclear regulation authority's opinion on the projects quality and the Russian NPPs engineering, maintaining, and exploiting quality is also not mentioned. The Federal Agency for Environmental, Technological and Nuclear Regulation (Rostechnadzor) states a number of 'incidents' at Russia's NPPs from year to year. Thus, Rostechnadzor 2007 report says that "47 breakdowns subject to record in accordance with the Regulation on investigation and inventory of nuclear plant operational failures took place which is five breakdowns more that in 2006". … "The most of NPP operational breakdowns in 2007 were caused by such factors as management failures, operation failures, and design failures".

As an example of unreliability of NPPs one can take data of two recent incidents at the Kalinin NPP. RBK news agency reported that the Kalinin NPP unit 2 was shut down for short-term repair on September 1 until approximately September 6. Shutdown occurred due to defects discovered after the unit was overhauled and put on-line August 26. The Kalinin NPP Internet site reports that September 12, at 10:00 unit 3 was shut down by the automatic security system. Frequent shutdowns of reactors lead to increased probability of a serious accident.

THE EIA OF DECOMMISSION IS MISSING

The EIA misses an assessment for an inevitable stage of an NPP lifetime, decommissioning. This is a very expensive and dangerous process which produces lots of radioactive wastes, provides grounds for possible accidents and essential environmental impact.

In the EIA, decommissioning of the NPP is only mentioned in 2.5-page long chapter titled "Conceptual Approach to Decommission" (p.148). Though, the EIA must contain not 'a concept' but the full assessment of impact to the environment and human health for an inevitable stage of the plant lifetime that is decommissioning. Decommissioning of the plant and cleaning up the plant site are processes

producing lots of wastes, including radioactive one, and considerably affects the environment and human health.

The EIA lacks such details of the NPP decommission as: who and at what expenses will fulfill this as well as who and at what expenses will provide security to the process, and what is the environmental and human health impact of it.

It is not indicated what technologies will be used for decommissioning and where hundreds thousands of tons of radioactive waste will be relocated to. It is known that decommissioning of one reactor produce thousands of cubic meters of waste. The environmental and human health impact of these procedures is also not described in the EIA. Estimation on the amount of wastes, including radioactive waste, generated by decommissioning is absent in the EIA. On each of options proposed for the procedure (unit removal or unit disposal) the full environmental and human health impact assessment should be given in the EIA.

The EIA completely lacks description of the decommissioning procedure but provides general statements only. As result, the environmental and human health impact assessment of the procedure is completely missing. And this particular issue will become critical in some ten years.

THE EIA MISINFORMS ON THE MOST DANGEROUS WASTE OF THE NPP, SPENT NUCLEAR FUEL

"Spent Nuclear Fuel Management" chapter of the EIA, p. 147 does not describe option of treating with spent nuclear fuel insufficiently.

Time period of storing spent nuclear fuel in a cooling pond at the reactor is not indicated. The cooling pond characteristics are also not specified.

Possible accidents related to spent nuclear waste handling procedures are not considered. Such accidents have been occurring at other NPPs, and they cannot be excluded at the Baltic NPP. Claiming that "all procedures with spent fuel exclude its contact with the environment" is declaratory. It is not backed with analysis of possible incidents. Probability of such incidents is not estimated, measures to mitigate their effects are not considered. Rejection of considering spent fuel related accidents is not grounded.

It is not specified where spent nuclear fuel will be transported to. Which particular "nuclear spent reprocessing plant"? Mayak Complex does not have sufficient capacities; another "nuclear fuel reprocessing plant" does not exist.

Route options for spent nuclear 'special train' transportation are also not specified. Spent fuel transportation can also cause essential environmental and human health impact. Probability of transportation accidents is also not estimated, their possible impacts are not described, and mitigation measures are not provided.

THE EIA IGNORES FACTS PROVING NPPs ARE HAZARDOUS EVEN UNDER NORMAL OPERATION

Radioactive emissions via stacks under normal operation of the NPP cause cancerous disease rate growth in the vicinity of the NPP. The EIA authors either unfamiliar with the related German and the US researches data or do not cite it intentionally.

Page 115 provides optimistic to cynicism statement: "Last years, high safety level and eventually negligible population exposure level are achieved at the Russia's NPP". The EIA contains some other assertions on insignificance of the 'allowed' emission human health effects.

The declared 'negligible level' is not proven by health comparative analysis results of people living in the vicinity of the NPP and those living in nuclear-free areas. At the same time, the EIA authors ignore

plentiful data of negative effects the operating NPP has on specific population groups' sickness rate in its vicinity.

According to a case control study commissioned by the German federal authority for radiation safety, the Bundesamt fur Strahlenschutz, leukaemia rate among children under five years old is all the more frequent the closer their proximity is to any of the 16 nuclear power plants in operation in Germany. The researches have been conducted by the German Institute for Medical Biostatistics, Epidemiology and Informatics and the University of Mainz Clinical Center since 2003.

For each of 16 NPP locations 3 neighboring counties were selected for population-based matched controls. The analysis shows that cancer odds ratio among children under five years old is 54% higher for residential proximity within 5 km from the nuclear plant than for residence outside this area.

Study of the Medical University of South Carolina based on population health data for 136 nuclear installations in the US, Canada, Great Britain, Spain, and Germany shows leukaemia incidence among children and youth living in the vicinity of nuclear plants is more frequent. Mortality rate among children under nine years old living close to the NPP is 5-24% higher than among their fellows living far away from nuclear plants. Mortality rate for people under 25 years old is 2-18% higher. Cancer odds ratio for the 1st children group is 14-21%, for the 2nd – 7-10% more frequent.

The broad epidemiological study among children living in the vicinity of five US nuclear power plants – Fort Saint Vrain, CO, La Crosse, WI, Millstone, CT, Rancho Seco, CA, Trojan, OR, after their shutdown shows that at first two years after the plants were shut down infant mortality rate in the leeward 40 mile proximity from the plant has decreased by 15-20% comparing to previous two years when the plants were yet operating.

The US Cancer Prevention Coalition presented results of a study conducted in 268 counties located in up to 80 km proximity from the military nuclear installations and commercial nuclear power plants. It shows considerable increase of breast cancer induced mortality rate in the areas.

Primary cancerous disease incidence in the Balakovo NPP (Russia) vicinity increased by 16.5% over three last years. 50% of patients of the cancer hospital in Volsk town serving 10 districts of the region are Balakovo district residents. Total children disease rate has always been increasing over 10 last years, no signs for its decrease. First of all it applies to respiratory diseases incidence that makes up for 57% of all diseases. Pollinoses incidence has increased in ten times, bronchial asthma - in 1.5 times, allergic dermatosis -by 12%. Children's endocrine system pathology, gastrointestinal tract malfunctions, joint lesions (allergic arthritis) incidence has grown in 2.5 times. Back in 1990s, Russian ministry of public health inspection noticed incidence of thyroid disease of explicit exogenic nature among Balakovo children. The NPP effects may be one of the causes, doctors believe.

Alarming fact list can be continued, but they are neither considered in the EIA nor disproved. In absence of any of that, statement that population is under full radiation effect protection looks risky.

THE EIA MISSES RADIOACTIVE WASTE MANAGEMENT PLAN AND ESTIMATIONS ON EFFECTS OF RADIOACTIVE WASTE STORAGE SITES AND POSSIBLE WASTE RELATED ACCIDENTS

The EIA materials do not contain exhaustive description of security measures to radioactive waste related procedures, and description of possible accidents at these procedures, and their effects mitigation measures.

At the same time, generation of huge amount of both liquid and solid radioactive waste is the most dangerous factor of NPP operation, and problem of long-term radioactive waste disposal is not solved anywhere in the world.

Waste related accidents occur regularly. April 10, 2003, accidents took place at the fuel rod storage on the Paks NPP, located 11.5 km away from Budapest. 30 rods (about 1/10 of full reactor load) were kept

after chemical cleaning procedure in a steel pool in accordance with a technology described in the EIA. Due to staff errors rods overheated, water boiled away, temperature raised to 1200 degrees C, and radioactive gas released made personnel escape. Water directed to scorching rods caused their destruction, thus formed radioactive mass on the pool's bottom. It took several years to clean up the aftermaths, and restoration was completed just a year ago.

The worst waste related accident is known as the Kyshtym explosion happened in the USSR. September 1957, at Mayak Complex (Ozersk, Celyabinsk region) a reservoir with radioactive waste exploded. 20 mln Ci of radioactivity were released to the atmosphere, which is only 2.5 time less than the Chernobyl explosion.

LIQUID RADIOACTIVE DISCHARGE IMPACT IS UNDERESTIMATED

Absence of liquid radioactive waste discharges and radioactive contamination of water bodies impact assessment in the EIA hides the important factor of the environmental and human health effect.

Pp. 144-145 give information on liquid radioactive waste management.

Data on impact of liquid radioactive waste discharges and inflows of nuclides to water bodies (within so called allowed emission limits) is not provided. This impact can be quite considerable.

For instance, the Tver NPP EIA states: "All categories of dumping water of the Kalinin NPP contain tritium (half-life period 12.5 years) which inflows to cooling pools bypassing treatment barriers. Specific activity of tritium in cooling pools and the Cyezha River is about 50 times above an average of Russia's open water bodies, and it is related to emissions and discharges of the Kalinin NPP" (The Tver EIA, Volume 2, p. 206).

Extract from the Instruction # 801-07 of the Federal Consumer Rights and Public Wellbeing Protection Regulation Agency Tver Regional Department from 26.11.2007: "Two-time exceeding of maximum permissible concentration of total alpha-radioactivity is registered in drinking water in Udomlya town. Use of drinking water that does not meet radiological hygienic standards can cause negative effect to human organism and lead to irreversible consequences".

RADIOACTIVE TRANSPORTATION ACCIDENTS ARE NOT CONSIDERED

Problem of nuclear materials and radioactive waste transportation is also not considered in the EIA properly.

Transportation procedure is dangerous as well as any other procedure related to NPP operation. In the US only, in 1971-1981, 108 accidents occurred at radioactive materials and waste transportation. After September 11, any radioactive waste transportation across the country has been forbidden as "extremely dangerous operation in term of physical protection from unauthorized access to nuclear materials'.

Due to enclave location of Kaliningrad region, nuclear transportation routes to and from the Baltic NPP will go via the Baltic sea and across almost all the region.

ENVIRONMENTAL IMPACT OF COOLERS IS NOT CONSIDERED

Operation of evaporating cooling towers can affect the environment and human health within up to 20 km away from the NPP. But the EIA authors are silent about that.

Coolers' impact to the environment and human health is not assessed; only page 107 says that "taking into account high atmospheric humidity and excess wetting in the area of the Baltic NPP location, effects of steam-and-air emissions generated by coolers will not be considerable outside the plant sanitary-protection zone". Does this controversial statement mean that however much you add to Kaliningrad humidity it can't get any worse?

According to the residents of Udomlya town which is located close to the Kaliningrad NPP, “a cooler’s steam plume extends under certain weather conditions for tens of kilometers, and covers trees with thick frost in winter. Steam plume can be about 2 km high and 15-20 km long”.

Thus, it can be assumed that coolers affect residents of settlements located within 20 km radius from the NPP.

The EIA authors failed to assess these effects. But residents of Ryad village located 3 km away from the Kalinin NPP prove these effects should not be neglected: “Coolers are steaming a year round. Atmospheric humidity is increased. Houses dampen; all bed lining is dampened causing sickness increase. Wooden houses decay, stone ones lose plaster”. It makes living conditions much worse. A woman living in Ryad village had observed no one sunny day for five winter months 2008-2009 in the village.

Coolers are intense climate installations that intensify negative effects of the NPP in many times, emit millions of cubic meter of moisture and millions of calories of heat to the environment making the climate more wet and unstable, contribute to pathogenic bacteria and chemicals spread in the environment leading to the ecological imbalance in the region and increasing human sickness and mortality rates.

MORE SAFE ALTERNATIVES ARE UNGROUNDEDLY REJECTED

Statements about insignificant and non-growing share of alternative energy sources in the energy balance in the chapter 1.7. are not true and mislead the public and the decision-makers to the opinion that construction of the NPP is the only inevitable option.

Statement that “energy supply of capacity needed cannot be provided with renewable energy sources” is false and short-sighted. Moreover it does not specify what the needed capacity is.

The EIA considers the only alternative option, a coal- or gas-burning heat and electricity (cogeneration) plant. As a disadvantage of this option, data on cinders accumulated at Russia’s fossil fuel power plants is provided. At the same time, similar data on radioactive waste and spent nuclear fuel accumulated at Russia’ nuclear power plants in not provided. It says that cinders can be a point of accidents, but possibility for accidents at radioactive waste and nuclear spent fuel storages is not even mentioned though such accidents occurred in Russia in 1957 and 1993 and had catastrophic aftermaths.

Such energy source as so called ‘energy woods’ is not mentioned at all, though it is widely used in Scandinavia. In Kaliningrad there are also domestic scientific developments on ‘energy woods’ which fast-growing willow species as a source of biomass for municipal cogeneration plants. In Sweden this technology is already in wide use and can be easily transferred to Kaliningrad region. This bioenergy source is growing on sewage waters making the technology highly environmental friendly. Focus on local sources will push on local economy, technology development and science revival. Moreover, ‘energy woods’ are grown by local farmers providing stable extra income for them.

Following the world tendencies and supported by legal directives, renewables will produce 20% of total electricity in the EU by 2020.

Wind energy is a rapidly developing sector; in the end of 2008 it had 120 GW of installed capacity, having growing six times since 2000. In 2008, world wind energy had provided over 400 thousand job, and world wind energy equipment market had grown to 36.5 bln euro, or about $46.8 bln.

Table: Wind total installed capacity, MW, by countries, 2005—2008.
European Wind Energy Association and Global Wind Energy Council.

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009 estimated	2010 estimated
7475	9663	13696	18039	24320	31164	39290	47686	59004	73904	93849	120791	140000	170000

Canada has set up a goal of producing 10% of electricity with wind by 2015.

Germany plans produce 20% of its energy with wind by 2020 году.

The EU has a target of 40,000 MW of wind installed capacity by 2010 and up to 180,000 MW by 2020.

Spain will have 20,000 MW of wind installed capacities by 2011.

China's National development Plan includes 5,000 MW of wind installed capacities by 2010 and 30,000 by 2020.

India will increase its wind capacities 4 times from 2005 level and install 12,000 MW by 2012.

New Zealand plans to produce 20% of its energy with wind.

Great Britain plans to produce 10% of its electricity with wind by 2010.

Egypt plans to install 850 MW of wind capacities by 2010.

Japan plans to increase its wind capacities to 3000 MW by 2010-2011.

According to the International Energy Agency (IEA), demand for wind energy in the world will reach 480 GW by 2030.

In the EU, solar energy sector is also rapidly growing. For instance, in 2004 solar heating panel market increased by 30%. By 2010 the market will grow to 100 mln m2 of panels. German solar energy market is most dynamic. This success is caused by considerable state support. Thus, the federal program "100,000 roofs" of the German government is the biggest solar energy financing program providing 0.51 bln Euro of subsidies for investors.

Decrease of renewable energy cost indicates effectiveness of renewable energy use (see table).

Tendencies in electricity cost in the developed countries (Euro/kW-h)

Power plant type	1980	1990	2000
Wind	0.25	0.07	0.04
Solar heating	0.24	0.08–0.12	0.05
Solar photovoltaic	1.5	0.35	0.06–0.15
Nuclear	0.03–0.05	0.04–0.13	0.16–0.25

Over 20 years, renewable energy cost has decreased in 5-15 times over 20 year, while nuclear energy has risen in cost in 5 times reaching 20 eurocents per kilowatt-hour.

This way, direct false placed in one of the EIA chapters aroused reasonable distrust to the entire text, and its authors can be suspected in lack of objectivity and intention to serve as nuclear energy advocates or in full incompetence.

THE REGION ENERGY SUPPLY OPTIONS: COMPARISON OF IMPACTS IS INCORRECT; ENERGY EFFICIENCE RESOURCES ARE NOT CONSIDERED

Comparison of a nuclear plant and a cogeneration plant of same capacity is conducted incorrectly and cannot prove the NPP as a preferred alternative without examination of all alternative options, including energy efficiency and saving measures.

Chapter 1.9 "Justification of the region energy supply option" mistakenly says that the NPP (taking into account the entire fuel cycle) is the most preferred option in comparison with the gas cogeneration plant because of its supposedly less thermal and CO2 emission to the atmosphere. Comparative data on thermal (Ccal per kW-h) and CO2 (ton per kW-h) for the NPP and the cogeneration plant is not provided, and in the absence of these data claim of the NPP causing less impact is unproven.

Thermal capacity of one unit is 3200 MW, and efficiency is 34.6% (pp. 12-13), so 65.4% (i.e. 2000 MW)of unit capacity will finally escape to the thermal atmospheric pollution. This is much more that the thermal atmospheric pollution caused by a steam-gas cogeneration plant of 50% efficiency.

Another aspect of accident-free operation of nuclear or gas plant is also important. The NPP is not a separate or autonomous energy installation; its operation is ensured by a number of related manufactures:

- uranium mines,
- uranium reprocessing plants,
- uranium enrichment plants,
- nuclear fuel assembly manufacturing plants,
- spent nuclear fuel storage sites,
- spent fuel regeneration radiochemical plants,
- liquid waste evaporation sites,
- high radwaste storages,
- solid waste storages,
- technological waste reprocessing and disposal plants.

All these plants emit greenhouse gases to the atmosphere making claim of "putting the NPP on-line will lead to greenhouse gas emission reduction by 16-24 mln tons" unfounded.

Energy supply for Kaliningrad region can be secured with no NPP. What is needed for that is a contract for guaranteed gas supply to allow Kaliningrad gas cogeneration plant operating on full capacity, as well as implementation of energy efficiency and saving programs. A rouble invested in energy efficiency makes 7 times for profit that one invested in nuclear energy.

THE EIA DOES NOT CONSIDER THE PUBLIC OPINION AND IS FULFILLED UNDER VIOLATIONS OF THE LEGISLATION AND WITH ESSENTIAL MISTAKES

The EIA does not meet the requirements of the Russian legislation, contains chapters with incomplete, incorrect, and illogical statements where conclusions contradicts premises, data provided or intermediate conclusions, part of required information is missing.

Majority of the Kaliningrad region residents was pushed aside the Baltic NPP project related decision making process. The public hearings were organized only in Neman town situated 120 km away from Kaliningrad in which half of the region's population lives.

On July 24, 2009, even for those who managed to get to Neman it was uneasy to get to the hearing room. Afterwards it was found out that about 500 people were brought to the hearing room right from their working places. Such way arranged 'participants' were apparently given clear instruction to occupy all free seats around and not allow the NPP opponents to them. At the same time, the police were taking out the room those failed to find a seat. There was a lot of police (estimated as around a hundred) in and around the building during the hearings. Nonetheless, about a hundred people from Sovetsk (town neighboring to Neman) managed to get to the room, and about 200 remained outside. The way the hearings were organized was initially intended by Rosatom and the regional authorities to manipulate the public opinion. Instead of having a honest discussion of pros and cons, the nuclear industry tried to prevent the opponents from participation in the hearing.

Over 20 speeches in favor of the NPP were similar to each other in thesis and style as if they were written by one author. Emotional and argumentation level of the NPP proponents reminded rallies of Communist era stigmatizing a 'people's enemy'. For this case, the NPP opponents were the people's enemy, with Ecodefense as its collective image. The NPP opponents were the only participants who brought the discussion to its topic, the Baltic NPP EIA. Experts from Moscow, Lithuania and Belarus

invited by Ecodefense as well as the anti-Baltic NPP local initiative group representatives had opportunity to speak out their comments. Some Chernobyl catastrophe survivors also came out.

Decision approved by the City Council of Sovetsk (located 20 km from the proposed NPP site) to organize the public hearings on the Baltic NPP project were cancelled by parliamentarians under pressure of the Kaliningrad region government.

The same occurred to the same decision of Krasnoznamensk District (some of villages of which are located 2 km away from the proposed NPP site) Council.

Rosatom refused to publish the full version of the EIA in the Internet, and the only hard copy available for the public was placed in Neman Culture Center. Finally, Ecodefense photocopied it and publish on its Internet site.

CONCLUSIONS

Abovementioned defects of the EIA go beyond particular errors and shortcomings that could be corrected on-line. Many of them are of principal or conceptual nature and indicate low professional level of the authors or their intention to misinform the public. There is a threat that the similar approach will be adjusted to the development of the other Baltic NPP related documentation.

Most statements on the NPP environmental impact are declarative and meant for trust but not for analysis of factual situation, scientific data, and international practice.

The EIA authors try to mislead not only the public but also the decision makers. This may result in unrecoverable errors and even a national catastrophe.

The Baltic NPP project must be cancelled as absolutely failing to meet basic environmental requirements to option, location and construction of the NPP in specified conditions that are subject to deep research and unbiased analysis.