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AUTHORITIES AND SOCIETY: COOPERATION FOR SAFE NUCLEAR POWER ENGINEERING

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The development of the global energy industry in the 21st century is determined by the following factors: limited and exhaustible resources of fossil fuels and increasing demand for energy resources because of the growing population. Therefore, mankind needs a new powerful source of energy.

So far, it has not invented any alternative to nuclear power engineering. It is nuclear energy that can largely satisfy growing demand of the growing global population. At the same time, an important role in the development of nuclear power engineering and the enhancement of nuclear safety belongs to the society that is gradually getting rid of the Chernobyl syndrome.

This safety cannot be enhanced without the civil society participating in the decision-making. On the other hand, authorities should provide adequate informational support and explain the advantages of nuclear energy. This particularly applies to Ukraine, where public opinions on nuclear power engineering are controversial and studied insufficiently.

History of Nuclear Power Engineering

The chain reaction was first used in a nuclear bomb. But scientists already saw its future destiny in peaceful applications. The first power-generating unit that was connected to the electricity grid appeared on July 27, 1954 in Obninsk, USSR. It is considered to be the world's first nuclear power plant. The way from the nuclear bomb to the generation of electricity was rather long - nearly a decade. It was also very complicated, both in terms of engineering problems and through public apprehensions caused by the injurious action of nuclear weapons.

The next stage involved the construction of nuclear power generating units and the development of a complete nuclear cycle. In 1970 there were 116 nuclear power generating units and in 1980 the number grew to 135. The next decade witnessed the fastest-ever increase in the number of nuclear reactors: their number reached 328 in 1990. In 2001 there were 438 operational nuclear reactors and 31 reactors were under construction or modernization.

Within this historically short period of time the nuclear power industry has made spectacular progress: as of today, 440 reactors have been built and 24 are under construction. It has become a real alternative to thermoelectric power stations.

The idea of nuclear power engineering as a perfect source of energy was called into question by several severe accidents. After a serious accident at America's Three Mile Island NPP in 1979, the U.S. government banned the construction of new plants. Although that accident had no immediate effects on human health (despite a considerable radioactive fallout), it prompted a revision of nuclear power generation and safety programs in the United States as well as the rest of the world. The accidents that followed revealed serious potential socioeconomic, environmental, and other hazards posed by nuclear power engineering and proved the necessity of ensuring high operation safety levels at nuclear power plants.

Big accidents at nuclear power plants changed the international community's attitude to the negative and triggered waves of mass protests and anti-nuclear environmental movements. In 1980, mass protests by environmental organizations coerced the Swedish government to indefinitely suspend the construction of a new nuclear facility, and a national referendum in Italy put an end to nuclear power engineering in that country. The governments of Sweden and Germany (largely through the influence of the Greens) decided to decommission their nuclear power plants after they exhausted their service life. As a result, the hitherto rapid development of nuclear power engineering slowed down, its role and possibilities decreased considerably.

However, the period of deceleration is over now and the global community is approaching a period of "nuclear renaissance". Nuclear power plants are operational in 37 countries with two-thirds of the world's population. Long-term development perspectives in most of them envision dozens of new reactors. In some countries (Italy and Germany, for instance) the "nuclear-free" policy is expected to be revised.

EU experts insist that the first-generation reactors of Soviet make (VVER-440/230 and RBMK) be stopped since their design allows for no safety upgrading. So far the IAEA has not issued any document in support of this conclusion. Demands to close down reactors of these types have been made to Lithuania, Slovakia, and Bulgaria. Regardless of the closure of some nuclear facilities, the EU neophytes are not going to give up on nuclear power engineering as this is not among the membership requirements. Public campaigns for preserving operational nuclear capacities are gaining momentum in Lithuania and Slovakia. Bulgaria (an EU candidate) plans to revise its earlier decision to close down two nuclear reactors.

According to a recent opinion poll in Sweden, 27 percent of respondents were positive about continued operation of 11 reactors; 32 percent supported the idea of their further operation and construction of new facilities; 21 percent were for upgrading operational reactors and building new ones. Only 17 percent of respondents were against nuclear power generation. Three percent were undecided.

Such changes in public sentiments are caused by the growing prices for oil and the growing awareness through governments' dissemination campaigns.

At the same time, the public has serious levers of influence on decision-making: the dialogue with authorities, the involvement of independent experts, and the mass media's active position.

Ukrainian Legislation on Public Participation in Nuclear Policy-Making

Ukraine is a young state with immature democratic institutions. Therefore, if the public opinion is ignored and the dissemination campaign on the need to develop the nuclear power sector is inadequate, there may be two extremities: either excessive construction of new nuclear facilities or curtailment of this key branch of industry under pressure from the uninformed public and environmentalist movements.

A portion of Ukrainians are prejudiced against nuclear power engineering. Sometimes Ukrainian and foreign mass media publish unverified information (in particular, about the alarming condition of the Chernobyl Shelter facility). As a rule, grim predictions of its collapse grow louder on the eve of every anniversary of the 1986 accident.

The national legislation guarantees free access to information on the use of nuclear energy, primarily via inquiries to the relevant offices. After the Ukrainian Parliament ratified the Arhus Convention, the legislation was amended toward ensuring adequate replies to such inquiries. Now a citizen can file a complaint against denial or incomplete provision of environment-related information.

However, the active legislation contains general provisions but no mechanisms of their enforcement. In practice this means that this right cannot be exercised by all citizens: it is only feasible for those who have enough time and money for protracted legal procedures.

The national legislation grants local self-governments and public associations an important right to policy-making, but it offers no mechanisms for their interaction with the central government.

Decisions on constructing new reactors ought to be preceded by local-level public hearings. However, as the Chernobyl tragedy showed, this issue concerns the entire country rather than a particular locality. Therefore, the limitation of public discussion to the local level reduces the level of public control over nuclear and radiation safety.

The national legislation needs to be improved: there must be effective guarantees of citizens' right to objective and complete information on the safety status of nuclear facilities.

With political, economic, and social reforms underway public involvement in decision-making increasing, the Ukrainian society needs to be provided with much more information about the nuclear industry's operation and development. The government's energy policy must become more transparent and comprehensible. It must give adequate responses to public sentiments with regard to its nuclear policy and economic strategy in general.

Referendum: Deciding the Fate of Nuclear Industry

Regrettably, environmental problems are not among the government's priorities, in which the main emphasis is placed on industrial programs. Some major projects that pose potential environmental hazards are implemented in violation of the law and in defiance of public opinion (as local communities still have scarce means of influence on authorities). In this situation a referendum as the ultimate exercise of people's power assumes exceptional importance. In some cases it may be the only way to halt a dangerous project.

A referendum is one of the most complex and expensive form of citizens' participation in decision-making, but it is the most effective of all. It is only through a referendum that environmentally dangerous projects, even if they are supported at the highest level, can be canceled. At the same time, practice shows that it is very difficult to exercise the constitutional right to referendums. Initiatives to hold them are often strongly resisted by authorities.

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Like in most other countries, the Ukrainian referendum-related legislation normally has a constitutional and an environmental component. According to the Constitution, "the people shall express their will through elections, referenda, and other forms of direct democracy" (Article 69). And Article 72 stipulates conditions and mechanisms of holding national referenda.

The active laws define the notion, types, and detailed mechanisms of referendums.

Article 4 of the law "On Environmental Protection in Ukraine" of 1991 says that "the Ukrainian people's power in protecting the environment and using the natural resources is exercised in accordance with the Constitution of Ukraine both directly - through referenda - and through bodies of executive authority in line with the legislation of Ukraine".

Article 21 of the law grants public environmental organizations the right to initiate national and local referendums on environment-related issues, the use of natural resources, and environmental safety.

So far, however, there have been no referendums on construction of nuclear facilities due to authorities' reluctance, the imperfect legislation, and the society's unreadiness.

The first environmental referendums took place in the Soviet era. Prompted and dominated by the "Chernobyl syndrome", all of them were aimed against construction of nuclear facilities and all reached their aim.

Between 1993 and 2003 there were 23 attempts to call a referendum in Russia. Referendums on construction of new nuclear reactors were either disrupted or their returns were annulled by courts. And even when the returns were not challenged, they were ignored by authorities and businessmen.

At present, the Ukrainian Parliament is considering a draft bill "On the Procedure of Decision-Making on Locating, Designing, and Constructing National-Status Nuclear Facilities". The draft bill suggests that decisions on constructing nuclear power generating and waste storage facilities be adopted by "local bodies of state authority and local self-governments, proceeding exclusively from results of a local referendum on the issue in question" (Article 3).

Considering the international experience, the practice of local referendums in Ukraine appears to be feasible and expedient. However, there are grounds for concern. A preliminary public opinion survey shows that such referendums may stall and even frustrate important projects for the development of the national nuclear power industry due to strong "post-Chernobyl stereotypes". Besides, most Ukrainians are not ready yet to realize the advantages of the nuclear power generation and the absence of alternatives to it. Therefore, this bill is premature and hollow without any preceding dissemination campaign in support of the nuclear power generation. This conclusion is drawn from the returns of the following opinion polls.

Attitude and Prospects for Nuclear Power Generation

The sociological service of the Razumkov Center conducted two national opinion polls among respondents over 18 years of age: on April 23 - 28 (2010 respondents) and on May 27 - June 2 (2008 respondents). The theoretical error does not exceed 2.3 percent.

Chernobyl consequences and construction of new nuclear reactors are not the most serious societal concerns in comparison with low incomes, unemployment, and crime. This can be understood: when two-thirds of the country's population are concerned about their low living standards, all other problems look far less important. The Chernobyl problems rated only fourth among the six gravest concerns (these worried only 14.1 percent of respondents). The construction of new nuclear facilities worried twice fewer respondents - 7.4 percent.

At the same time, respondents over 40, who remember the Chernobyl disaster very well, are concerned more deeply than those aged under 40: 15.0 percent versus 12.8 percent. This problem appears a lot more serious to residents of the areas where nuclear facilities are located than residents of other parts of the country: 17.0 percent versus 13.6 percent on the Chernobyl issue; 12.5 percent versus 6.5 percent on the issue of construction of new nuclear power plants.

Opinions on different sources of electric power: as is known, most of the electricity consumed in Ukraine is generated at nuclear power plants. But only 27.7 percent of respondents are positive that in ten years nuclear power plants will be the main source of electric power in Ukraine (whereas in France the figure is 62 percent).

Renewable sources of energy rate second (14.7 percent of respondents), although their present share in the fuel-energy balance of electricity output is a mere 0.005 percent. Considering the fact that almost a third (31.4 percent) of respondents were unable to give a definite answer, we can state a rather low level of concern over (awareness of) the problem of available and future sources of electric energy and the technologies of its generation.

The opinion poll revealed a notable fact: prospects for nuclear power generation appear more realistic to residents of the areas where nuclear power plants are located than to respondents in other parts of Ukraine: 36.0 percent versus 26.3 percent respectively. New nuclear facilities may mean new job opportunities, but it is also possible that those who live near such facilities know more about the real conditions there and consider them to be safe.

Nuclear power industry and energy dependence: on the whole, Ukrainians regard the nuclear industry as a positive factor in achieving this country's "energy independence" (39.3 percent vs. 30 percent of those who do not). This opinion is prevalent among younger respondents (44 percent) and residents of "nuclear-free" areas (39.4 percent vs. 28.3 percent). In the areas where nuclear facilities are located the opinions on this issue split almost equally: 39.4 percent vs. 40.4 percent, With 30.7 percent of respondents unable to give a definite answer. Such returns suggest that active dissemination and enlightenment campaigns may be effective in molding a positive public opinion about the nuclear sector.

Safety: In spite of (or, perhaps, thanks to) the experience of Chernobyl, only 24.6 percent of Ukrainians consider Ukrainian nuclear power plants "extremely dangerous". 40.3 percent appraise them as "substantially dangerous" (which could be said about any other nuclear facility in Ukraine).

On the other hand, very few respondents (3.5 percent) are sure that Ukrainian nuclear facilities are "absolutely safe". 24.1 percent of respondents assess them as "relatively safe", and 7.5 percent are undecided.

There is a notable difference between the assessments of nuclear safety levels by residents of areas where nuclear facilities are located and residents of other parts. The former appear to be more rational than the latter: a mere 0.3 percent of residents of "nuclear industry" areas call Ukrainian nuclear power plants "absolutely safe" versus 4.1 percent of respondents from "nuclear-free" areas. At the same time, the respective assessment of Ukrainian nukes as "extremely dangerous" is 20.4 percent vs. 25.5 percent.

The life extension of operational nuclear reactors worries most respondents (55.3 percent) while 18.6 percent are not concerned. 16.9 percent of respondents have not heard of such plans, and 9.2 percent are undecided.

Residents of the areas where nukes are located are more concerned over the plans to prolong the operation of nuclear reactors in comparison with residents of other areas: 61.5 percent vs. 54.4 percent. Older respondents are concerned more than younger ones: 57.3 percent vs. 52.8 percent respectively.

The necessity to build new reactors: the replies were generally correlated with the replies to the previous question. 54.9 percent of respondents were negative about the idea of building new reactors while 26.8 percent were sure about this necessity. Nearly every fifth respondent (18.3 percent) was undecided.

There are more opponents to such construction plans among residents of areas where nukes are located and among older respondents: 60.6 percent vs. 53.9 percent and 58.5 percent vs. 49.5 percent respectively.

Prospects for construction of 11 new reactors and public awareness: considering the above returns, it appears logical that the government's intention to build 11 new power generating units by 2030 was supported by a mere 19.9 percent of respondents while 57.2 percent were negative about it. 9.6 percent were indifferent, and 13.3 percent were undecided.

However, one of the possible reasons for the opposition to the construction projects could be a lack of information. The question "Do you receive enough information about the government's intention to build new reactors?" got 84.1 percent of negative and only 9.3 percent of positive answers.

No wonder that the overwhelming majority (91.1 percent) of Ukrainians have no idea of the planned location of construction sites. Only 5.6 percent of respondents said they knew where the first two reactors are planned to be built. And just like the previous answers, these have neither age nor geographical peculiarities, so practically all Ukrainian citizens are insufficiently informed about the government's plans to develop the national nuclear power industry.

The trust in sources of information on nuclear safety: professional experts are trusted most of all: almost 24 percent of respondents trust them completely while three times fewer respondents (7.4 percent) trust the government. Almost as many trust environmental organizations. A considerable number of respondents (18.5 percent) gave no definite answer, perhaps having lost trust in anyone. Notably, most of those who trust professional experts reside in areas where nuclear facilities are located (34.3 percent versus 22.2 percent of respondents residing in other areas).

A comparative analysis of the levels of trust in official information on nuclear issues in Ukraine, the USA, and Japan shows that people in all these countries trust various institutions except for their governments.

The decision-makers: the low trust in the government with regard to nuclear safety issues correlates with the answers to the question "Who is supposed to decide where to build new reactors?" 40.2 percent of respondents said that such decisions should be adopted at national referendums. Only 18.1 percent of respondents were ready to entrust such decisions to local authorities, 15.6 percent - to the Parliament, 14.4 percent - to the President, and 11.3 percent - to the central government.

Notably, residents of the areas where nuclear power plants are located are equally inclined to entrust such decisions to the Parliament (26.5 percent versus 13.6 percent of residents of other areas) and the Government (18.9 percent versus 9.9 percent of residents of other areas).

It should be noted in conclusion that Ukrainian citizens are generally aware of the importance of developing the nuclear power industry for attaining a higher level of Ukraine's "energy independence". At the same time, the appraisals of the safety level at the operational nuclear power plants and the attitudes to their development are prevalently negative. There are grounds to presume that the reasons are insufficient information about the government's plans and the still low level of trust in official sources of information on nuclear safety.

The subsequent conclusion is that the government's open and transparent policy in the nuclear sphere and continual provision of the public with objective information about the actual and prognosticated nuclear safety status can change the public attitude to nuclear power generation for the better.

Need for Dialogueue between Authorities and Society

Radical changes in relationships between the authorities and the rest of society in regard to nuclear issues require that the authorities change their attitude to the public and reckon with its opinion. Open decision-making and strategic planning, combined with a continual PR process aimed at changing the "Chernobyl stereotypes", can reduce the possibility of the national nuclear energy development programs being suspended or curtailed.

We can single out three levels of public dialogue between authorities and society on problems of nuclear power engineering: 1) freedom of expression combined with authorities' publicity and transparency; 2) a meaningful public dialogueue, or the freedom to both speak and be heard by authorities; 3) real influence of a community on authorities, when they reckon with its opinion.

The first level is very likely to be attained under the new leadership: members of the new government display more openness to mass media than their predecessors did. At the same time, practically nothing has changed in terms of transparency. The new leaders speak more openly and freely, but their utterances have not yet converted into transparent deeds. The new team seems to be ignorant about the rules of transparent decision-making.

The experience of developed democracies shows that transparency is attained through consulting the civil society and/or its interested subjects in the process of decision-making. Such subjects may be business associations, local communities (on whose territory nuclear facilities are planned to be built), independent experts (including ecologists), political parties, trade unions, environmentalist movements, etc. Members of government should provide the interested groups with maximally complete information about planned decisions, expected positive and negative results, ways (resources and sources) to achieve goals, possible alternatives, etc. An effective dialogue between authorities and interested subjects would enable them to adopt, correct, or abandon proposed decisions without conflicts or losses on either side.

The second level requires a lot more effort from authorities. They must start a constant open dialogue with the society, first of all with its most competent part - experts, non-governmental research organizations, analytical centers, journalists, environmentalist movements, etc. The government must continuously consult the most active and influential interested groups and try to optimize its policy in relation to them.

Of course, the influence of this dialogue on the decision-making process will be minimal at early stages. But very regrettably, the new leadership has not even tried yet to establish such a dialogue as a part of its national development strategy.

The first and second levels do not require any specific laws or organizational steps. The only prerequisite is the political leadership's will to leave authoritarian methods in the past.

The third level implies certain requirements to both the authorities and the society. The latter should receive sufficient information about the construction (number, location, etc.) of new reactors and other nuclear facilities, the results of ecological expertise, and planned revisions of consumer tariffs. The people need to be constantly informed about advantages, disadvantages, and prospects of nuclear power generation. They need to always know how safe Ukrainian and foreign nukes are.

The more prepared audience should receive detailed information on specific issues: the sources of fissile fuel supplies, the sources and volumes of expenditures, the implementation status of safety enhancement programs, the output/consumption and the export/import balance, the costs of electricity generation, the financial condition of each nuclear power plant, etc. Such information should come directly from the government.

Unfortunately, the new government quite often resorts to the old measures. This was the case at the hearing of the Nuclear Energy Development Strategy of Ukraine at the Cabinet of Ministers meeting on May 18, 2005. The Strategy was presented as a final blueprint without any previous discussion. Yet it is impossible to produce a development strategy of a single segment of entire industry without general strategy of the social economic development of the country as a whole and development strategy of the fuel and energy sector, which nuclear energy is a part of. Such moves of the government only scare the population and the greens as well as the international community.

Dialogue and public information are essential; yet they could not substitute for economic incentives. Thus economic incitement of the residents of the 30-kilometers zone around a nuclear power plant is the most effect PR campaign. Although some consider it to be risk compensation, it is in line with the international practice, which is quite justified. Such practice must be applied in Ukraine. If Ukraine wants to develop its nuclear energy section it must carry the informed consent of the people residing within the 30-kilometer zone by providing economic incentives to them.

Conclusions

The current stage of the human development is characterized by the increased role of nuclear energy in life support functions. Negative experience of breakdowns at the nuclear power plants with severe consequences for people and environment is the restraining factor. This issue is especially topical in Ukraine with its Chernobyl syndrome. The drawbacks in the government's work aimed at the increase in public awareness of the advisability of the development of nuclear energy can result in economic losses and this industry's stagnation.

Society must be educated about obvious lack of alternatives in the provision for the county's economic needs and the need to increase the share of nuclear energy in its energy balance.

Cooperation with society should not be a one-time political campaign. It should be present at all stages of creating and implementating the energy development strategy in Ukraine. The wide range of problems from negative public attitude to nuclear energy to broad public support of state policy on nuclear development must be tackled.

Hasty legislative measures aimed to ensure positive results of local referendums about the construction or extension of the operation term of nuclear power plants can only bring the development of nuclear energy to a halt and result in a loss of existing nuclear power capacities.

Government's PR activities in the sphere of nuclear energy development must account for diverse public opinions, be purposeful and result-oriented. Sociological research, which will identify target groups according to the age, education, location, etc., will help to work out adequate approaches to these groups.

Proposals

To identify strategic areas of nuclear energy development in Ukraine in the framework of a long-term strategy of the country's social economic development and of development of its fuel and energy sector.

To increase dramatically the quality of management of state organizations operating in the nuclear energy sector. Special attention should be paid to the problems of trust, transparency, control over government's activities, and effective feedback from society.

To adopt a law in Ukraine on preferential tariffs for electricity and heat for people residing within the 30-kilometer zone of operating nuclear power plants in order to ensure public support of the state policy of nuclear energy development.

To carry out regional and national informational and analytical projects aimed to study sentiments and awareness (especially in the zones of construction and development of nuclear power plants); to ensure broad public participation in the formation of state policy on nuclear energy and provide support after its adoption.

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These and other aspects were reviewed at a professional discussion Nuclear Energy in Ukraine: Problems of Its Development, Security, and Public Support in the Context of the European Integration, held by the Razumkov Center on June 16, 2005 in a special edition of the *National Security and Defense* magazine.

Other materials: