Russia's Impending Ecological Disaster

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The environment and ecological aspects of economic development are becoming more and more important for Russia. Unfortunately, under the present conditions of political, social, and economic crisis, attention to ecological factors has declined. This is quite understandable. The objectives of legislative and executive structures at various levels—as well as those of the absolute majority of the population—are determined today by the burning necessities of adaptation and bare survival, amid the breakdown of the Soviet Union, centrifugal tendencies in Russia and the consequences of the transition to a market economy. Hence, there are few incentives for environmental protection, whose results are not so immediately obvious as an empty stomach. This attitude is leading Russia into a blind alley, and to a bleak future for her social, political and economic development.

For a long time, information about the state of the environment in the former Soviet Union was considered a state secret. It was difficult to publish on the subject even in specialized scientific literature, not to mention critical articles in the mass media, which was a virtual impossibility. Many economic and industrial projects with adverse environmental effects, as well as serious ecological disasters, remained unknown to the public. Their investigation and discussion were banned. One example was the radiation accident in Kyshtym, the Urals, during the 1950s, which was comparable to the Chernobyl catastrophe as well as to what was perhaps the largest ecological disaster of the 20th century—the Aral Sea tragedy. The central planners practically did not take into account environmental implications.

Information about the catastrophic state of the environment in the USSR became possible only a few years ago. Actually, the first document available to the general public was the "White Book" (the governmental report "On the State of the Environment in the Russian Federation in 1991"). Prepared for the Congress of People's Deputies, which was to meet at the end of 1992, this report was widely reprinted and commented on by the mass media. What everyone had suspected all along became a horrible reality: the country was on the brink of an environmental abyss.

The word "ecocide" (ecological genocide) is gaining widespread and frequent use in Russia. Like the history of man has been said to be the history of wars, the history of the USSR could be described as the history of

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ecological genocide. While creating the new ideal society, the Soviet system at the same time was killing its own future. Now more than ever it is clear that if the present trends prevail, Russia will plunge into a general ecological crisis in the near future. The question is, When? This may be in the first two decades of the 21st century.

The Approaching Disaster

The main reason for the dismal ecological situation in Russia results from her type of economic development: monopolism of almighty ministries and departments and the Soviet desire to reach higher production targets at any price.

To avoid the outright destruction of the economy's natural basis, urgent actions are needed. By expert estimates, only 10 to 15 years remain before a general ecological crisis in agriculture, triggered by the degradation of land resources, occurs. Accordingly, this will result in a deep food shortage, and even food aid from the United States and Western Europe will hardly help Russia avert the collapse.

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Soon Russia may face dire industrial and agricultural consequences due to the growing dearth of water resources from the Volga and Don rivers, Lake Baikal, Azov and Caspian Seas, and others. They are polluted above all admissible levels with organic compounds, heavy metals, phenol, oil products and other substances. This leads to a rising deficit of drinking water, together with a crisis in water supply for urban populations.

Many kinds of natural resources are close to depletion. Russia has large proven commercial oil reserves for 20-25 years only. Forest resources in the European part of the country have been practically depleted. The same with many other resources. In the years to come, the danger of large technological accidents will be more likely, due to the enormous erosion of production, transport and purification equipment. In many industries such wear reaches 80-90 percent.

Industrial enterprises are also making nature a victim in their rush to minimize environmental protection costs, survive on the way to a market economy and cope with their strained financial situation. They are trying to economize by all possible means on environmental protection and acquisition of ecologically sound equipment, because environmental spending does not contribute to an increase in output or profits. Emissions and discharges of pollutants and waste burials are often done clandestinely, to avoid payments and fines.

Killing the Future

This type of development, in addition to the ecological implications, leads down a blind alley for social reasons as well. The most important among them is the overall deterioration in public health. This alone is enough to revise the concept of Russia's socio-economic development.

Everywhere, the quality of agricultural products is rapidly declining, while their content of hazardous substances and heavy metals is increasing. Environmental living conditions are also getting worse, especially in large industrial regions, where multiple violations of air pollution standards has become a common practice. Only 15 percent of Russia's urban population lives in an ecologically sound environment. In 84 large Russian cities, with a combined total population of about 50 million, air pollution exceeds accepted world standards by a factor of 10 or more.

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All this results in a growing incidence of various diseases, lower immunity and genetic mutations. The progressing environmental degradation may in the next decade lead to the situation where 80 percent of Russians will have at least one chronic disease.

Children are the most adversely affected by the worsening environment. In terms of infant mortality rates, Russia is comparable to the least developed countries. About 90 percent of locally produced milk is dangerous to consume by children below one year of age. According to medical data, only four percent of Russian children may be considered as completely normal. In the opinion of V.I. Danilov-Danilyan, the Russian minister of Environment and Natural Resources, the country is close to a critical level of genetic inferiority, beyond which begins national degradation. The low quality of the environment, coupled with alcoholism, have led to a sharp rise in the number of children born with various genetic disorders. The present birth rate for such children reaches 17 percent. It is clear that if the present degradation of the gene pool proceeds at the same pace, the Russian people will degenerate and start to die out in two or three generations. Therefore, it would not be an overstatement to say that the present ecological situation in Russia kills future generations. Russian philosopher Pyotr Chadaev was probably right when he wrote 150 years ago that Russia serves as an example to the whole world of how one should *not* live.

Among other social problems provoked by environmental degradation are the ethnic and migration problems. For instance, the large-scale production

of oil and gas, and the construction of giant oil and gas pipelines in the Arctic and Siberia, led to the loss of traditional habitats and occupations (reindeer husbandry, hunting, fishing) for small ethnic communities in the north. At present, the consequences of the above practices are a sharp drop in life-spans, as well as the depopulation among seven of 26 such communities.

Who Is to Blame?

Let me try to answer two traditional Russian questions: "Who is to blame?" and "What is to be done?"

The ecological threat has clearly become the number one problem for the safe development of the country and of its future. Regrettably, the Russian government has not fully realized this threat. This is due mainly to the way of thinking formed by the government over all these years. The environment's neglect was one feature of Soviet social and economic development. The priority was economic goals, whose realization contributed first and foremost to the strengthening of the military-industrial complex. Many resulting social and economic problems were pushed to the background.

The standing of the ecological question has not changed significantly since the breakdown of the Soviet Union and the election of progressive and democratic forces. There are few attempts to stabilize the ecological situation in Russia, and these consist mostly of legal and economic regulations by the Supreme Soviet and Ministry of the Environment and Natural Resources. However, the effect of such measures is minimal. The deep and worsening economic and social crisis in Russia makes ecological problems a second priority. A sharp drop in living standards, a rapidly declining production, a large dearth of investments and funds to serve immediate socio-economic programs—they all compel the government to focus on short-term goals and postpone ecological stabilization to an indefinite future. The Law "On Protection of the Natural Environment," adopted by the Supreme Soviet in 1991, is mostly of decorative character and its practical enforcement is dubious.

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Leadership crises also contribute to the worsening ecological situation. Local authorities tend to pursue their own economic policies aimed at gaining quick results. This leads to a wasteful exploitation of natural resources. This practice is notorious in Siberia and the Far East, where local administrations try to expand, as much as possible, production and sale of oil, gas and timber with the old environment-wrecking technologies. An example is the notorious leveling of vast forest lands in the Far East by South Korean firms. Everything is cut—including the forests in water-protection zones and

valuable natural landscapes.

Here, another feature of the "modern" technological thinking of Russian administrators is manifested—orientation to quick benefits and results. The environmental impact of such decisions, mostly negative, is usually seen only afterwards, and the resulting total ecological and economic damage greatly outbalances the short-term benefits.

The low level of ecological culture is characteristic not only of the power structures, but of the Russian public as well. People do not fully understand the relationship between nature's pollution and their own health, or how environmental degradation affects future generations. In this context, an ecological movement could play a stimulating role in enhancing political efforts directed at the protection of the environment and the improvement of ecological awareness. According to surveys, a full fifth of the questioned secondary and high-school students and teachers are willing to join the ecological movement. Though, regrettably, 76 percent of them know nothing in particular about the "green movement." Twelve percent nevertheless took part in ecological meetings and demonstrations, and 28 percent signed appeals and letters of protest for protection of the environment.

At present, the Ministry of Justice has registered statutes of 12 ecological organizations having branches in 150 cities of the country. The most important ones are Ecological Union, Socio-Ecological Union, and the association Ecology and Peace. The politization of the ecological movement has also taken place (in 1991, the Russian Green Party was registered). This nongovernmental movement is very active in establishing contacts with similar organizations in foreign countries. Its representatives took part in the preparation for the 1992 U.N. Conference on the Environment and Development in Rio de Janeiro, Brazil. Unfortunately, the political and economic crisis in Russia has had a negative effect on the work of green organizations. Some of them, in an attempt to survive, are getting involved in commercial activities.

What Is to Be Done?

To avoid an overall ecological collapse in Russia, it is necessary to formulate a new ecologically responsible economic development, together with a program on its practical implementation by the legislative and executive structures of the government. In this connection, an important step would be to "ecologize" the decision-makers' thinking, so that they will take into account the long-term consequences of their decisions as well. Only in this way will it be possible to achieve a safe and stable socio-economic development for Russia in the years ahead.

Here, it is very important to reject or revise many misconceptions associated with decision-making processes. The existing traditional approaches to economic development are based on the amount of natural

resources used. The more resources, the better for the country. However, it is evident that such approaches led Russia to a blind alley. For instance, Russia is the world leader in oil production, but many airplanes, road transport and agricultural machinery are idle because of fuel shortages. The country is also the leading producer of gas—about 40 percent of world production. Nevertheless, most houses in rural areas lack gas supply. Vast territories are black-earth land, the world's most fertile soil, but food shortages are growing. Russia has more forests than any other country, but there is a lack of paper to print books and magazines.

Such absurd examples abound. At one end of the economic chain we have fantastic natural resources, and on the other—a permanent shortage and deficit of goods and services derived from these resources.

The built-in desire to extract more natural resources and intensify their exploitation can only bring closer an ecological disaster in Russia. What Russia needs are fundamentally new approaches. First of all, it is necessary to focus the economic development not on intermediate but on final results. The underdevelopment of the processing and manufacturing industries, along with the infrastructure and distribution structures, leads to enormous losses of natural resources and raw materials. Is it, then, necessary to increase pressure on nature, while knowing that a significant part of natural resources cannot be used efficiently?

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Evidently, the problem is not with the volumes of natural resources used, but with the existing economic structures managing them. If the established tendencies in nature management and the accompanying approaches are kept intact, Russia will never find enough resources to maintain its present level of development, even by stepping up exploitation of nature. Therefore, an ecology-oriented restructuring of the whole economy seems to be a rational approach to the solution of Russia's environmental problems. The creation of efficient economic structures would permit significant reduction of pressure on the environment while increasing the production of finished products. Ecology-minded economic development would, in the writer's estimation, save vast amounts of presently used natural resources (up to 20-30 percent), with a simultaneous rise in living standards.

A safe, ecologically sensitive economic development for Russia will not be possible without radical changes in public attitudes. As has been mentioned, public opinion should be really ecologically minded, so that the whole of society will be somewhat "greenish." But still, these questions are not duly

observed by the fundamental and applied sciences, and their coverage in the mass media remains insufficient and inadequate. This has a negative effect on decisions taken in the highest echelons of power.

Nature Is Everybody's

The critical ecological situation in Russia poses a threat to the whole world. The Chernobyl catastrophe and the death of the Aral Sea demonstrate that natural disasters do not recognize national boundaries. Russia also contributes much to the aggravation of global ecological problems. For instance, for its rather small share of world industrial output, Russia produces over 10 percent of the chemicals destroying the ozone layer.

Environmental degradation causes tension in international relations. The exchange of air and water pollution gives headaches to the politicians trying to solve this problem. With some countries Russia has a "positive" balance of transboundary pollution (it supplies more pollutants to its neighbors than it receives), and with some it has a "negative" balance. To the detriment of the Russian environment, the country imports more pollution than it exports. For instance, it receives tremendous amounts of sulphur and nitrogen from Germany, Poland, the Czech Republic, Slovakia, Romania and even the UK. But the leading supplier of these substances is Ukraine. Transboundary pollution from that country exceeds returns from Russia: of sulphur, by a factor of 16, and of nitrogen oxides, by a factor of seven.

The most adversely affected countries from Russian pollution are the Nordic states (Finland, Norway and Sweden) and Kazakhstan. Therefore, it is not a coincidence that Russia's Nordic neighbors are trying somehow to exert influence on Russia in order to limit the pollution expansion from the east. They propose programs for the reconstruction of the "dirtiest" enterprises in the north with new resource-saving technologies. However, most projects of that type are costly, and Russian managers are not very enthusiastic about them. In recent years nonetheless, Russia has been rather actively expanding its international ecological cooperation. Good relations have been established with UNEP, within the framework of which eight projects are being implemented, including those for Chernobyl, the Black Sea and Lake Baikal. In 1991, Russia joined the Global Natural Resources Data Base, also within the framework of UNEP.

The United States plays the leading role among partner-countries in ecological cooperation. Russia has 60 joint projects with the U.S. in 14 areas. Cooperation with Germany covers seven large areas integrating over 40 projects. Contacts with the international ecological organization Green Cross, now headed by the former USSR President Mikhail Gorbachev, may also be promising.

Ecological problems also cause tension between the former Soviet republics—one of the most acute of which is the nuclear power industry. For

instance, local authorities in Krasnoyarsk refused to accept used nuclear fuel from a Ukrainian power station, thus breaking Russia's obligations in the transaction. In principle, Russia must supply the fuel to the other republics and accept it back for a certain pay. But what region would like to be a nuclear dump?

Problems relating to the burial of radioactive waste become more acute in Russia itself. Tatarstan, wishing to gain more autonomy, is a good example of that. For 17 years, radioactive wastes from other regions of the former Union were transported to a "radon" complex in that republic. The wastes must be stored for at least 600 years under very strict conditions, which is far from reality in the region. But now some in Tatarstan argue that all that waste should be returned back. In their arguments they refer to precedents in world practice—Argentina returning radioactive wastes to the U.S.; Belgium to Germany; and countries of Central Africa, to France.

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The Power Industry Versus Nature

To stabilize the ecological situation in Russia, it is essential to find a solution for two major problems, which are now the subject of much social, political and economic controversy. These problems are the power industry and defense conversion. On the one hand, the power industry and defense complexes cause tremendous ecological damage and, evidently, it will be impossible to improve environmental protection without their fundamental modernization and restructuring. However, on the other hand, this may lead to the closure or reconstruction of thousands of large enterprises, resulting in high unemployment. It would also lead to a reduction in investments and deprive the power industry and defense elite of a significant share of their influence upon the Supreme Soviet and the government (which is immense). The advent of Russia's new prime minister, Viktor Chernomyrdin, who previously headed the gas industry, has made the power industry lobby even stronger.

At present, there are clear symptoms of an energy crisis in Russia: a sharp decrease in the production of energy resources, a reduced energy consumption, and the disruption of export supplies. The population, industry, and agriculture suffer from energy shortages. The prospects are equally gloomy. According to forecasts, oil and coal production will soon decrease, as well as the export of fossil fuels, which will result in the reduction of currency earnings. Should these tendencies prevail, this may lead to very negative social and economic consequences.

The conclusion derived in the government from this crisis is that a significant increase of capital investments in the fuel and energy complexes is needed to increase the exploitation of the existing fields and develop new ones. The speedy construction of new power stations is also needed according to them, even with lower environmental parameters. And such an approach is indeed being followed. The latest measures by the Russian government are directed to stepping up the production of energy: one of Chernomyrdin's first decisions was to allocate 200 billion rubles to the energy complex.

Even the nuclear power industry, which after Chernobyl seemed to be buried for good, now has risen from the ashes like a phoenix. The government has adopted a special program for construction of new nuclear stations throughout the country, which will put nearly 20 power-generating units in operation before the year 2010. And all this despite very serious radiation problems in the country. The Chernobyl accident polluted 14 administrative regions in Russia, with a total area of 55,000 sq. km.—an area bigger than Switzerland.

Russia's intention to begin development of new large fossil fuel deposits carries an exacerbated social and political price. Since the country lacks its own means for such large-scale projects as the development of oil and gas fields in wild and remote areas of Siberia and the Far East, the necessity of involving foreign investment is obvious. To this end, attempts are being made to hold tenders in certain regions, including Sakhalin Island, the Tyumen and Magadan regions, and others. Such oil giants as Shell, Exxon and Mitsubishi have shown their desire to participate. However, a number of questions arise in this respect, which still need to be answered clearly.

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How can the interests of the emerging Russian business community be taken into account? They would hardly survive competing with powerful foreign firms. In such conditions, the government should follow a policy to combine justified patronage with attractive incentives for foreign companies. To maintain such a balanced line will be rather difficult. On the one hand, the government is under pressure by Russian businessmen and nationalistic forces, which accuse it of "selling" Russia, "trading for next to nothing the national wealth," while "strangling" the national businesses. Natural resources are now the most lucrative commodity, and businessmen make fantastic money on the sale and profiteering of oil, gas, timber, non-ferrous

metals, and other resources. According to estimates, each year Russian businessmen illegally deposit in foreign banks five to 10 billion dollars, received from the sale of Russian goods, mainly energy resources.

On the other hand, the government is under pressure from the regions, where the deposits are, which are interested in attracting significant foreign capital. Also interested in foreign participation are many corrupted administrators at all levels, who enrich themselves by extorting and receiving big bribes from foreigners. In February 1993, in the national conference on control of organized crime and corruption, President Boris Yeltsin cited frightening figures. About 40 percent of businessmen and two thirds of commercial structures are involved in corrupted relations. Corruption in administrative and managerial bodies destroys the Russian power structures from top to bottom.

Another pernicious political problem is the distribution of revenue between the central and local authorities gained from the sale of natural resources. Each region now wishes to declare itself the proprietor of the natural resources in its territory, and minimize the deductions from their revenues to Moscow. This situation has a long history, when the regions, with enormous reserves of oil, gas, gold, and diamonds, lived in poverty, receiving only a small share of the profit from the sale of their wealth. The Center used to retain the lion's share for its own purposes. For instance, in the last decades, 200 billion dollars were received for the sale of Siberian oil alone. However, Siberia got practically nothing from this fortune. Now, when the Center is weaker, the situation has changed radically. Each region wishes to become a "Kuwait," ensuring first of all the well-being of their own populations. And that is done in absence of clear legislation regulating property rights to natural resources between the federal and local authorities. This situation adds to political tensions in Russia, contributes to the emergence of centrifugal forces and creates the threat of actual disintegration in the country. Hundreds of billions of rubles and tens of billions of dollars are at stake in this game.

As already mentioned, the breakdown of the Soviet Union and the ensuing energy crisis have revived the nuclear power alternative. Quite recently, one of the main goals of green ecological movements was the struggle for the overall closure of nuclear stations. In fact, this struggle was of a political character, because construction of such stations was carried out by decisions made in Moscow, and practically without any prior consultation with the regions. After Chernobyl, the desire not to remain "nuclear hostages" became especially strong in Lithuania, Armenia, Ukraine, Belarus and some regions of Russia. Many green activists came to parliaments and governments on the crest of an anti-nuclear wave.

And so what? The severe economic and energy crisis compels Russia to maintain in operation the existing stations and construct new ones. In the

In Lithuania, the previously controversial Ignalinsk station continues to function, and in Armenia, the government demands the reopening of the local nuclear power station to alleviate the country's chronic energy dearth—despite the fact that the station is in a seismic zone.

center of European Russia, the nuclear power industry produces 25 percent of the total energy supply. Before 1995, the government plans to build three additional power plants, and by the year 2000, another five. In Lithuania, the Ignalinsk station, about which there was so much fuss, is quietly functioning, supplying 60 percent of Lithuania's electric power and stabilizing life in a country living with erratic oil and gas supplies. Levon Ter-Petrosyan, the Armenian president, demands the reopening of the local nuclear station, situated in a seismic zone, in order somehow to alleviate the catastrophic energy shortage in his country which is practically isolated because of the war with neighboring Azerbaijan.

Russia produces per capita approximately the same amount of electric power as Japan, and more than the UK, Italy and Poland. It produces more oil and gas than most developed countries. Yet, the final economic results are directly opposite. And one should get a clear idea that with the existing non-rational economic structure, the country will never have enough energy, no matter how much of it is produced.

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To change the present energy-intensive economy to an energy-saving one it is necessary, in the shortest time possible, to replace "voracious" technologies with more efficient ones. A vivid example of this is the metallurgical complex. By expert estimations, a wide use of energy-saving equipment in the metallurgy industries of the Commonwealth of Independent States would save about 12 percent of the total power supply, which corresponds to the share of power produced by all nuclear power stations. The paradox is the fact that many types of energy-saving equipment—for the continuous casting of steel in particular—were developed in the USSR and then exported to Japan.

So, even with the very modest estimates, possible energy conservation resulting from economic restructuring can be 30 percent at a minimum. This means that even while maintaining the present level of oil, gas, coal and power production, it would be possible to raise efficiency of energy consumption by one-third, provided the existence of rational and normal

economic structures. Such an amount of additional energy would be enough for many years for even the most intensive socio-economic development.

A great potential for energy-saving development has been proven by the experience of many countries, where economic growth in recent years has been sustained by means of economizing energy resources, and without the construction of new power stations or the development of new deposits.

Nature and Defense: Is Cooperation Possible?

The military-industrial complex, known as the VPK, like a heavy milling stone, is hanging on the neck of Russia which tries to swim out of the social, political and economic crisis. The extent of the country's militarization can be illustrated by the following figures: Up to 70 percent of mechanical engineering products are used for defense needs, and tens of millions of people work for the VPK. According to the writer's estimates, this complex consumes annually, at a minimum, 100 million tons of oil and coal, 100 billion cubic meters of gas, tens of millions of tons of various ores and cubic meters of water; its enterprises occupy tens of millions of hectares of valuable land, pollute the environment with enormous quantities of various hazardous substances.

"At any moment, ecological effects [in Lake Baikal] may become irreversible."

A classic example of the adverse effects on nature caused by the defense industry is Lake Baikal, in Siberia. This lake is unique in our planet; it is the world's deepest and contains 20 percent of the world's fresh water reserves. In the 1950s, the USSR Ministry of Defense badly needed a strong cord to produce tires for heavy bombers. In the opinion of engineers, this required very clean water. Defense priorities were highest in the former Soviet Union, and Baikal was doomed. On the lake bank a giant pulp-and-paper mill was constructed, which very soon started to pollute the water with its effluents. The absurdity of the situation was that already after the mill was put in operation, it was found out that, in principle, it was not needed—a tire cord of much better quality could be manufactured from oil products, which is what was actually done. However, production was already on the run, and Baikal's degradation was quickly progressing. Despite the efforts of public organizations, scientists, and attempts by the government to change the chemicals needed for production or even close the mill, pollution of the lake goes on at a high rate. At any moment, ecological effects there may become irreversible.

Only quite recently has it become possible to obtain data on the scale of radioactive pollution in the Urals: in the Yekaterinburg (Sverdlovsk), Chelyabinsk and Kurgan regions to be exact. Radiation there occurred as the result of a series of accidents in 1949-1951, 1957 and 1967, which were concealed from the public, in the top-secret "Mayak" integrated group of

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enterprises involved in nuclear weapons production. For a long time, this conglomerate pumped highly radioactive wastes into the small lake of Karachai. In hot summers, the lake partly dried up and radioactive dust spread for dozens of miles around, covering the nearby human settlements. According to some estimates, the level of radiation in some Urals regions is 20 times higher than in Chernobyl.

Taken together, open water bodies contain about 500 million cubic meters of radioactive water, capable of doing irreparable damage to the health of 7.5 million people living in the vicinity to the Siberian rivers Iset, Irtysh and Ob. This means that a "latent Chernobyl" exists, with unpredictable consequences for many regions in the Urals and Siberia.

The end of the Cold War and the ongoing disarmament process makes possible a large-scale defense conversion in Russia with accompanying production cuts in the defense complex. The defense industries have great scientific and technical potential, highly skilled manpower and advanced technologies. Therefore, conversion may play an important role in the stabilization of the ecological situation in the country.

Recently, the Ministry of Environmental Protection and Natural Resources, jointly with the defense enterprises and organizations, prepared a draft program called "Conversion—Ecology." The program provides for wide-scale research and development and preparatory work to start commercial production for ecological purposes. But is there still enough time left?