

The role of science in Russia's modernisation

By Levan Mindeli

The process of modernising Russia is understood as a strategy of renovation, the elimination of backwardness, achievement of an up-to-date level of competitiveness comparable to advanced countries, sustainable rates of social and economic development, high living standards, expanded reproduction of the human potential, respect for nature, protection of citizens' rights, and development of democracy and law and order. The orientation of the country to modernisation is associated with radical transformations in the social structure, political activities, public psychology, and other areas of social life. All this suggests organic inclusion of the national economy in the world's newest innovation processes, integration into the global economy, intensive use of a wide range of innovations in all areas society that are impossible without appropriate investments, close interaction between the government and business, and the optimal use of results of scientific, technological, and intellectual activities.

So far, Russia has better positions in research activities than in their further implementation in the form of know-how, industrial prototypes, and trademarks (for example, by 2010 the gap between technology imports and exports amounted to 22.4 billion roubles, whereas by 2007 it had been 11.9 billion roubles). Thus, the field of foreign trade in technology reflects the old disease of the Russian economy: an excessively long path from research to applied development and especially to introduction into production. For its part, the sector of knowledge generation must be capable to flexibly respond to new global trends and needs of the national economy and society, to ensure close co-operation between the research sector and higher education, as well as to effectively implement commercialisation of new technological solutions.

Achieving the purposes of modernisation is possible only on the basis of scientific knowledge, the intellectual capital of society and its creative potential, a system of efficient training of R&D personnel and skilled technicians. However, the most serious problem in Russia is the lack of demand for R&D results from the business enterprise sector of the economy, which will negatively affect the timing of the modernisation. Results proposed by R&D institutions, even those at the global level, find no application because of low overall receptivity to innovation in Russia. Private businesses are reluctant to innovative industries, finding more profitable areas of investment. The lack of incentives and weak competition constrain the redistribution of capital from the primary industries into high technology production and the use of new technologies and the introduction of innovation products. As a consequence, the chronic depletion of the range of exports is a dangerous trend for Russia, as the principal place belongs to hydrocarbons, while the share of high-tech products is only about 9 per cent, mainly the export of arms. It should also be noted that revenues from the export of raw materials can and should be directed to the production sector and contribute to its innovative development. However, we

cannot rely solely on the importation of foreign technologies. Without planning and implementing our own technological breakthroughs it is impossible to modernise Russia, in our opinion.

As the international experience shows, successful modernisation requires common will and understanding of the goals of this process in society at large, not limiting to individual representatives of the state power. However, the so-called manual control cannot be completely excluded. Russia is a specific country with its largely unique history of development, in which the human factor has always played a significant role (just to remember Ivan the Terrible, Peter the Great, Vladimir Lenin, Mikhail Gorbachev, and Boris Yeltsin). The transfer of foreign experiences onto the Russian soil should be very careful because it is necessary to consider both the particular environment where they were formed (Western European, American, etc.), and Russian specifics. This also applies to the projects existing in government circles to shift the centre of gravity of scientific research for solving the problems of modernisation into educational structures that have not yet the necessary infrastructure for these purposes and, which is even more important, scientific schools (that, as well known, provide the basis of research activities and are being formed for decades). The sample is taken from the United States possessing the network of universities that perform the lion's share of basic research, and national academies are voluntary public associations that do not receive budget funding. Science in Western Europe (and later in the United States) has historically occurred at universities as research and education complexes. The Russian Academy of Sciences was an initiative of Peter the Great as exactly a *research institution*. And so far here, in spite of all past and present problems, the most qualified and internationally recognised research workforce is concentrated. It appears that government policy should be aimed at enhancing the role of basic research in solving the problems of modernisation, and the academy sector should maintain its position as the leading research centre in the country.

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