

The public-private partnership as a system to implement innovation projects in alternative energy and hydrogen technologies

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1. In this context we consider public-private partnership (PPP) as an effective tool to implement innovation projects in the field of alternative energy (AE), hydrogen technologies (HT) and fuel cells (FC) for the human society power supply.
2. The PPP is not a tribute to fashion, but is the objective reality and the necessary condition to establish the equal relationship between the public and private sectors to achieve the innovation breakthrough both in economy and power supply. [1]
 1. The objective nature is determined by at least two factors. First, Russia is a mixed-type economic system where on the one hand there is traditionally strong public presence in economics and power engineering. And on the other hand there is a very rapid development of private business which interests extend to energy sphere as well. Secondly, in modern conditions the strategic goals to balance the energy basic development both in public and private segments as part of a mixed-type economic system undoubtedly meet the scientific-and-technological advance nature. [2]
 2. Speaking about partnership equality it should be noted that at present the old views are to be got rid of when estimating both public segment as "basically not effective owner" and the private industry that "became rich using the uncivilized approaches". This estimation of the economic and social conditions of Russia was to a certain extent true in the nineties of the last century, but today this position becomes the historical anachronism and functions as a brake preventing the mutually advantageous and therefore equal partnership between public and private branches.
 3. Neither public nor private sectors are separately able to solve such ambitious task as innovation breakthrough in economy and power engineering. At that it should be considered that power engineering in Russia (due to historical traditions, natural resources, leadership geopolitical goals, geographical position and economic and social development) is a relatively conservative sphere of economics which is hardly susceptible to innovations. [3] The power engineering development trends established by the state for the coming decades [4] are oriented mostly to growth in volumes (improvement of infrastructure and capacity increase of traditional industries) than to quality changes associated with the alternative energy sources which shall meet the requirements for the civilized countries to transit to the new (sixth) technological set-up in the 21st century. It results in some disproportion between the public position in respect to strategic priorities for the traditional energy and the private business position which due to the severe competition has to seek for new market niches, to make use of innovation technologies for competitive products to be issued, in our case - "clean energy of E.2 new generation".
3. Taking into consideration such public position and to remove disproportion the initiatives of partners to be mutually advantageous are of significant importance. The project for the alternative energy and hydrogen technologies was initiated by the private-owned company "Norilsk Nickel" MMC that signed the cooperation agreement with the Russian Academy of Sciences as the public entity in 2003. The public sector represented by the Federal Agency for Science and Innovations initiated in its turn particularly the Federal Target Program "Research and Developments of Priority Trends in Scientific and Technological Complex of Russia for 2007–2012". These initiatives within PPP is of prime importance for risk profile: hydrogen energy program is a venture,

long-term and thereby risky business. [5] The most risky is the Research and Advanced Development phase which the state "ensures" by tendering for the declared lots and practically supports corresponding winners out of our contractors for 50–75% of financing.

4. Mutual interests between public and private sectors are coincided in implementing these initiatives in the hydrogen energy program. Public sector - academician institutes, higher education establishments, design centers, industrial enterprises, etc. - receives a particular order from private business to perform research, scientific and development works, as well as integration of the hydrogen program efforts, its stable, long-term and target financing by the private entities and, of course, — effective management. Private interests are the competitive innovation products and their commercialization (serial production based on the hydrogen technologies with the following entering the domestic and foreign markets). The somewhat conversion formula may be used for this: "science is the process of conversion money into knowledge" and "innovations are the conversion knowledge into money". The common ground of mutual interests is to improve the image and business reputation both for public and private business which is considered to be a necessary condition for Russia to be integrated into world's energy community.
5. We consider the PPP as the necessary condition for the National Hydrogen Economy Program to be developed and implemented in Russia. [6] Similar national programs or projects exist in more than 60 developed countries and third world countries, but Russia is not part of them. [7] "The division of labour" may be as follows:
 1. The public branch initiates clear and precise "rules of game" in the key spheres:
 - Political assessment of significant conversion from the hydrocarbon energy to alternative one which should result in changing the trends in the energy strategy of Russia up to 2030;
 - Legislation. At the end of 2007 the draft law "Technical Regulations on Safety for Units and Systems designed for Hydrogen Production, Storage, Transportation and Use" has been worked out;
 - Administrative and organization steps to build alternative energy infrastructure;
 - Tax, financial and economic preferences to promote implementing the infrastructure for "clean energy";
 - Coordination of activity of all entities concerned (Gosduma, Ministry of Industry and Energy, Educational Federal Agency, Gazprom, Rosatom, Rosnanotech, etc.);
 - Scheduled preparation of engineering and technical personnel, etc.
 2. The private business task is to undertake heavier financial burden at the pilot and serial production phase, to outline the "road map" to markets (regional-federal-foreign), to develop and implement market expansion technologies (product substitution, joint ventures, concession agreements, etc.). [8]
 3. The joint task is to arrange and conduct the massive informational and educational activity especially among the domestic consumers and promotional campaigns for "clean energy" products. [9]
6. Development and implementation of alternative energy, hydrogen technologies and FC in our globalizing world has the "international and integrated" nature. Therefore, the PPP is an integral part of international partnership strategy of our Company. For example, state approval of the big financial transaction for purchasing the American Plug Power block of shares by our investor - Interros and Norilsk Nickel, cooperation of many state academic institutions, i.e. our contractors, with the private German firm FuMaTech in the field of membrane-electrode assemblies (MEA), delivery of distributed energy power plants, backup and uninterruptible power units (produced by American Companies UTC and Plug Power, respectively) to Russian facilities and their adjusting accordingly to the local conditions, etc.

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