
ABSTRACTS

V. M. Golovatyuk

Social Potential of the Innovation-Driven Economic Development in the Science, Technology and Innovation Policy Context

The possibilities for the development of science and innovation potential in the Ukrainian economy are investigated in view of the specifics of science, technology and innovation policy (STI policy) in EU countries. It is highlighted that a distinctive feature of the recent STI policies in EU countries is its emphasis on growth of the social potential of the innovation-driven development. The experiences of EU countries in this field are of great importance for Ukraine in view of its aspirations to Euro-integration and the need for the appropriate improvements in the national STI policy. Results of sociological studies are used to show that the Ukrainian society features strong trust to R&D and social demand for its active contributions in its life. However, the social function of R&D is implemented inefficiently, which but widens the existing gap between R&D and society. Hence, because the existing state of the socio-economic environment in Ukraine is incapable of triggering growth in the social potential of the innovation-driven economic development, the innovation periphery of the national economy will tend to be more explicit.

The article is a follow up of the study devoted to problems of optimization of the mechanisms for Ukraine's integration in the social and economic environment of EU, dealt with in the article "Innovativeness of the Ukrainian Economy in the Context of European Integration", published in "Science and Science of Science", 2015, No 4.

Keywords: *innovation-driven development, innovation attractiveness, science and innovation policy, social and economic environment, monitoring, social potential.*

V. V. Senchenko, O. V. Gladkov

Monitoring of Information Society Development in Ukraine

The current status and problems of the system for measuring the development of the information society and implementation of e-governance in Ukraine are analyzed. The need for improvement and harmonization with EU standards of the National System of Indicators Measuring the Development of Information Society, the Guidelines for Constructing the Information Society Development Indicators, the statistical observation system of the Ukrainian State Statistics Service and the related regulatory acts is substantiated. The results will help increase objectification, efficiency, transparency and openness of the public policy and the governance in the field of information society building the in Ukraine, and lower levels of corruption.

Keywords: *information and communication technology, information society, Digital Capacity Index, Networked Readiness Index, E-Government Development Index, National System of Information Society Development Indicators.*

N. B. Isakova

Business enterprise R&D: Current Performance and Problems

Analysis of the current performance and prospects of business enterprise sector of R&D in Ukraine is made by official statistics data on R&D organizations, R&D personnel, R&D financing, R&D effectiveness, distribution of R&D by type of R&D result. A comparative analysis of the performance in business enterprise sector and other R&D sectors is made. A review of the innovation activity at Ukrainian enterprises is given. Results of the analysis show too low level of R&D activity at research organizations and enterprises classified in business enterprise sector of R&D, weak interactions between economic agents within the national innovation system, which results in less effective utilization of the domestic R&D capacities in all the R&D sectors. A nomenclature of recommendations is given, aimed at achieving a crucial objective of the innovation policy in Ukraine – laying down the framework required for effective utilization of the capacities in business enterprise sector of R&D within the national innovation system.

Keywords: *business enterprise sector of R&D, research and development, scientific and science & technology works, innovation cooperation, R&D results, commercialization of R&D results.*

L. S. Lobanova, A. Yu. Humenyuk
**The Development of Education System for Research Staff:
An Indicator of Science and Technology Policy**

The paper contains analysis of the current performance and problems of doctoral education in Ukraine in the context of integration in the Single European Education and Research Area. A critical analysis of the new Law of Ukraine “On Higher Education”, adopted in 2014, is made to the effect of doctoral education, with recommendations on additions to the Law with account of the practices in European countries. Official statistical data is used for finding out negative tendencies in doctoral education in Ukraine over the latest years. It is shown that poor financing of doctoral education in Ukraine has been the main economic factor behind these tendencies. Real opportunities for Ukraine to approach the average European measures of doctoral education are studied using the results from the international project “Careers of Doctorate Holders”, implemented on line of the 7th Framework Program of EU, and the official statistics data on graduate school and higher doctorate, with due consideration to variances in interpretations of terms and indicators.

Keywords: *higher education, graduate school, higher doctorate, higher education establishment, research organization, doctoral education, specialized scientific council, national education accounts, official science and technology policy.*

I. P. Makarenko, O. H. Rohozhin, V. P. Soloviyov
Innovation Monitoring in Asian Countries: Lessons for Ukraine

The necessity for change in the approach to statistical monitoring of the innovation activity in Ukraine by introducing the methodology used for evaluating the performance of national innovation systems (NIS) and development of basic innovation technologies in rapidly developing countries, in East Asian countries in particular. A detailed description of this methodology is given. Structural analysis of R&D financing in Ukraine is made. It is recommended that quarterly statistical monitoring of the Ukrainian NIS by OECD methodology should be launched, with publication of its results.

Keywords: *innovation activities, national innovation system, statistical monitoring, research and development, technological tenor, system innovation process, economic security.*

O. A. Grachev, V. I. Horevin
National Academies of Sciences of Africa’s Countries: Scientific Analysis

This work is part of a project devoted to the analysis of the Academies of Sciences of different countries. Scientific and technical sphere in Africa is seen as an important component of social progress to overcome the colonial past. R&D during 2010–2014 revealed signs of growth and were performed mainly in the field of agricultural sciences and Earth sciences. Objectives and structure of the National Academy of Sciences in 14 African countries analyzed on the basis of information found in their websites in 2014–2015. Academies in African countries tried to provide advanced level of science and education, independent and informed advice to the government and society, to promote national and international cooperation. National Academy of Sciences in 13 African countries consist of the Learned Society of outstanding scientists, Academy of Scientific Research and Technology in Egypt is represented by 4000 members working at scientific institutions and universities and has no Learned Society of outstanding scientists. While members of Academy in 8 countries are organized by their professional fields in form of college, in other academies this organization is expected for the future.

Keywords: *scientific and technological potential, African countries, education, National Academies of Sciences, objectives, structure.*

A. A. Slonimsky, M. V. Gordeychik
**Internationalization of Resources for the Innovation-Driven Development
of National Economy: Case of Belarus**

The contribution of foreign resources in the innovation-driven economic development is analyzed in the context of international ratings. It is argued that interpretation of foreign resources for innovation as a separate economic category is needed for their further studies from perspectives of their structural change and the existence of mechanisms for their attracting in the economy, including the regional economies. It is shown that the Republic

of Belarus is characterized by limited capacities for attracting this category of resources in building up the national knowledge-based economy, on the one hand, and the availability of potential reserves for the increased and broader use of foreign and international intellectually oriented capital for intensification of local innovation resources.

Keywords: foreign innovation resources, Index of Knowledge Economy, Summary Innovation Index, Global Creativity Index, Global Innovation Index, research and development, direct foreign investment.

E. L. Kordyum

Space Biology and Medicine in Ukraine: History and Prospects

A brief account of the history of formation of space biology and medicine in Ukraine, dating back from late 50s of the past century, is contained. The chronology of space biological experiments with intensive participation of researchers from the National Academy of Sciences of Ukraine is given, and their contribution in the methodology of setting and performing space model experiments with various biological objects like bacteria, algae, plants, organ cultures, tissues and cells of plants and animals is highlighted. The role of the State Space Agency of Ukraine in successful development of space biology in Ukraine is demonstrated. Main fields of research in space biology being conducted now are highlighted.

Keywords: space biology and medicine, experiment, bacteria, cell, orbital station, space flight, microgravitation, biosatellite, bioregenerative system.

I. V. Babichuk, V.A. Shenderovskiy

Importance of Professor I. Gorbachevsky's Works for Protection of Human Health

The contribution of Ivan Yakovlevich Gorbachevsky, a Ukrainian scientist, professor, the first ever minister of health protection, in investigating the chemical composition of substances found in alcohol drinks, harmful effects for human organism from drinking alcohol and use of alcohol as solvent in industry, in elaboration of measures for improving health of workers employed in hazardous productions on the basis of data from reports about the workers' general condition and deceases that may origin from poisoning caused by methyl alcohol's vapors.

Keywords: alcohol drinks, absent, ethyl alcohol, methyl alcohol.

V. V. Tatarchuk

F. R. Geshvend: Inventor of an Aircraft with Jet Engine

The purpose of the study is an attempt to sum up all the information available in literary sources about F. R. Geshvend, an architect and an inventor of an aircraft with jet engine, called "Steam-aircraft". The data are specified, related to his biography, his work in Kyiv in particular; the circumstances encouraging him to create "Steam-aircraft" are highlighted. Information is given on technical parameters of "Steam-aircraft", expert conclusions of that time about feasibility of its exploitation, tragic fate of Gershvend, and the author's search to find out the burial place of this outstanding inventor.

Keywords: "Steam-aircraft", inventor, engine, airplane, Kiev Society of Aeronautics.

O. V. Firsov

Borys Hryhorovych Lutskiy (Lutskoy) (Commemorating the 150th Anniversary since the Birth)

An account of Borys Hryhorovych Lutskiy, an outstanding designer, inventor and scientist of Ukrainian origin, whose career was made and life was mostly spent in Germany, is given. Detailed data are used to evidence that at late 19 – early 20 century he was an acknowledged designer and inventor in Europe in the field of engine building, first and foremost numerous models of internal combustion engines, and made remarkable contribution in motor-car construction and shipbuilding. It is shown that although his inventing and designing work was mainly located in Germany, he kept offering his projects for implementation in his homeland.

Keywords: engine, internal combustion engine, invention, automobile, transport vehicle, aircraft, airplane.