

## FOREST RESEARCHES IN THE WORLD

Valentin Shalaev

Moscow State Forest University, Russia

e-mail: shalaev@mgul.ac.ru

### ABSTRACT

The directions of the forest researches are considered in the paper. They give in accordance to the estimation of the IUFRO-experts for the period of time from XXII up to XXIII World Congress IUFRO. These researches priorities may be taken into account while planning the science development in the country. The paper provides the short information on research priorities stated by the EU Seventh Framework Programme.

**Key words:** forest, research, IUFRO, Seventh Framework Programme.

The most influential organization in the world scientific forest community is International Union of Forest Research Organizations (IUFRO), established in 1892 and currently unites more than 15 thousand scientists from 700 organizations and institutions from 115 countries. In this case, the organization's estimation of areas of forest research in the world is of interest.

The results of questionnaire of affiliated organizations and their functionaries were presented at the XXII IUFRO World Congress in Brisbane (Australia). The answers in percentage replies by regions in proportion are: Europe – 49,4; Northern America – 18,5; Latin America – 8,3; Africa – 1,2; Asia – 18,4; Western Pacific – 4,2. The content of responses firstly allowed formulating the main directions of research that prevailed in the global forest community for 10 years in advance of Congress. These are:

- Air pollution;
- Biodiversity;
- Forest dieback;
- Forest operations;
- Genetics;
- SFM and certification;
- Wood quality.

Moreover certain changes were noted over the past period and at the time of the Congress the areas of forest researches looked as follows. These are:

- Agro forestry;
- Climate change;
- Carbon sequestration;
- Forest restoration;
- Plantations;
- Policy and governance;
- Sustainable use of wood and NWGS;
- Wood consumption.

The total responses also allowed to formulate future research priorities and promising areas of forest research. They are:

- Adaptation of forests to climate change;
- Biotechnology;
- Forests and landscape (and restoration);
- Forests and water;
- GMO;
- Reduced impact logging;
- Recreation and valuation of NWGS;
- Social aspects (incl. gender, forest workers, communication).

Nowadays it is possible to analyze the correctness of assessments made and some

real changes. For example, estimates of IUFRO 2009 indicate a number of topics for future research that should be considered as a development and complement previous findings. They are:

- The increased global demand for wood and non-wood goods and services;
- Bioenergy;
- Impacts of climate change;
- Competition for land and how to reverse deforestation;
- The role of genetically modified trees and plantation forestry;
- Invasions of alien pests and pathogens;
- Biodiversity conservation;
- Social and behavioral processes;
- The impact of global economic developments on local economics and livelihoods.

At the same time there was presented an analysis of responses from branches of science, which represents the interaction with the resultant interest. Among the main partners for forest research, there is ecosystem research; environmental sciences; genetics; modeling; policy science; soil science; wood science. In perspective Future Partners for forest research are supposed to be changed, the most notable are: agro forestry; biotechnology; economical sciences; environmental science; health sciences; microbiology; social and policy sciences.

Undoubtedly research priorities over the last ten years have shifted from more technical to environmental issues. For the future an increasing focus on social issues is expected. Obviously, these tendencies could be explained by the globalization of problems facing humanity. Forest research, research into forest problems, which is one of the main components of the global life sup-

port system, naturally, reflects the decisions response to the world's challenges. And if at the time of the study (survey), this did not seem important enough, the dynamics of recent years clearly confirms the findings and forecasts.

In that case there were some interesting research tendencies, which were given start in the 7<sup>th</sup> Framework Programme for Research and Technological Development of the European Union (FP7) in 2007 with very substantial funding. Similar programs have been operating in the EU since 1984, this form of collaborative research has been proposed by the European Commission, adopted by the Council and European Parliament as a result of the total voting.

FP7 collaborative researches are based on the range of research topic areas as follows:

- Health;
- Food, agricultural and fisheries, and bio-technology;
- Information and communication technologies;
- Nanosciences, nanotechnologies, materials and new production technologies;
- Energy;
- Environment (including climate change);
- Transport (including aeronautics);
- Socio-economic sciences and the humanities;
- Space;
- Security.

The main feature of this European Program is the structural organization of the thematic priorities in as so-called Technology Platforms. The term „Technology Platforms“ was proposed by the European Commission in 2004 to identify thematic areas within the framework of which the

priorities were formulated for the development of the European Union. A key feature of European technology platforms can be regarded as forming as a result of the needs of the consumer. In fact, that is the commissioning for a scientific and technological work to achieve the goals and strategies for sustainable and renewable resource of renewable modern society.

In the same 2004, work on developing the Forest-Based Sector Technology Platform (FTP) began, which was aimed at uniting representatives of all branches of the EU forest sector and research community of European universities and research centers. As part of the FTP the main directions of research was formulated – Strategic Research Agenda, presented in an appropriate scheme and classified:

- by the five strategic objectives: Development of innovative products for changing markets and customer needs; Development of intelligent and efficient manufacturing processes, including reduced energy consumption; Enhancing availability and use of forest biomass for products and energy; Meeting the multifunctional demands on forest resources and their sustainable management; The sector in a societal perspective;
- by six forest-based value chains: Forestry; Wood Products; Pulp and Paper Products; Bioenergy; Specialties.

Of the 29 technology platforms, operating within the framework of FP7, we can mention those of them that are most associated with Forest-Based Technology Platform. These are:

- Plants for the Future;
- Sustainable Chemistry;

- Global Animal Health;
- Food for Life;
- Water Supply and Sanitation Technology Platform;
- Zero Emission Fossil Fuel Power Plants;
- Bioenergy Technology Platform.

Thus, the directions formulated by the world scientific community (IUFRO) are mostly those concerning fundamental science, and the research areas formulated by EU are more consumer-oriented and they should be considered when planning forest research, especially in developing the more significant process of mutual integration in the world.

In August 2010, in Seoul (Republic of Korea) XXIII IUFRO World Congress was held – a landmark event in the global forest science. The Congress was held under the motto: „Forests for the Future: Sustaining Society and the Environment“. The Congress was attended by 2675 registered participants from 92 countries worldwide. Meaningful work of Congress, correlated with the previous forecast was carried out in nine research areas:

- Forests and Climate Change;
- Biodiversity Conservation and Sustainable Use of Forest Resource;
- Forest Environment Services;
- Asia’s Forests for the Future;
- Forest Products and Production Processes for a Greener Future;
- Emerging Technologies in the Forest Sector;
- Frontier in Forest and Tree Health;
- Forests, Communities and Culture;
- Forests, Human Health and Environment Security.

The decisions of Congress, in particular the Seoul Resolution and IUFRO Strategy 2010–2014, primarily focused on global

challenges facing humanity. It should be noted that in accordance with the adopted documents the objectives of future research papers focused on six thematic areas:

- Forests for People;
- Climate Change and Forestry;
- Forest Biodiversity Conservation;
- Bio-Energy;
- Forests and Water Interactions;
- Forests Resources for the Future.

In conclusion, I would like to quote from the report of FAO (Food and Agriculture Organization of the United Nations) in 2009: „...research continues to break new ground in all areas of forestry, from production, harvesting and processing to wood energy and the provision of environmental services. Relatively new fields such as biotechnology, nanotechnology and information and communication technologies

contribute to these developments. More concerted efforts are needed to address imbalances and deficiencies in scientific and technological capacity. Challenges include reducing barriers to the flow of technologies among and within countries, ensuring that social and environmental issues are mainstreamed and transcending traditional sectoral boundaries to take advantage of scientific and technological developments outside the forest sector...“.

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