

FOREST RESEARCH AND MANAGEMENT INSTITUTE (ICAS)

1. **The Mission** of Forest Research and Management (ICAS) is to give a scientific background to the development and the management of the forestry sector through producing, developing and disseminating scientific and technical information, by setting the national forest inventory, providing professional consulting, generating, transferring and implementing of new and improved technologies, developing innovative products and contributing to the welfare of our society.

2. Priority directions and objectives for research

The fundamental objective of the institute's activities is *"Increase of the capacity, quality and complexity of scientific research and technological development in the forestry domain for a sustainable management of forests in the context of the socio-economic and environmental changes at national, European and international level"*.

Priority strategic objectives:

A. Creating knowledge respectively, obtaining top scientific and technological results, competitive at European level, aiming at increasing the contribution of the Romanian research-development system in the forestry domain to the European knowledge stock, the international visibility and the transfer of results to the socio-economic system in general, and to forest practice, in particular.

B. Increasing the competitiveness of the Romanian forestry through research-development with impact at the level of forest administration and economic agents from the forestry sector and the transfer of knowledge to the forest practice. This objective aims at obtaining valuable scientific and technological results of local, regional and national interest or specified by economic agents, products and services with direct applicability.

C. Increasing social quality is carried out through the orientation of the research-development activities of ICAS towards the domains designated as priorities through the EU framework-program for scientific research and technological development. The participation and direct involvement generates direct social benefits at local, regional, national and European levels. These solutions are specific to issues related to rural development and environment protection (terrestrial planning, exploitation of local and regional forest resources, agro-tourism, production of agro forest cultures, shelterbelts), as well as to issues related to social cohesion and dynamics.

Main priority directions and objectives for research:

i) Ensuring the stability, management and increase of the functional effectiveness of forest ecosystems in the conditions of environmental changes.

Scientific objectives:

- continuation and development of long-term inter and transdisciplinary research on the state of forest ecosystems under the action of climate changes and risk factors;
- development of knowledge of biotic and abiotic disturbance factors and their action on forest ecosystems and the establishment of integrated measures for fighting against them;
- realize direct measurements on under sampled zones with large contribution to country's emissions, and improve knowledge about greenhouse gas balance under LULUCF;
- foundation, on the basis of the new biometric and yield models, of a new information system for forest management planning;
- elaboration of new regulation methods of the production process in the planning activity, improvement of models and methods of national forest inventory;
- development of new methodologies and the implementation of geomatic technologies in the forest research and practice;

ii) Preservation and improvement of the genetic diversity of forests in order to increase the productive, protective and adaptive potential.

Scientific objectives:

- elaboration of strategies on the “in situ” conservation and on the sustainable management of forest genetic resources;
- evaluation of the genetic diversity of the forest species and the selection of the valuable genotypes in order to increase the productive potential of forests;
- identification and description of new genetic resources in order to increase the adaptive capacity to climate changes of forest ecosystems;
- development of new advanced methods and technologies for the „ex situ” preservation of valuable genetic resources.

iii) Scientific foundation of the silvotechnical, ecological reconstruction works and torrential watershed planning

Scientific objectives:

- optimization of the management stands works and silvicultural treatments;
- improving the installation, attendance and management technologies intended for cultures and shelterbelts;
- methods for the ecological reconstruction of stands affected by harmful factors;
- elaboration of new solutions for the management planning of torrential river basins and the reforestation of degraded lands.

iv) Research and evaluation of the biologic diversity of forests and their related ecosystems

Scientific objectives:

- foundation of conservation measures of natural habitats and flora species from forest ecosystems;
- identification and mapping of the types of forest ecosystems valuable from the viewpoint of biodiversity;
- foundation of the management plans for protected natural areas;
- research development in the domain of soil systematic and forest stations;

v) Preservation of biodiversity and the increase of productivity within cynegetic and salmonicol funds

Scientific objectives:

- management of the conflicts between human activities and wild fauna;
- development of an ecological network for the reduction of genetic isolation and the preservation of populations of cynegetic interest;
- increasing the cynegetic and salmonicol potential within forest ecosystems.

3. Representative projects

3.1. “Sustainable management of forest ecosystems in the context of global changes” – GEDEFOR

Financed by: Romanian Public Authority for Research

Period: 2009 – 2014

Objectives:

- i) Sustainable production and management of forest resources. Evaluation and analysis of the effects of environmental changes and socio-economic conditions on forest ecosystems and their mitigation.
- ii) Conservation and improvement of forest’s biodiversity, of their productive, protective and landscape potential.
- iii) Substantiation and promotion of agro systems, special crops for biomass / energy and their non-wood purposes. Increase the contribution of forestry to rural development and environmental protection.

Main results:

- i) Methodologies, networks ,reports, models transferred to public authorities for forestry, environment and agriculture
- ii) Methodologies ,technologies, studies etc transferred to forest and protected areas administrations, forest owners
- iii) Data bases, networks reports – MCPFE, FAO, LTER, ENFIN, ICP-Forests etc

3.2. “Environmental quality and pressures assessment across Europe: the LTER network as an integrated and shared system for ecosystem monitoring” – EnvEurope (LIFE 08 ENV/IT/000399)

Financed by: European Commission through Life+ Program (associated beneficiary)

Period: 2009-2013

Objectives:

- i) Provide ecological data and information on long-term trends of terrestrial, freshwater and marine ecosystem quality at the European scale, with reference to habitat types (including Natura 2000 network) and environmental gradients.
- ii) Provide and develop an integrated Information Management System on status and long-term trend of environmental quality both at European and regional levels
- iii) Develop and setting-up in the field an integrated and permanent site-system to detect and evaluate changes in environmental quality across Europe.
- iv) Select, on the basis of ecological long-term data and feasibility test in the field, a set of key environmental quality indicators sensitive to defined major pressures and drivers

Main results:

- i) Manual on harmonized methods for environmental indicators across different ecosystems,
- ii) Integrated Information Management System for environmental data,
- iii) Cause – effect analysis and data evaluation,
- iv) Restructured LTER network architecture.

3.3. “Conservative management for 4070 and 9260 habitats of ROSCI0129 North of Western Gorj” – NORTHWESTGORJ

Financed by: European Commission through Life+ Program (associated beneficiary)

Period: 2012-2017

Objectives:

- i) Restoration of destroyed 4070 - Bushes with *Pinus mugo* and *Rhododendron myrtifolium*
- ii) Restoration of destroyed 9260 - *Castanea sativa* woods;
- iii) Establishing the conservative measures for restored habitats;
- iv) Mitigation / elimination of negative impact of tourism on the restored areas, including small-scale visitors' infrastructure for a controlled eco-tourism;
- v) Increase public awareness on nature conservation as part of sustainable development concept.

Main results:

- i) Study regarding the actual conservative status of 4070 habitat and elaboration of management plan for planting 10 ha with *Pinus mugo* seedlings, including maintenance work;
- ii) Study regarding chestnut sanitary state and biological control of alien invasive fungus *Cryphonectria parasitica* with natural virus CHV1 from Maramureş forests, including silviculture works for *Castanea sativa* management in 9260 habitat;

- iii) Study regarding conservatory state of 9260 habitat and planting of 25 ha with *Castanea sativa* seed seedlings;
- iv) Appropriate infrastructure for conservation of restored habitats, including small scale visitors' infrastructure for tourism control.

3.4. *“Designing Trees for the future” - TREES4FUTURE*

Financed by: European Commission (7th Framework Program) and the Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI) (associated beneficiary)

Period: November 2011 – October 2015

Objective:

Long term objective is to provide the whole European Forestry community, not only the project partners, with an easy and comprehensive access to complementary but currently scattered sources by both the research community and the socio-economic players.

Main results:

- i) A common framework network able to assure a centralized access point to major European databases in the area of forest genetics and forest ecology ;
- ii) Common protocols and reference standards for traits and species;
- iii) The development of research-policy-practitioner networks;
- iv) A long-term vision and strategy for the long-term maintenance and further development of the Trees4Future infrastructures;
- v) Developed infrastructure to provide new and improved services to the wide research community.

3.5. *„Operationalisation of Natural Capital and Ecosystem Services; from concepts to real – world applications” – OpenNESS*

Financed by: European Commission (7th Framework Program) and the Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI) (associated beneficiary)

Period: December 2013 – May 2017

Objective:

- i) Critical analysis and identification of Ecosystem Services (ES) and Natural Capital (NC) concepts' potential
- ii) Inform on sustainable management of land, water and urban environment at different levels and scales by analyzing different economic sectors, ecosystems productive and protective potential, their biodiversity etc.

Main results:

Including new methods and concepts regarding ES and NC tested in the case study in the management plans of forest protected areas, including methods for quantifying of ESS, and cost-benefit analyses of trade-offs between timber production, aesthetic value, biodiversity etc.