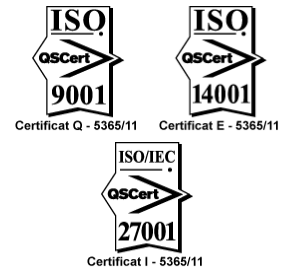




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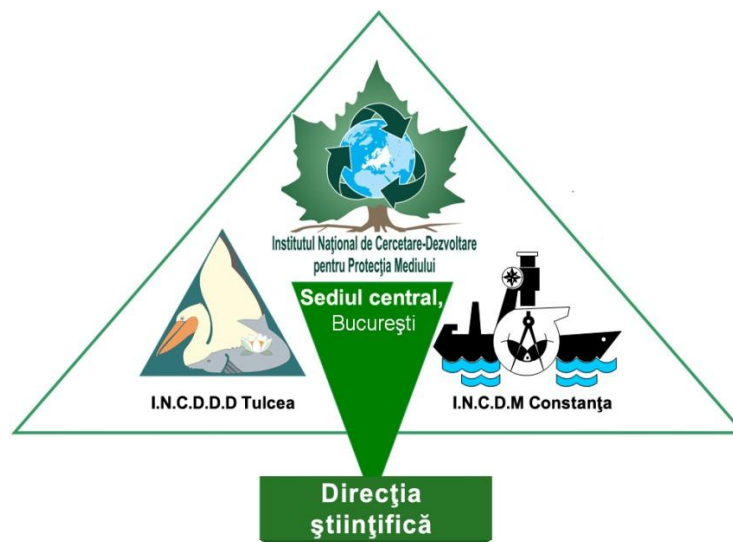


SUMMARY OF SCIENTIFIC ACTIVITY NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN ENVIRONMENTAL PROTECTION

The National Institute for Research and Development in Environmental Protection (INCDPM) was founded according to GR 1442/2009 by embodying 3 environmental institutions known at national and international level, having experience since 1950 on fields like: environmental protection – the Danube River, the Danube Delta and the Black Sea. Currently, INCDPM consists of 3 research entities from Bucharest, Constanta (legal subunit of INCDPM - National Institute for Marine Research and Development „Grigore Antipa”) and Tulcea (legal subunit of INCDPM - "Danube Delta" National Institute for Research and Development).

Mission

Currently, the activity of scientific and technologic research from environmental protection field has the mission to fulfill the society needs related to environmental protection, sustainable development and climatic changes, both at national and international level. The mission of the institute is asserted by specialists with a lot of professional experience and also by an adequate infrastructure, which may offer any time efficient solutions to different challenges regarding this field of knowledge. INCDPM develops complex activities regarding both fundamental and applicative research, at different temporal and spatial scales.



Specific objectives of INCDPM activities:

- **to get part in international research projects.** The fulfillment of this objective has complex perspectives, significant for the development of the Institute: increasing the competencies of employees in various domains; establishing international research networks; financial stability; assuring professional development of young researchers.
- **to take part in national research projects.** Finding and underlie the best solutions for meeting the environmental problems that face society and the local industry. Create new technologies

and innovative solutions which, through patenting, will increase the prestige of the institute and of the Romanian research.

- **to issue scientific publications.** Being given the more stringent criteria for evaluation of research activities, INCDPM must consider the constant publishing of research results in scientific high level publications. However, to ensure transparency principle is envisaged presenting significant results on the websites of the institutes (www.incdpm.ro, www.rmri.ro, www.ddni.ro).
- **to rise high scientific level for economic and social areas.** This strategic objective aims to impose INCDPM as a key entity in some areas of environmental research, ensuring the economic and scientific stability of the Institute.
- **to develop cooperation with other similar institutions and with customers.** Herewith, the Institute started to take part at national and European research networks, aiming the participation in the specific professional flow; also, it aims to maintain and develop the relationship with customers.
- **to promote professional competencies, especially those of the young employees.** The medium and long term consistent development of INCDPM is highly depending on promoting young researchers and meritorious experts, and constantly supports their activity.
- INCDPM aims **to capitalize the research-results** by establishing start-ups and spin-offs.

The skills of National Institute for Research and Development in Environmental Protection are:

- Research and development in environmental engineering (basic research, applied research, technological development) and in social sciences
- Developing strategies and / or environmental programs
- Monitoring environmental factors (air, soil, water, noise, and biodiversity)
- Development and use of geographic information systems (GIS), remote sensing and telemetry
- Mathematical modeling, statistic mathematics and physics of anthropogenic and natural phenomena in the environment, affecting the air, soil, water, noise, and biodiversity
- The risk assessment of pollution and the impact of human activities on environmental factors
- Forecast studies of pollution phenomena or the greenhouse effect and climate change
- Other activities related to promotion and exploitation of research results and the technical-scientific prestige of the institution
- Research – development in the Danube Delta Biosphere through its subunit, The Danube Delta National Institute (DDNI) Tulcea
- Research – development in The Black Sea Biosphere, through its subunit, The Grigore Antipa National Institute for Marine Research and Development (NIMRD) Constanta

Between 2012 – 2013, INCDPM participated as coordinator or partner in some national and international scientific projects: 1490 national projects, 115 international projects, studies/analysis/environmental reports/ impact evaluations.

The dissemination activity was materialised through: participation in 93 national and international conferences, 47 scientific publications, 21 books, 8 patents, scientific reports, etc.

The INCDPM researchers are interested in a permanent self-perfecting, participating in dissemination activities, all these being an essential condition for the professional promotion and institute`prestige. Also, there is a special concern related to the mentoring activity, in order to improve the level of knowledge for the young scientists for rising the technical and scientific quality of the elaborated papers. The mission statement of INCDPM is accountability and awareness of each researcher towards the technical and scientific obtained results.

IMPORTANT PROJECTS

➤ "Monitoring of Environmental Impact of the Works for Improvement of the Navigation Conditions on the Danube between Calarasi and Braila, Km 375 - km 175"

Period: 2011- 2017

The Project is financed within the Operational Programme – “Transport” (SOPT) 2007 - 2013, Priority Axis no. 3, Key Area of Intervention no. 3- Minimizing the adverse effects of transport on the environment, following to monitor the evolution of environmental factors on the Danube River sector comprised between Calarasi and Braila, Km 375 and km 175.

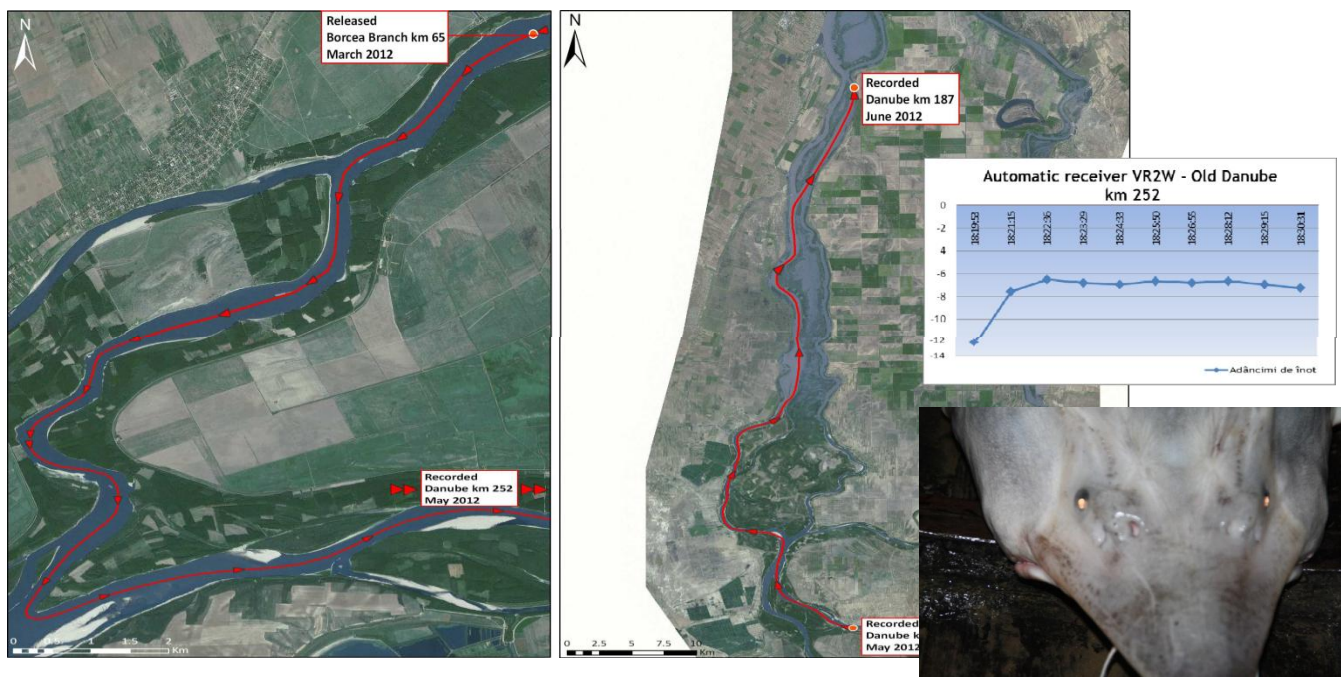
Project objectives:

The overall objective of the project is to identify the evolution of environmental factors status as a result of the implementation of hydrotechnical works which will be made on the Danube at Calarasi-Braila sector between km 375 and km 175, within the project "Improvement of Navigation Conditions on the Danube between Calarasi and Braila".

The specific objective is to ensure effective monitoring in the pre-construction phase, construction and post-construction of hydrotechnical works, for the following factors: air quality, noise, soil, hydro-morphology, water quality, aquatic flora and fauna, sturgeon migration, terrestrial flora and fauna, worksite activity, compliance with intervention plan in case of accidental pollution.

Also, the project aims to realise the quasi 3D modelling of the section between km 380 (Silistra) and km 165 (Braila), the detailed numeric 3D models for the critical areas CP 01, CP 02 and CP 10, forecast through numerical simulations using 3D models, in case of necessity to be able to elaborate preventive solutions in order to exclude the risk of environmental impact. A particular importance is given to monitoring sturgeons migration routes, so that 175 specimens are currently ultrasonic marked. The significant results are presented on the web-site of INCDPM (www.incdpm.ro) and AFDJ R.A. Galați (www.afdj.ro).

In order to give an example, the migration route of a beluga sturgeon is presented in figure below, an unique result in Europe.



In this project are involved both researchers with broad experience regarding this field and also young scientists.

➤ **Promotion and coordination of environmental research for sustainable development in Central and Eastern Europe (PROCEED) – project financed by Seventh Framework Programme**

Period: January 2011- June 2013

PROCEED is focused on communication and dissemination of research results and environmental practices in Central and Eastern Europe countries (CEE), to industrial sector, public and private research centers and academia.

Within the PROCEED project are involved 15 partners from 12 countries in Central and Eastern Europe: Greece, Denmark, Italy, Romania, Bulgaria, Poland, Lithuania, Latvia, Slovenia, Croatia, Serbia, the former Yugoslav Republic of Macedonia.

The project aims to encourage the participation of CEE countries to the EU-funded research projects by cooperation with other European partners and increase uptake of research results. Specific areas of research on that focuses PROCEED are environmental pollution and environmental technologies.

Project objectives:

PROCEED project has as main objectives the collection of best projects / research results in the area of Central and Eastern Europe and improving of existing communication at European level in terms of scientific activity developed for environmental protection. It will make a database of all innovative research results obtained in the CEE countries. It also will be achieved a SWOT analysis of existing channels and used tools to communicate in Europe the research results in the environment field, paying particular attention to academics, to policy makers and to industry.

➤ **CarpathCC Project (Carpathian in-depth assessment of vulnerability to climate change and ecosystem-based adaption measures)**, was financed by the European Union, represented by the European Commission - DG Environment, contract nr. ENV. D.1/FRA/2011/0006, was coordinated by the Regional Centre of Environment (REC), Hungary and is was developed between 2011-2013. The interest area refers to the region of the Carpathian Mountains, including as adjacent areas the Transylvanian Basin and the Panonic plain. (<http://www.carpathcc.eu/>)

The project, divided into six representative modules, called *Special Requests*, generated the following results:

- Evaluation of studies on the vulnerability of the area of interest to the appearance of extreme weather events (floods, droughts)
- Assessment of seasonal changes in water regime and impact on ground water resources
- Evaluation of climate change impacts on ecosystems (forests, grasslands and wetlands) and ecosystem services in the Carpathians region
- Identification of ecosystem services generated by forests, wetlands and grasslands
- Establishing a methodology using Geographical Information System (GIS) in order to estimate the influence of climate change on land cover
- Assessment of anticipated changes in the composition of forests, wetlands and grasslands, including the influence of climate change on grassland productivity
- Developing maps regarding the Carpathian ecosystems vulnerability to climate change in the present period and in the future

➤ **"Increasing the skills of enterprises and employees in sustainable development perspective" funded by the Sectorial Operational Programme Human Resources Development 2007-2013, Priority 3 "Increasing adaptability of workers and enterprises", Key Area of Intervention 3.2 "Training and support for enterprises and employees to promote adaptability "**

Period: 2010 – 2013

The general objectives

- Supporting businesses in increasing skills to ensure the environmental protection;
- The project provides assistance for:
 - promoting adaptability in the implementation process of advanced technologies for identification and elimination of pollution sources;
 - increasing employees' skills necessary to comply with EU regulations on environmental protection and sustainable development.

Results

- Training in environmental management and sustainable development of the 104 managers and of 1760 employees in the 4 areas of development;
- Technical assistance in developing and implementing action plans customized to adoption of pollution control technologies
- Providing managers and employees vocational training courses of individualized course support for each enterprise

➤ **Air quality assessment for identification the main sources of emissions in order to achieve the objectives of the national strategy on protection of the atmosphere and commitments under the Treaty of Accession to the European Union**

Period: 2010-2011

Objectives that have been achieved in order to complete the project:

- Data collection and development of national and local inventory of emissions for major air pollutants taking into account point, linear and area sources, ensuring data quality.
- Development of proposals for revision and update of National Programs for Reducing Emissions of sulfur dioxide, nitrogen oxides and particulate matter from large power plants.
- Developing emissions projections at national level for sulfur dioxide, nitrogen oxides, volatile organic compounds, ammonia and particulate matter.
- Determination of critical loads and levels for specific environmental sensitive elements at national level.
- Mathematical modeling of the dispersion of air pollutants in order to assess air quality at national level and in areas defined as agglomerations for 2009 year.
- Classification schemes for air quality assessing and managing, required by the law of zones and agglomerations.
- Areas classification in assessment and managing air quality, according to actual legislation.

The most important result of this project is the identification of impossibility in complying with the IMA established thresholds for 2013, this being caused by the fact that the actual assessed thresholds include some pollutants that have exemption until 2014. There were developed 26 scenarios and forecast for finding the preventive solution which has been already presented to the involved authorities.