

## EG Delta / Fore-Delta

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### **A brief follow-up for the years 2015/2016, referring to the background information in the Activity Report 2015 and the subsequent annual Progress Reports**

The vision of the DFD EG is to drive up the efficiency, effectiveness and excellence of the research system through the free circulation of researchers, knowledge and technology exchange and in so doing to support the critical contribution it makes to achieving ecological equilibrium flow and economic competitiveness and addressing grand challenges.

Understanding how we're doing today is a vital step in creating a better future, and we remain committed to the transparent reporting of Major Projects Portfolio (MPP) described in this report.

In 2015-2016, activities of IAD EG members focuses primarily on their integration in Danube Delta Strategy – ITI, recently adopted by Romanian Government.

There is increasing recognition within both policy and academic communities that many natural environment-related policy issues cannot be framed, explored and addressed through evidence from any single perspective, but require more interdisciplinary research that embraces both social and natural science (amongst other many other disciplines). This is the reason of our heterogeneity of *EG Delta / Fore-Delta*.

Social science has a key role to play, not only in finding appropriate solutions to existing policy challenges (to which it is already contributing), but also in helping to frame policy challenges in alternative ways that may enable the implementation of different and potentially more effective policy responses to these challenges.

Many scientist of our group provide analytical or advisory services to elaborate an integrated sustainable development strategy for the Danube Delta and to identify action plans to implement the strategy elaborated by The Ministry of Regional Development and Public Administration (MRDPA) in Romania and the World Bank.

[http://www.mdrap.ro/userfiles/delta\\_dunarii/draft\\_Danube\\_Delta\\_Strategy.pdf](http://www.mdrap.ro/userfiles/delta_dunarii/draft_Danube_Delta_Strategy.pdf)

In fact this is a new instrument (Integrated Territorial Investment - ITI). *EG Delta / Fore-Delta* sought to draw together relevant researches findings from a broad and diverse evidence base and to present them in a way that is informative, relevant and accessible to policy-makers to transform and implement them.

This has required staff liaising closely with many of those within IAD EG. They have to implement both visions:

- Vision for the Danube Delta (the Biosphere Reserve area)

A "living delta" (an area where people live and work) with balanced support for the environment and the community;

- a healthy, sustainable local economy - mainly based on nature and cultural tourism;
- an inclusive planning process (residents, administrative structures, businesses).

- Vision for the Neighboring Area:

- A vibrant, modern agricultural and small enterprise area, with a network of urban service centers and a tourism sector that is integrated with the attractions of the area and the Delta.

It's a challenge, that funds will be used first for creating an European standard infrastructure on land, water and air. The long term application for 2030:

- An attractive area – with precious biodiversity and vibrant, small/medium scale (artisanal and modern) businesses - where people live in harmony with nature;
- Integrating economic activities of tourism, farming and fishery;
- This area would be supported by urban service centers.

*EG Delta / Fore-Delta* researchers are involved in the projects for the EU programs as HORIZON 2020, Black Sea Basin BSB 2014-2020, Danube Transnational Program or by developing new proposals or continuation of that ended.

The projects' overall objective was to assess, enhance and adapt existing management and conservation strategies in protected sites to pro-actively respond on likely influences of CC as a threat to habitat integrity and diversity. Furthermore, a monitoring concept was developed to detect changes caused either by human activity or climate change effects:

- Identification of potential CC induced threats,
- Evaluation of existing management practices,
- Deriving a set of indicators reflecting local-scale effects,
- Establishing monitoring measures based on earth observation data and ground truthing,
- Modeling regional climate change effects and risks for protected areas,
- Supporting protected site authorities with decision support tool,
- Adapting management plans, strategies and measures of protected areas to climate change effects,
- Fostering awareness rising on the demand for adaptive management,

The main outcomes of activities:

- **Transnational Joint Strategy** for the better management and improvement of Natura 2000 sites, as steering planning tool for the future environment protection activities
- a **monitoring tool** that takes into account specific devices already prepared at EU level (and in other cooperative projects), and the requirements of the Directive; the data collected will be useful for assessing the success achieved, and activities will provide a series of comparable data that can be exploited for future assessments and evaluations of the evolution of the situation
- **Joint Transnational Action Plans** on common target habitats and species selected by the PP to concretely respond to EEC Directive 92/43; the plans will be adopted locally and submitted for approval to the competent national bodies of each PP country, in compliance with the required procedures
- Direct and indirect interventions (**pilot projects**) for implementation of the Transnational Joint Strategy, which will be carried out through public-private cooperation with the aim of sustaining them also on completion of the project and of replicating them in other areas of the same region (Ref. WP4).

From exchanges of experiences and best practices, the project aims at studying the necessary governance tools to ensure a sustainable development of straits and to develop their functions as gateways to hinterlands and to external territories around the issues of economic development, transport, tourism and biodiversity. By searching ways to improve the governance between the two banks of a strait, the aim is to enable the authorities to enhance effective public policies, at the local, national and European levels, that will both allow economic development of the area and preserve the biodiversity.

Also, we have to mention that the European Deltas are facing the same issues as the European straits: reconciling balance between the economic activities and the environmental management. In the meantime, both areas are dealing with faster economic growth while large parts of them are included in Natura 2000 network. DELTANET project (Network of European Delta Regions – Sustainable Delta Governance) can benefit from the cross-border cooperation dimension given by straits through exchange experience and best practices regarding the common approach of the sustainable governance of sensitive areas like straits and deltas and of the cross-border co-operations in order to achieve the sustainable management objectives.

In DG MARE research program, MARSPLAN BS project starts with the scope cooperation to improve coherence, coordination and alignment of policies and instruments having an impact on the maritime ecology/economy. This means:

- generating sustainable growth and new jobs in maritime sectors through identifying and introducing cost-effective strategies.
  - improve/upgrading marine knowledge.
  - Maritime Spatial Planning and Integrated Maritime Surveillance
  - reinforced comprehension of sea-river ecosystems and protection of the maritime environment.
- DANUBIUS RI – ESFRI initiative was finalized during last month and we expect to be successfully.

Tulcea, August 31, 2016

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## **A Black Sea network promoting integrated natural WASTewater Treatment systEms - WASTEnet**

WASTEnet is a network joint action, which aims at motivating the widest possible audience of local and regional authorities of the participating Black Sea countries (Romania, Georgia, Moldova, Armenia, Ukraine, Turkey and Greece) to develop and apply Natural Treatment Systems (NTS), and in particular Constructed Wetlands (CWs), for the wastewater treatment of their remote rural communities. The development of very simple and cost effective NTS, especially in small communities, (e.g., rural and mountainous communities, airports, hospitals, schools and

universities) provides an effective and reliable, but also simple and inexpensive solution.

### **BSB Net - Eco**

**The overall objective:** To improve the ability of the Black Sea Basin national and coastal authorities to respond timely and effectively to water pollution and strengthen the joint knowledge and information base needed among partners, target groups and final beneficiaries on addressing the common challenges of water pollution in BS Basin marine and river environment.

#### **Specific objectives:**

- Stronger integration of monitoring and research transborder activities in the area of the Black Sea hydrographic basins.
- Characterization of the river and underground water with potential quantification of relationships of pollution in surface and groundwater.
- Assessment of current state of biological diversity in the marine and river ecological systems of the BS Basin, exchange of available research data and estimation of impact of anthropogenic activities for further stability and better functioning of ecosystems.
- Improvement of existing technologies of water conditioning and purification by means of efficient selective sorbents on base of widespread mineral raw materials, exchange of experiences and available research data in order to assure a better health status of population.
- Development of methods and instruments for the real time observation of laser induced fluorescence and spectral features of natural waters, pilot application of fiber optic laser fluorometer instrument for detection of organic pollutants and estimation of the phytoplankton community status in aquatic environment.
- Exchange of experiences, good practices and available research data on techniques and tools for the monitoring and mitigation of marine oil pollution.
- Increase awareness of academic and research people as well as of public, governmental and nongovernmental structures and population in order to assure a better environmental protection in the Black Sea Basin region.

### **Black Sea E-Eye <http://blacksea.ugal.ro/web/guest/proiect>**

The project **Innovative Instruments for Environmental Analysis in North Western Black Sea Basin (Black Sea E-Eye)** is implemented by four countries of Black Sea Basin (Romania, Moldova, Ukraine and Armenia).

The main applicant of the project is Lower Danube University of Galati (Dunărea de Jos University din Galati), Romania.

The overall objective of the project is supporting the development of durable environmental policies by deploying innovative research initiatives focused on the analysis, monitoring and investigation of physical-chemical and biological parameters of surface aquatic systems in North Western Black Sea Basin.

### **Managing aquatic ecosystems and water resources under multiple stress**

**MARS** - funded under the 7th EU Framework Programme, Theme 6 (Environment including Climate Change), Contract No.: 603378 (<http://www.mars-project.eu>)."

MARS is a four-year large research project launched in February 2014 that will support managers and policy makers in the practical implementation of the European Union Water Framework Directive 2000/60/EC (WFD), of related legislation and of the Blueprint to Safeguard Europe's Water Resources.

Goals of MARS are (1) to provide a framework for improving the success of mitigation and restoration measures for water bodies exposed to multiple pressures and (2) to assess more effectively the state, future scenarios and ecosystem services of rivers, lakes and connected groundwater systems, as well as transitional waters.

The impacts of multiple pressures on aquatic ecosystems and their services are poorly understood and the extent to which these impacts can be effectively reversed or mitigated lacks scientific rigor. MARS will conduct new research and synthesize existing knowledge concerning effects and management of multiple stressors in surface water and groundwater bodies.

MARS results will underpin advice to the 3rd RMBP cycle and the revision of the WFD; and will develop new integrated tools for diagnosing and predicting multiple stressors in water resource management. The following countries are represented in MARS by individual partners: Austria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Netherlands, Norway, Portugal, Romania, Slovenia, Spain, Turkey and United Kingdom.

Coordinator: The project is coordinated by the Department of Aquatic Ecology/Faculty of Biology in cooperation with the Centre for Water and Environmental Research (ZWU), both located at the University of Duisburg-Essen, Germany.

**AQUACROSS** - <http://aquacross.eu/content/about-aquacross>

Aquatic ecosystems are rich in biodiversity and home to a diverse array of species and habitats, providing numerous economic and social benefits to Europe. Many of these valuable ecosystems are currently at significant risk of being irreversibly damaged by human activities and by the numerous pressures these create, including pollution, contamination, invasive species, overfishing and climate change.

Existing policies, such as the Water Framework Directive (WFD), Marine Strategy Framework Directive (MSFD), and the EU 2020 Biodiversity Strategy, have been unable to halt and reverse the trend of declining biodiversity of aquatic ecosystems.

Knowledge, Assessment, and Management for AQUATIC Biodiversity and Ecosystem Services aCROSS EU policies (AQUACROSS) aims to support EU efforts to protect aquatic biodiversity and ensure the

provision of aquatic ecosystem services. Funded by Europe's Horizon 2020 research programme, AQUACROSS seeks to advance knowledge and application of ecosystem-based management (EBM) for aquatic ecosystems to support the timely achievement of the EU 2020 Biodiversity Strategy targets. To do this, AQUACROSS considers the EU policy framework for aquatic ecosystems and builds on knowledge stemming from different sources to develop innovative management tools, concepts and business models for aquatic ecosystems.

**ResponSEAble:** Sustainable oceans : our collective responsibility, our common interest. Building on real-life knowledge knowledge systems for developing interactive and mutual learning media

<http://www.responseable.eu>

The project is funded by Horizon 2020, ResponSEAble is mapping European marine research and knowledge to further our understanding of complex human-ocean relationships and the economic benefits that we derive from our seas and the ecosystems they support.

The project is also working on a raft of exciting media and outreach activities including films and film making competitions, an educational computer game and other learning materials, a social media campaign and an interactive website. The project's media outreach aims to connect with a wide range of audiences. By generating greater public debate and knowledge, ResponSEAble, intends to support all sectors of European society take a more informed and responsible attitude and help secure healthier and more sustainable oceans.

The project will develop well-targeted and sound communication material that raises awareness on our (individual and collective) responsibility and interest in ensuring the sustainability of the ocean and of its ecosystems. The project builds on critical assessments of: (1) existing communication strategies, material and governance that focuses on the ocean; (2) the values, perceptions and understanding of the state, functioning and role of the ocean by different types of stakeholders and of the wider public; (3) the (scientific) knowledge that exist on the ocean-human relationship, in particular in terms of ecosystem services that can be delivered by ocean ecosystems and support (future) development opportunities and blue growth and of pressures that are imposed on the oceans. These critical assessments will help identifying priority target groups with key responsibilities and interests in the state of our oceans - today and in the future.

**Project title: MARSPLAN-BS**

•**Financed by:** Executive Agency for Small and Medium –sized Enterprises, European Commission

•**Implementation period:** august 2015-august 2017, 24 months

•**Total budget:** 2,049,015.74 euro( 1,639,212.59 euro grant, 80%)

•**Project partners:**

•Ministry of Regional Development and Public Administration (RO) –lead partner

•From Romania: Department on water, Forests and Fisheries, National Institute for Marine Research and Development –Grigore Antipa, National Institute for Research and Development in Environment Protection -subunit Danube Delta National Institute for Research and Development –Tulcea, Urban Incerc, OvidiusUniversity of Constanta

•From Bulgaria: Ministry of Regional Development, Institute of Oceanology at the Bulgarian Academy of Sciences, Executive Maritime Agency, Bulgarian ports Infrastructures Company

**Project objectives**

Supporting the implementation of the directive on EU maritime spatial planning

- Creating an institutional framework for Romania-Bulgaria cross-border maritime spatial planning
- Developing the cooperation with all states in the Black Sea Basin for maritime spatial planning in the Black Sea area
- Consolidation the cross-border cooperation and exchange of information between Romania and Bulgaria on issues related to maritime area
- Setting out the vision and strategic goals for Black Sea area relevant for maritime spatial planning, while also taking into consideration the land-sea interface
- Elaborate the maritime spatial plan for the cross-border area
- Contributing to a wider dissemination of all the information gathered on MSP, Black Sea area and best practices to all stakeholders in the Black Sea basin

### **FLOOD Serv: Public FLOOD Emergency and Awareness SERVICE**

Flood risk increases with ongoing climate change. Risk reduction in large international basins can only be achieved through transnational, interdisciplinary and stakeholder oriented approaches within the framework of a joint transnational research project.

The overall objective of FLOOD-serv is to develop and to provide a pro-active and personalised citizen-centric public service application that will enhance the involvement of the citizen and will harness the collaborative power of ICT networks (networks of people, of knowledge, of sensors) to raise awareness on flood risks and to enable collective risk mitigation solutions and response actions.

Other general objectives are:

1. Empowering local communities to directly participate in the design of emergency services dealing with floods mitigation actions.
2. Harness the power of new technologies, such as social media, and mobile technologies to increase the efficiency of public administrations in raising public awareness and education regarding floods risks, effects and impact.
3. Encourage the development and implementation of long-term, cost-effective and environmentally sound mitigation actions related to floods through an ICT-enabled cooperation and collaboration of all stakeholders: government, private sector, NGOs and other civil society organizations as well as citizens.

### **SCENT: Smart Toolbox for Engaging Citizens into a People-Centric Observation Web**

The SCENT project will enable citizens to become the 'eyes' of the policy makers by monitoring landcover/ use changes in their everyday activities. This is done through a constellation of smart collaborative technologies delivered by the SCENT toolbox in TRLs 6-8: i) low-cost and portable data collection tools, ii) an innovative crowd-sourcing platform, iii) serious gaming applications for a large-scale image collection and semantic annotation, iv) a powerful machinelearning based intelligence engine for image and text classification, v) an authoring tool for an easy customization by policy makers, vi) numerical models for mapping land-cover changes to quantifiable impact on flood risks and vii) a harmonization platform, consolidating data and adding it to GEOSS and national repositories as OGC-based observations. SCENT will be evaluated in two large scale demonstrations in Kifisos Attica and Danube Delta. Our consortium covers the complete stakeholder chain: industries in machine learning (IBM), SMEs in crowd-sourcing (U-Hopper), gaming (Xteam) and awareness raising (Carr), leading research institutes with expertise in hydrodynamic modelling (UNESCO-IHE), data harmonization and authoring tools (ICCS) and environmental monitoring (DDNI), NGOs at the pilot sites (HRTA, SOR) and policy makers/public bodies (Region of Attica). The SCENT initiative will go beyond the current project

and form a Europeanwide citizen movement, created and fostered by the SCENT stakeholders, that will ensure its sustainability and its complementarity with existing citizen partnerships.

**CERES** is a project that provide a step change in the knowledge, tools and technologies needed to successfully adapt European fisheries and aquaculture sectors in marine and inland waters to anticipated climate change. CERES addresses the urgent need to invest in and apply innovative and adaptive industry tools and management strategies for fisheries and aquaculture activities. CERES intends to develop a solution space, where risks, challenges, opportunities and uncertainties are communicated and used with stakeholders to enhance the resilience and support the development of adaptive management and governance systems in these blue growth sectors. Indeed, one of the greatest innovations of CERES is to determine whether, how and where the seemingly adverse impacts of CC can produce opportunities for new aquaculture production systems and species, and profitable changes to fisheries in terms of species, areas and methods.

CERES will involve and closely cooperate with industry and policy stakeholders to:

1. Provide regionally and industry relevant, short-, medium- and long-term **future projections of key environmental variables** for European marine and freshwater ecosystems;
2. Integrate the resulting knowledge on changes in productivity, biology and ecology of wild and cultured animals (including key indirect/food web interactions), and **'scale up' to consequences** for shellfish and fish populations and assemblages as well as their ecosystems and economic sectors
3. Anticipate responses and **assist in the adaptation** of aquatic food production industries to underlying biophysical changes, including the development of early warning methods, new operating procedures, infrastructures, location choice and commercial markets
4. Assess relative exposure, sensitivity, **vulnerability and adaptive capacity** within the European fisheries and aquaculture sectors;
5. Consider **market-level responses** to changes (both positive and negative) in commodity availability as a result of climate change;
6. Apply innovative **risk-assessment** methodologies that encompass drivers of change, threats to fishery and aquaculture resources, barriers to adaptation and likely consequences if mitigation measures are not put in place;
7. Formulate viable autonomous **adaptation strategies** (solutions) within the industries to circumvent/prevent perceived risks or to access future opportunities;
8. Formulate policy guidelines (solutions) and **highlight management challenges** where established governance structures may hinder successful adaptation to long-term climate change.
9. Effectively **communicate these findings** and tools to potential end-users and relevant stakeholders.

The CERES project itself is named after the Roman goddess of agriculture and fertility, emblematic of the EU's 'blue growth' agenda. The total budget for CERES will be €5.58 million and the project will run over 48 months (2016-2019).