

**EU-UNDP Project No. 110515 “Improving Environmental Monitoring in the Black Sea,
Selected Measures-EMBLAS-Plus”**

Ukrainian Lead Applicant: Scientific Research Institution «Ukrainian Scientific Centre of Ecology of the Sea» (UkrSCES).

Time frame: October 2019 – August 2020

1. SUMMARY

Summary: The proposed project addressed the overall need to fine-tune and improvement of the Water quality database according to MSFD. The following activities are proposed to be implemented.

Activity area 1: Collection of historical data on the biological and chemical parameters (linked with the EU WFD or MSFD) in the Black Sea region from each of the beneficiary countries in the form of the harmonized Data Collection Templates – DCTs (the templates are available with this call announcement).

The following activities are to be organized (all or selection from the topics below):

- Provision of relevant environmental data (chemical, biological and other related to EU WFD / MSFD) in the format of DCTs developed in the frame of the EMBLAS-II and EMBLAS-Plus project. Relevant data are either from the national monitoring programs, projects, surveys and/or from international projects implemented in cooperation with the Black Sea Commission (e.g. MISIS, PERSEUS etc.);
- Facilitating upload of the quality checked data organized in the DCTs into the BS WQD.

The following deliverables shall be provided (as relevant to the selected topics):

- DCTs filled out with data, including metadata;
- Upload of the received quality checked historical data in DCTs into the BS WQD.

Activity area 2: Further development of the BS WQD, extension for new data types/modules. During the EMBLAS-II the BS WQD has been developed. There is a need to further proceed with the database development, in terms of: i) extending the structure of the database for not yet covered environmental parameters, that are linked to the MSFD Descriptors (based on the DCTs to be developed); and ii) improve functionalities of the database.

The following activities are to be organized (all or selection from the topics below):

- Develop new DCTs as a basis for new modules of the BS WQD – microbial communities, marine mammals, fish, birds, chlorophyll-a, hydrography – physical characteristics, marine litter Floating marine macro litter, riverine litter, microplastics, beach litter, sea bottom litter, noise/energy;
- Collect historical data in the new DCTs;
- Develop new modules in the BS WQD for microbial communities, marine mammals, fish, birds, chlorophyll-a, hydrography – physical characteristics, marine litter – floating marine macro litter, riverine litter, microplastics, beach litter, sea bottom litter, noise/energy;
- Interactive map service (web-GIS) development;
- Propose improvement of functionalities for the existing online BS WQD (e.g. interactive map service, web-interface including statistics and queries, export functions, automated data quality checks at upload, link to EMODNet, etc.) and carry out the implementation of improvements approved by the Project Management Team.

The following deliverables shall be provided (as relevant to the selected topics):

- A new set of DCTs for microbial communities, marine mammals, fish, birds, chlorophyll-a, hydrography – physical characteristics, marine litter – floating marine macro litter, riverine litter, microplastics, beach litter, sea bottom litter, noise/energy;
- BS WQD modules based on the new set of DCTs for microbial communities, marine mammals, fish, birds, chlorophyll-a, hydrography – physical characteristics, marine litter – floating marine macro litter, riverine litter, microplastics, beach litter, sea bottom litter, noise/energy;
- DCTs filled out with available historical data;
- Web-GIS developed and filled with WQD data;
- Proposal and implementation of improvements of the BS WQD functionalities.

2. Project Context

The proposed project addressed the overall need to fine-tune and further development of the WQDB. The specific objective is to collect, process and upload a new set of high quality data of the Black Sea surveys in line with the EU Marine Strategy Framework Directive (MSFD), EU Water Framework Directive (WFD) and Black Sea Strategic Action Plan (2009) needs.

Existing DCTs will be fine-tuned and new will be developed for database structure renewal (for the absent MSFD descriptors), new statistical tools will be developed and accessible via updated web-interface.

As a follow-up to results obtained during EMBLAS II the following objectives will be aimed:

- The data collected in the previous phase will be uploaded in the newly created database catalogues;
- Improve data accessibility, interoperability, visualization (including Web-GIS) for the Black Sea partners and wider scientific communities and for the data exchange process.

In EMBLAS plus the “Activity 1.3 Facilitate sharing of environmental monitoring data at the regional and European level” and “Activity 1.4 Capacity building on novel monitoring methods, quality assurance/quality control and use of the Black Sea Water Quality Database” will be fulfilled by pursuing the following tasks.

- Upgrade of the BS WQD with new modules for the new data on zooplankton, ichthyoplankton, benthic habitats, benthos, chemicals data, marine litter and marine mammals monitoring data
- Adding functionalities to the BS WQD allowing interpretation of results, assessing trends and providing input to the BSIMAP
- Further population of the BS WQD through gathering of new data from the surveys organized during the project, and historical data (including data from PERSEUS and MISIS projects via BSC). Additional simplified DCTs will be developed and provided to the responsible parties to be filled according to the database upload ready requirements;
- Sharing data with the other European marine data platforms incl. EMODNet, SeaDataNet, OBIS, etc.

Ongoing initiatives

- ANEMONE
- MARLITTER
- CeNoBS

- EMODNET-Chemistry
- SEADATACLOUD

The Project is contributing to the starting activities in MSFD implementation in Ukraine: organization of the national field surveys including survey of cetaceans supplemented by the photo-ID, organization of monitoring of the riverine and marine floating litter, participation in the Joint Open Sea Survey – Georgia - Ukraine, development of the WQDB (data collecting, data sharing platform).

3. Objectives, planned activities, results

The specific objectives of the call are:

- Further develop the Black Sea Water Quality Database;
- Collect historical set of the Black Sea environmental data⁷ obtained within various national and international projects, relevant to EU WFD and MSFD.

Activity 1. Development of the new DCTs for the new catalogues of the WQDB.

- Activity 1.1. DCT for the microbial communities development;
- Activity 1.2. DCT for the marine mammals development;
- Activity 1.3. DCT for the fish development;
- Activity 1.4. DCT for the birds development;
- Activity 1.5. DCT for the chlorophyll-a development;
- Activity 1.6. DCT for the hydrography – physical characteristics development;
- Activity 1.7. DCT for the marine litter development;
- Activity 1.8. DCT for the energy (noise) development;

Activity 2. Improvement and upgrade of the WQDB, extension for new data types/modules, add new catalogues to the WQDB structure according to the newly developed DCTs, new software, updated web-interface, statistical tools and WEB-GIS development.

- Activity 2.1. Build new structure and catalogues of the WQDB for new data types/modules;
- Activity 2.2. Update existing web-interface to support newly developed catalogues and adding new tools for extended data analysis;
- Activity 2.3. Statistical tools development;
- Activity 2.4. Data upload and initial quality control software development;
- Activity 2.5. Development of the GIS platform. Build the geodatabase using the WQDB structure. Spatial representation of the BS WQDB data (WEB-GIS).

Activity 3. Upload the new data collected within the EMBLAS+ Project

- Activity 3.1. Initial quality control of the new survey EMBLAS+ and other data.
- Activity 3.2. Population of the WQDB with the data prepared by the data providers in accordance with the data set requirements.

Activity 4. Collection of historical data on the biological and chemical parameters in the Black Sea region from each of the beneficiary countries in the form of the harmonized Data Collection Templates – DCTs

- Activity 4.1. Development of the minimal requirements for the historical data sets.
- Activity 4.2. Historical data collecting and initial quality checking.
- Activity 4.3. Population of the WQDB with the historical data.

The following results will be obtained.

- Result 1.** New DCTs developed on all planned descriptors and historical data;
- Result 2.** BS WQDB structure extended with new catalogues for new data types/modules;
- Result 3.** Updated web-interface with new functionalities and tools;
- Result 4.** New software for the population of the new catalogues developed.
- Result 5.** Initial QC of the new data and population of the BS WQDB done.
- Result 6.** WEB-GIS of the Project developed and accessible online.
- Result 7.** DCTs filled out with available historical data
- Result 8.** Collected historical data uploaded into WQDB.

The further using sustainability of obtained project results is confirmed by the facts: the UkrSCES is the main institution of state environmental monitoring system within the Black and Azov Seas, which provides a whole complex of tasks of the ecological monitoring as well as information support of the Ministry of Ecology and Natural Resources of Ukraine on permanent base.

The target values of the project linked with the following activities of the EMBLAS – Plus:

- Activity 1.3 Facilitate sharing of environmental monitoring data at the regional and European level
- Activity 1.4 Capacity building on novel monitoring methods, quality assurance/quality control and use of the Black Sea Water Quality Database

Cooperation with other partners and institutions, as well as other projects

- Institute of Marine Biology, NAS of Ukraine (previously OBIBSS)
- Schmalhausen Institute of Zoology, Kyiv, Ukraine
- Dzharylgach national reserve, Skadovsk, Ukraine
- Black Sea Biosphere Reserve, Ukraine
- NGO Mare Nostrum, Romania
- NIMRD, Romania
- NGO Green Balkans, Bulgaria
- IO-BAS, Bulgaria
- TUDAV, Turkey
- ACCOBAMS Secretariat, Monaco
- GFCM Secretariat, Italy
- Black Sea Commission Secretariat, Turkey
- CeNoBS (aerial survey in the exclusive economic zones of Ukraine, Bulgaria, Romania, Turkey and Georgia and pilot by-catch monitoring activity leading by UkrSCES)
- ANEMONE (biodiversity assessment, marine litter and cetacean assessment in Romania and Turkey)
- OceanCare (cetacean survey in Bulgaria)

There will be involved 7 women and 9 representatives of young generation in the implementation of the proposed activities. A few students will be involved as volunteers in the Project.

4. Project management and team of key experts

The overall management approach toward planning and implementing the proposed project will base on S.M.A.R.T. (Specific, Measurable, Actionable, Realistic, Timely) approach in accordance with the requirements of the Common Implementation Strategy of the MSFD for each Descriptor.

An organization structure of key experts team will be basis on structure of UkrSCES.

The organization chart for the management of the project describing the relationship of key positions and responsibilities is represented on fig. 1.

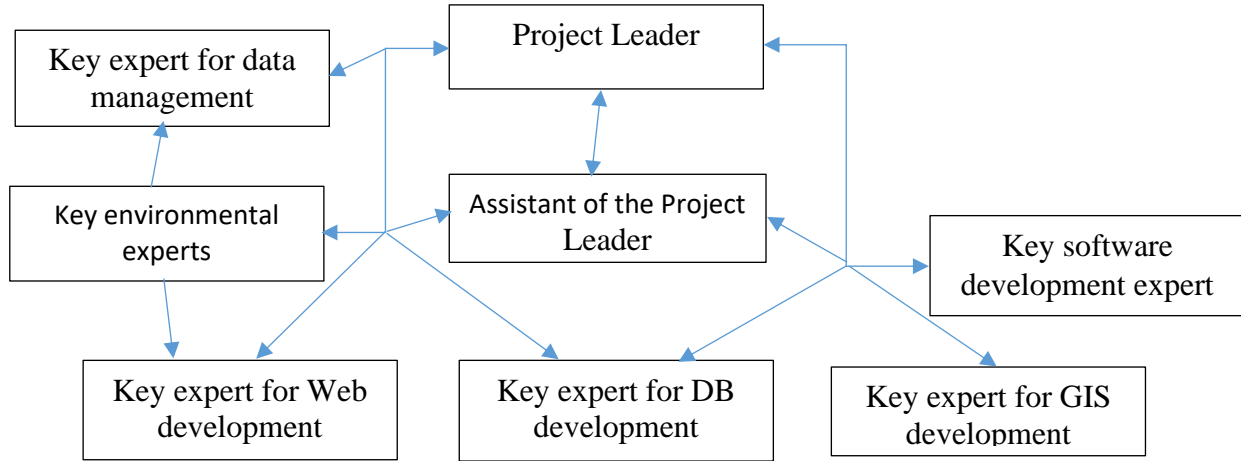


Fig. 1 - Organization chart for the management of the project

Team of key experts of the UkrSCES:

Project Leader: Viktor Komorin, PhD, director of UkrSCES

Assistant of the project Leader: *Oleksandr Neprokin*, head of department

Key expert for data management: *Olena Miasnikova*, head of sector

Key expert for DB development: *Yevhen Ivchenko*, head of sector

Key expert for software development: *Artem Kruhlov*, scientific researcher

Key expert for Web development: *Maxym Motylov*, scientific researcher

Key expert for GIS development: *Oleksandr Leposhkin*, head of department.

Key environmental expert: *Mykola Pavlenko*, phd, head of department.

Key environmental expert: *Vladimir Ukrainkiy*, PhD, head of MIAC

Key expert for pollution monitoring and assessment: *Yuriy Denga*, PhD, head of department

Key expert for biological sampling and analyses: *Mikhailo Nabokin*, scientific researcher

Key expert for litter sampling and observation: *Julia Kotelnikova*, scientific researcher

Key expert for the cetacean monitoring: *Karina Vishnyakova*, PhD, Certified ACCOBAMS MMO.

5. Time plan of activities

Activity	Oct _19	Nov _19	Dec _19	Jan _20	Feb _20	Mar _20	Apr _20	May_ 20	Jun _20	Jul_ 20	Aug _20	Key deliverable
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