United Nations Environment Programme

Northwest Pacific Action Plan (NOWPAP)
Pollution Monitoring Regional Activity Centre (POMRAC)

Regional Workshop

"Targets and indicators for Ecological Quality Objectives for the NOWPAP region"

Vladivostok, Russia, 18 May 2016

Information document

1. According to the 2016-2017 NOWPAP Program of Work approved by the 20th IGM (Beijing, China, 28-30 October 2015), preparation of the Regional Overview "Targets and indicators for Ecological Quality Objectives used in NOWPAP member states" is the major activity for POMRAC in this biennium.

2. Implementation of this activity needs close cooperation of all RACs and NOWPAP countries because Ecological Quality Objectives (EcoQOs) cover very wide range of environmental aspects, from biodiversity to marine litter.

3. The goals of this workshop are as follows:

    - to collect information on existing targets and indicators for the EcoQOs in the NOWPAP region and beyond;

    - to analyze national approaches (features) relevant to EcoQOs in NOWPAP member states;

    - to discuss similarities and differences among national monitoring systems on each of suggested EcoQOs for the NOWPAP region and to reveal common environmental quality indicators in the entire region.

Background

4. Taking into account marine environmental problems in the NOWPAP region, NOWPAP Medium-term Strategy (MTS) includes the following thematic elements:
    - Integrated coastal and river basin management;
    - Regular assessments of the state of the marine environment;
    - Pollution prevention and reduction, including harmful substances, hazardous waste and marine litter;
    - Biodiversity conservation (including alien invasive species);
    - Climate change impacts.

5. Under the "Integrated coastal and river basin management (ICARM)" theme, one of the suggested activities is "Setting Ecological Quality Objectives for marine and coastal environment based on the regular assessments".

6. The 12th NOWPAP POMRAC FPM and back-to-back Regional Workshop "Setting Ecological Quality Objectives for the NOWPAP Region" (Busan, Republic of Korea, 3-5 September 2014) discussed in detail the List of suggested EcoQOs. The further steps related to operational objectives, targets and indicators were also proposed and discussed. The representatives of NOWPAP states asked for some time for the internal consultations on the List of EcoQOs, but no objections have been received during the following months after the workshop.

Development of Ecological Quality Objectives in other regions

7. Achievement of Good Environmental Status (GES) in marine water is one of the leading directions in the goal-setting of modern global society, and development of the Ecological Quality Objectives (EcoQOs) for a number of regions around the world is the first step in this direction. In Europe, the Marine Strategy Framework Directive (MSFD) was adopted by the European Parliament and the Council of the European Union on 17 June 2008 with aim to achieve Good Environmental Status of the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend. Qualitative descriptors of good environmental status according to the EU MSFD (Annex 1) served as basis for the development of Ecological Quality Objectives for a number of Regional Seas Action Plans in Europe, such as OSPAR and HELCOM (see Annexes 2,3).

8. Environmental Quality Objectives (EcoQOs) could be used to develop broad stakeholder agreement on the major environmental objectives of the region. They are useful for communication of the desired state of a particular environment or component of the environment. They represent consensus views of environmental priorities, or visions of what the environment should look like in the future. Often, EcoQOs are simple restatements of existing consensus views (UNEP/MAP/MED POL, 2005).

List of the Ecological Quality Objectives (EcoQOs) in the NOWPAP region

9. Taking into account the analysis of current environmental situation in the NOWPAP region (SOMER, SOMER 2 and references herein) and considering successful work on EcoQOs by several leading Regional Seas programmes (such as MAP, HELCOM, and OSPAR) as well as discussion during the regional workshop held in September 2014, the suggested **Ecological Quality Objectives for the NOWPAP region** are as follows**:**

- Biological and habitat diversity are not changed significantly due to anthropogenic pressure;
- Alien species are at levels that do not adversely alter the ecosystems;
- Eutrophication adverse effects (such as loss of biodiversity, ecosystem degradation, harmful algal blooms, and oxygen deficiency in bottom waters) are absent;
- Contaminants cause no significant impact on coastal and marine ecosystems and human health;
- Marine litter does not adversely affect coastal and marine environments.

Steps for the further development of Ecological Quality Objectives in NOWPAP region

10. Several steps are suggested for the further development of Ecological Quality Objectives in the NOWPAP region. These steps include:

- Elaboration of the Operational Objectives (targets) for each EcoQO;
- Agreement on indicators and targets among NOWPAP RACs, nominated national (technical) experts and, later on, by the NOWPAP member states.

11. Development of the list of indicators of the marine environment condition in the NOWPAP region is at its initial stage. Description of the major ecological problems is the starting point on the way to final agreement on Ecological Quality Objectives. Important steps in this direction are as follows:

- singling out of biogeographic zones within the NOWPAP region, and determining background conditions for each zone, which will be useful for further comparison with actual or possible environmental conditions under anthropogenic pressure;
- elaboration of the Operational Objectives (targets) for each EcoQO;
- development of lists of environmental quality indicators for each EcoQO;
- analysis of the relevance of the proposed targets and indicators in relation to the existing national legislation, programs of monitoring and resource use practices in the NOWPAP region;
- analysis of existing monitoring programmes and development of recommendations for their harmonization;

12. Participation of all NOWPAP RACs in the development of EcoQOs for the NOWPAP region is important to achieve constructive and efficient results. List of EcoQOs and sets of targets and indicators should be prepared, discussed and approved by the joint work of the experts from NOWPAP member states and RACs. The experience of NOWPAP partners operating in the same region (PICES, PEMSEA, YSLME, and others) as well as other relevant organizations and projects should be also taken into account.

13. To facilitate the development and discussion of the EcoQOs POMRAC has prepared draft matrix with suggested EcoQOs, possible targets (operational objectives) and indicators (Annex 4). Participants of the workshop are expected to check and discuss this matrix before the workshop. Then, it will be finalized after the workshop with involvement of all NOWPAP RACs.

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Annex 1

QUALITATIVE DESCRIPTORS of good environmental status according to the EU Marine Strategy Framework Directive (DIRECTIVE 2008/56/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 June 2008):

- **Biological diversity is maintained.** The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.
- **Non-indigenous species** introduced by human activities are at levels that do not adversely alter the ecosystems.
- Populations of all **commercially exploited fish and shellfish** are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.
- All elements of the **marine food webs**, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.
- **Human-induced eutrophication** is minimized, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters.
- **Sea-floor integrity** is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected.
- Permanent alteration of **hydrographical conditions** does not adversely affect marine ecosystems.
- **Concentrations of contaminants** are at levels not giving rise to pollution effects.
- Contaminants in fish and other **seafood for human consumption** do not exceed levels established by Community legislation or other relevant standards.
- Properties and quantities of **marine litter** do not cause harm to the coastal and marine environment.
- Introduction of **energy, including underwater noise,** is at levels that do not adversely affect the marine environment.

Annex 2

HELCOM vision: "*A healthy Baltic Sea environment, with diverse biological components functioning in balance, resulting in a good environmental/ecological status and supporting a wide range of sustainable human economic and social activities*". HELCOM Baltic Sea Action Plan, 2007 (http://www.helcom.fi).

HELCOM Ecological Quality Objectives, EcoQOs (2007):

- Baltic Sea unaffected by eutrophication.
- Baltic Sea with life undisturbed by hazardous substances.
- Maritime activities carried out in an environmentally friendly way.
- Favorable conservation status of Baltic Sea biodiversity.

Annex 3

OSPAR vision 2010-2020: "*Clean, healthy and biologically diverse North-East Atlantic*"

OSPAR Strategic Objectives 2010-2020:

- To halt and prevent by 2020 further loss of biodiversity in the OSPAR maritime area, to protect and conserve ecosystems, and to restore, where practicable, marine areas which have been adversely affected.

- To combat eutrophication in the OSPAR maritime area, with the ultimate aim to achieve and maintain a healthy marine environment where anthropogenic eutrophication does not occur.

- To prevent pollution in the OSPAR maritime area by continuously reducing discharges, emissions and losses of hazardous substances, with the ultimate aim to achieve concentrations in the marine environment near background values for naturally occurring substances and close to zero for man-made synthetic substances.

- To prevent and eliminate pollution and take the necessary measures to protect the OSPAR maritime area against the adverse effects of offshore oil and gas activities by setting environmental goals and improving management mechanisms, so as to safeguard human health and to conserve marine ecosystems and, when practicable, restore marine areas which have been adversely affected.

- To prevent pollution of the OSPAR maritime area from ionizing radiation through progressive and substantial reductions of discharges, emissions and losses of radioactive substances, with the ultimate aim at concentrations in the environment near background values for naturally occurring radioactive substances and close to zero for artificial radioactive substances.

- To ensure integrated management of human activities in order to reduce impacts on the marine environment, taking into account the impacts of, and responses to, climate change and ocean acidification.

- To facilitate and coordinate the work of relevant Contacting Parties in achieving good environmental status under the EU Marine Strategy Framework Directive by 2020.

Annex 4

List of Ecological Quality Objectives (EcoQOs), suggested operational objectives (targets) and indicators for the NOWPAP region

EcoQOs	Operational Objectives (targets)	Indicators
1. Biological and habitat diversity are not changed significantly due to anthropogenic pressure	1.1. Species diversity of marine mammals and waterbirds	1.1.1. Abundance, distribution and population growth rates of marine mammals 1.1.2. Abundance and productivity of key waterbird species
	1.2.Species, age and size structure of fish stocks	1.2.1. Catch/biomass ratio 1.2.2. Spawning Stock Biomass (SSB) 1.2.3. Proportion of large fish (for selected species at the top of food webs)
	1.3.Distribution of benthic and pelagic communities and their status	1.3.1. Distribution 1.3.2. Condition of the typical species and communities 1.3.3. Hydrological and chemical conditions
2. Alien species are at levels that do not adversely alter the ecosystems	2.1. Abundance and state characterization of alien species	2.1.1. Trends in spatial distribution and biomass of alien species
	2.2. Environmental impact of alien species	2.2.1. Ratio between alien species and native species and their interaction at the level of ecosystem, habitats and species
3. Eutrophication adverse effects (such as loss of biodiversity, ecosystem degradation, harmful algal blooms, and oxygen deficiency in bottom waters) are absent	3.1. Nutrients concentration	3.1.1. Nutrients concentration in the water column 3.1.2. Nutrient ratios (silica, nitrogen and phosphorus)
	3.2. Direct effects of nutrient enrichment	3.2.1. Chlorophyll concentration in the water column 3.2.2. Species composition and abundance of toxic microalgae 3.2.3. Harmful algal blooms (HABs) 3.2.4. Abundance of opportunistic macroalgae
	3.3. Indirect effects of nutrient enrichment	3.3.1. Seasonal hypoxia, dissolved oxygen changes and size of the area concerned
4. Contaminants cause no significant impact on coastal and marine ecosystems and human health	4.1. Concentration of contaminants	4.1.1. Concentration of the contaminants in sediments, water and hydrobionts 4.1.2. Exceeding of MPC in aquatic organisms and frequency of such cases
	4.2. Effects of contaminants	4.2.1. Levels of pollution effects on the ecosystem components concerned, where a cause/effect relationship has been established
5. Marine litter does not adversely affect coastal and marine environments	5.1. Characteristics of litter in the marine and coastal environment	5.1.1. Trends in the amount and composition of litter washed ashore 5.1.2. Trends in the amount of litter in the water column and deposited on the seafloor 5.1.3. Trends in the amount, distribution and composition of micro-particles
	5.2. Impacts of litter on marine life	5.2.1. Trends in the amount and composition of litter ingested by marine animals