

Coastal & Marine Water Quality Management in [Country]

Proposed Pilot Testing of Interim Water and Sediment Quality Objectives and Targets

**(based on series of documents on M&CWQM in the WIO
region by UNEP Nairobi Convention Secretariat & CSIR)**

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EXAMPLE

1. INTRODUCTION

Following agreement by the countries in the Western Indian Ocean (WIO) the Nairobi Convention Secretariat, in consultation with Regional Task Force for Coastal and Marine Water Quality Management (C&MWQM), commissioned the CSIR (South Africa) to undertake the *Development a Strategic Framework for C&MWQM for the WIO region*, including *Guidelines for Setting Water and Sediment Quality Targets for the Coastal and Marine Environment* (Reference WIO Documents when officially issued). The aim of Guidelines is to assist responsible national authorities and water quality managers to prepare Quality Objectives and Targets for their particular coastal and marine environments towards effective implementation of national-level C&MWQM.

The *ecosystem-based Implementation Framework for C&MWQM*, developed as part of the above-mentioned project, are conceptualised in Figure 1 also showing the context of Quality Objectives and Targets.

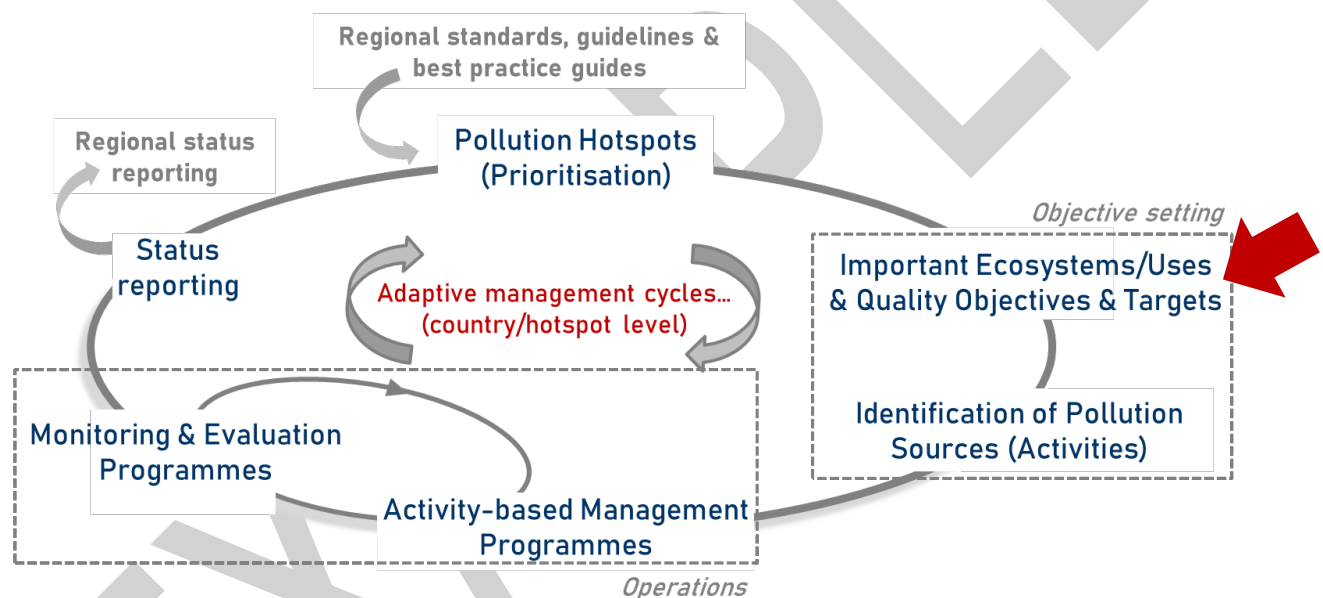


Figure 1: Implementation Framework for C&MWQM, also showing where allocation of sediment and water quality objectives and targets fits (Reference WIO Documents when officially issued)

To wisely apply human and financial resources, it may be necessary to tackle C&MWQM in a phased approach. In this regard, the identification of marine pollution **hotspots** or emerging hotspots, provide a transparent mechanism to prioritise study areas where coastal and marine environmental quality is most at risk or impacted by human activities. The identification and mapping of **important ecosystems, and key socio-economic beneficial uses** in a specific area, as well as their environmental quality objectives and associated targets are key components in a C&MWQM programme. Agreement on important aquatic ecosystems and other the beneficial uses within a specific coastal management area (or hotspot), as well as associated water and sediment QTs, should be negotiated a consultative process using the appropriate institutional structures, e.g. stakeholder fora. As part of the objective setting phase, another key component is the identification and characterisation (including location and quantification) of potential **marine pollution sources** (both land-based and sea-based) that may alter water and sediment quality within a specific study area, as well as setting limits. **Activity-based management**

programmes, involve the operational management of specific activities potentially contributing to marine pollution. The design and implementation of environmental quality **monitoring and evaluation programmes** form an integral and critical element in the Implementation Framework's operational phase. **Status reporting** provides for a high-level reflection on progress and transparency on issues of concern which need to be addressed through a cycle of adaptive management.

The primary purpose of C&MWQM is to manage activities and developments, potentially contributing to coastal and marine pollution, so as to keep these natural resources suitable for designated uses. To achieve this goal, it is important to identify **important or sensitive aquatic ecosystems, as well as other beneficial uses** of coastal and marine areas that rely on good water and sediment quality. For the WIO region, the following were considered appropriate (**Reference WIO Documents when officially issued**):

- Protection of aquatic ecosystems
- Recreational use (including tourism)
- Marine aquaculture (including collection of seafood for human consumption)
- Industrial uses (e.g. intakes for desalination, cooling water intake and seafood processing).

Within this light, the phased approach is proposed for the integration of these Guidelines as tools for C&MWQM at national level. First, it is proposed that the quality objectives and targets for sediment and water quality, as recommended for the WIO region at large (**Reference WIO Document when officially issued**), be adopted as **interim national sediment and water quality guidelines**. Thereafter, it is proposed that a country's responsible authorities commission a few pilot or case studies to test the applicability of these objectives and targets (e.g. pollution hot spots along a country's coastal and marine environment). This should be done in collaboration with local authorities, local universities, as well as local stakeholders, in accordance with the Framework for C&MWQM (Figure 1).

This document presents an Annotated Table of Content to provide Guidance on the **Implementation of Pilot Studies** e.g. at a few selected marine pollution hotspots, to test application level of the proposed interim sediment and water quality objective and targets.

2. INFORMATION REQUIREMENTS ON PILOT SITE

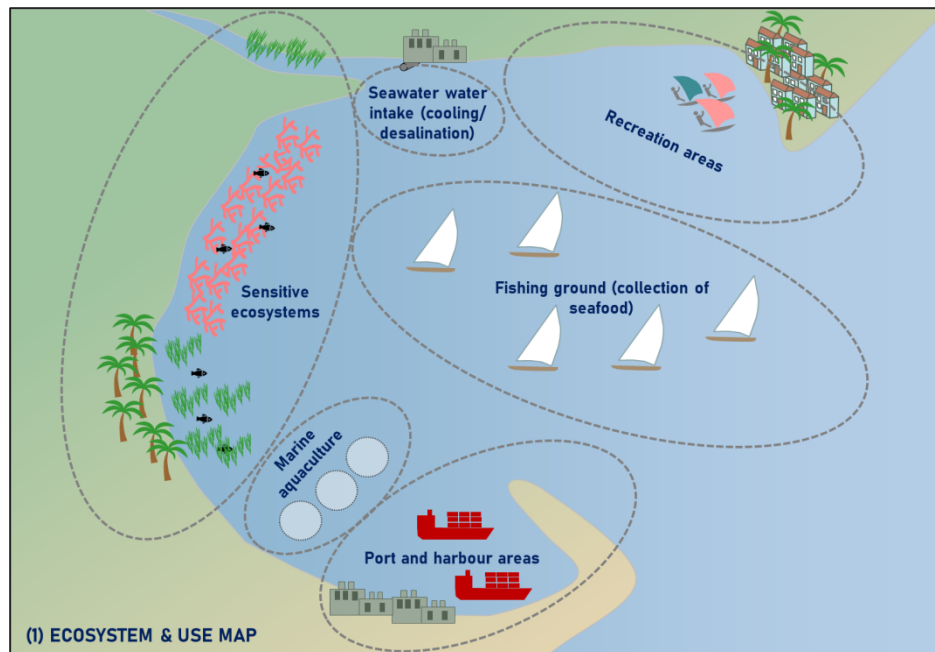
In order to provide context for testing of the interim water and sediment quality objectives and targets it is important to collate and generate related relevant information for pilot studies sites, as summarised below.

2.1 Background information

- Geographical boundaries of pollution hotspot
- Brief description of coastal and marine environment
- Socio-economic context (demographics, economic profiles, important social considerations)
- Legal framework applicable to C&MWQM
- 2.5 Institutional Arrangements for C&MWQM.

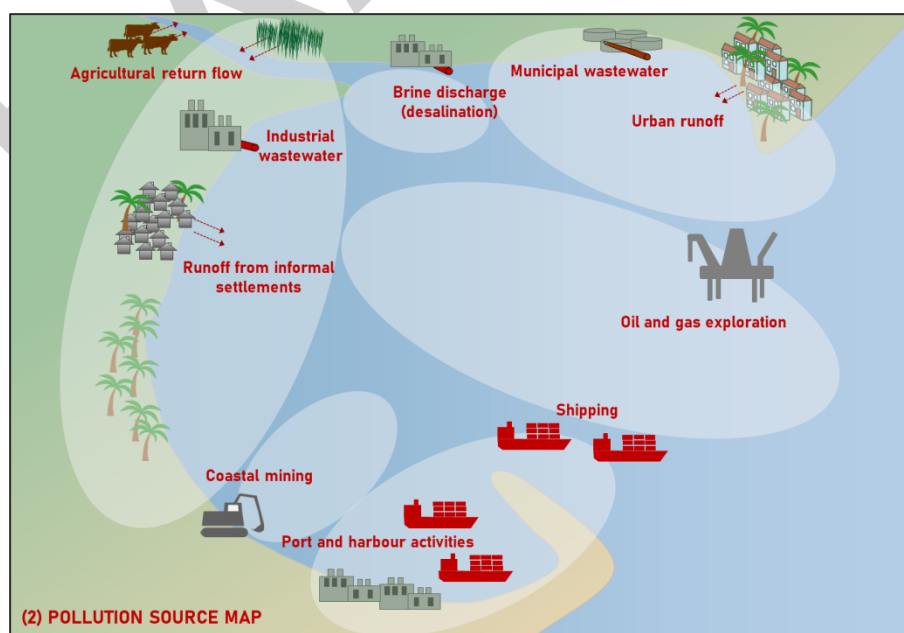
2.2 Zonation of Important Ecosystems and Uses

- Location map of Important and Sensitive Ecosystems, as well as required QTs (e.g. as per Guidelines for the WIO region)
- Location map of social and economic uses (ecosystem services), as well as required QTs (e.g. as per Guidelines for the WIO region)



2.3 Identification of Pollution Sources (Activities)

- Location map of pollution sources (activities)
- Description and quantification of each of the identified pollution sources (activities)



2.4 Define Relevant Quality Objectives and Targets

Based on the identified ecosystem and other beneficial uses, as well as the type of pollutants expected to affect those areas, use the **Interim Water and Sediment Quality Target Report** (see Example) to derive QTs, e.g.

TYPE OF AREAS	KEY PARAMETERS	QUALITY TARGET
Sensitive aquatic ecosystem areas		
Recreation areas		
Marine aquaculture areas		
Industrial use areas		

3. COLLATE/GATHER FIELD MEASUREMENTS ON KEY PARAMETERS

Source available data and information on concentrations of key parameters previously gathered from stations in the pilot study areas, e.g. scientific literature, government monitoring programmes, or any other possible sources of such data.

Where such data do not exist, start a monitoring programme to collect data on key parameters. Also, in order to apply the Reference Method for site-specific physico-chemical and nutrient QTs, it is also important to identify and monitor so-called reference sites, i.e. areas of similar characteristics but that have not been affected by pollution.

Also important is to ensure good practice in the execution of measurement programme as these are costly. Important considerations are:

- Selection monitoring parameters (motivation and frequency of sampling)
- Location of sampling stations (e.g. matched with beneficial uses areas)
- Frequency of sampling
- Sampling and *in situ* measurements procedures
- Laboratory analysis procedures
- Data analysis methodology

As this component of the pilot study can be costly (e.g. if field measurements needs to be undertaken) it will be very important to collaborate with partners, such as local authorities, universities and other institutions with capabilities to perform water and sediment quality monitoring to develop a joint initiative.

Also, it might not be possible (due to human and financial resource constraints) to collect new data on all the key water quality parameters. In those instances measurement programmes can start with those parameters that are easier to measure, or that are more affordable.

4. EVALUATE WATER AND SEDIMENT QUALITY DATA

Once field data on key water and sediment quality parameters at stations within the pilot study area have been collated or collected, the next step will be to compare those to the interim QTs (see Table above) relevant to various areas in the pilot study area (see maps above).

In doing so, it will be possible to test the applicability and practicability of applying the interim QTs in pilot study areas in a particular country. Because of natural variability in some water and sediment quality parameters, it is necessary to check, where there are 'non-compliance' with interim QTs whether it is actually attributed to pollution, or where it is because values are naturally higher (e.g. by also looking at Reference site data).

5. KEY FINDINGS AND RECOMMENDATIONS

- Summarise key findings from results, e.g. compliance/non-compliance, trends, etc.
- Identify where refinements to the interim QTs may have to be considered, where concentration of key parameters are naturally higher than targets, or where more studies need to be conducted to confirm.

Following the outcome of the pilot studies, the interim QTs can be refined where necessary, and can then be accepted as official water and sediment quality targets for a particular country for application in C&MWQM.

The pilot studies can also then be rolled out to full-on C&MWQM programmes for those particular areas, and use as templates for initiation in other marine pollution hotspots. Also important is to formalise local institutional arrangements that were established to execute the pilot studies – moving from *pilot project to institutionalised practice*.