

Good Practice Guide Series

K I M O



KOMMUNENES INTERNASJONALE
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Mitigating Eutrophication:
A Checklist for Municipalities

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A **Growing** CONCERN



Contents

Introduction	3
Section 1: Initial steps	4
Section 2: Preparation stages	4
Section 3: Implementation stage	6
Section 4: Post Implementation	6
Conclusions	7

Aims of the Good Practice Guide

- To provide practical guidance and encouragement to municipalities to reduce the impacts of eutrophication
- To highlight the scope for municipality-led projects in wastewater treatment and riparian improvements to limit the discharge of nutrients
- To equip municipalities with the necessary knowledge and skills to undertake projects

Objectives of the Good Practice Guide

- To consolidate information about eutrophication into an accessible format for municipalities
- To summarise examples of best practice to inform and inspire municipalities to take action
- To highlight the potential of riparian zones and wetlands to achieve nutrient reductions to motivate municipalities to undertake projects

A manual has been produced to accompany this checklist that is available from KIMO electronically

The information contained in this document, to the best of our knowledge was correct at the time of publication. This checklist is meant only as an “aide memoir” and KIMO assume no responsibility for any omission or for any situation that may arise as a result of using this guide



Background

The impacts of eutrophication are a serious threat to natural and human environments. International conventions, European directives and national strategies have been devised over recent decades to mitigate its effects. The prospects for affected environments are increasingly positive with a growing awareness of the need for mitigation. Most strategies focus on the large scale, setting targets to reduce nutrient discharges from industry; by limiting the use of harmful agricultural products, and by improving centralised wastewater treatment plant processes. There is scope for municipalities to take action at the local level and contribute to mitigation efforts by implementing small-scale projects within their regions.

Definition

Eutrophication is a primary production of microscopic plants in surface waters as a result of increased loading of nutrients and organic matter; the increased biomass causes depleted oxygen levels, reduced light penetration and other damaging consequences for human and natural systems. Knock-on effects include changes in species compositions and ecosystems and damage to recreational functions, economies and industries.

Purpose and content of the good practice guide

The guide explains eutrophication and related issues and highlights the scope for municipalities to contribute towards reducing its harmful impacts.

It provides a summary of two key areas that municipalities can exert their influence on (small-scale wastewater improvements, riparian buffers and wetland restoration) and sets out a methodology for implementing projects.

Application of the checklist and manual

This checklist is intended to guide a municipality or individual seeking to implement a project to reduce eutrophication and should be used alongside the manual in a reflexive way to respond to changes in a project as they occur.

The range of information contained in the manual may not be relevant in all situations and this should be taken into account when applying it. The checklist seeks to be specific enough to ensure sufficient detail for a project, but broad enough to apply to most situations.

Section 1: Initial steps for a project

Sections 2.0 and 7.2 of the manual

Do the municipality have sufficient information to be fully aware of how eutrophication is occurring and impacting their area?

- Sensitive environments
- Vulnerable and protected species and habitats
- Geographic information
 - Drainage patterns
 - Soil characteristics
 - Topography
 - Eutrophication-causing activities/ land-uses
 - Population projections
 - Predicted land-use changes

Section 7.1 of the manual

Have all stakeholders central to a project been identified?

- Land owners and users in areas with high nutrient loads (hot spots)
- Wastewater treatment system users
- Local communities/ community groups and representatives
- Government agencies
 - Environmental protection agencies
 - Water boards and utilities companies
 - Planning and infrastructure departments
- Non-governmental environmental and conservation groups
- Other experts
 - Engineers
 - System installers
 - Manufacturers
 - Industry experts
 - Academics and specialist researchers

Section 7.0 of the manual

Have the municipality identified nutrient hot spots in their area?

- Land in proximity to surface water where riparian buffer and wetland projects can be implemented
- Rural, isolated and scattered settlements and dwellings with lacking or absent wastewater treatment



Section 2: The preliminary stages

Section 7.4 of the manual	Has a plan been drawn up to implement an effective project? <ul style="list-style-type: none">▪ Identified appropriate project site(s) in hot spot areas <input type="checkbox"/>▪ Effectively engaged with stakeholders <input type="checkbox"/>▪ Good practice techniques for effective nutrient reductions <input type="checkbox"/>▪ Fully understand socio-economic circumstances <input type="checkbox"/>▪ Identified appropriate funding to complete the project <input type="checkbox"/>
	<u>Wastewater treatment projects</u>
Section 7.22 of the manual	Where present, have exiting systems and infrastructure been evaluated? <ul style="list-style-type: none">▪ To identify where cost savings can be made <input type="checkbox"/>▪ To reduce disruption to households, users and environments <input type="checkbox"/>
Section 5.0 of the manual	Has the best available technology been identified? <ul style="list-style-type: none">▪ To achieve maximum nutrient reductions <input type="checkbox"/>▪ To reduce risks to public health <input type="checkbox"/>▪ A cost-effective system to install, run and maintain <input type="checkbox"/>▪ A modest system that is sensitive to the landscape <input type="checkbox"/>▪ A system to cope with changes in population <input type="checkbox"/> Are the benefits of a project fully understood? <ul style="list-style-type: none">▪ Predicted nutrient reductions <input type="checkbox"/>▪ Raised awareness of the need for mitigation <input type="checkbox"/>▪ Improved quality of receiving environment <input type="checkbox"/>▪ Reduced risks to human health <input type="checkbox"/>
Section 7.1.3 of the manual	Have experts been consulted to ensure the plan incorporates best practice options? <input type="checkbox"/>
Section 6.0 of the manual	<u>Riparian buffer and wetland projects</u> Have best practice techniques been selected? <ul style="list-style-type: none">▪ Identified existing remnant features for improvement <input type="checkbox"/>▪ Extended riparian zones for maximum nutrient reductions <input type="checkbox"/>▪ Used native species with the greatest capacity to absorb nutrients <input type="checkbox"/>

Refer to section
7.1.3 of the manual

Have experts been involved and consulted to ensure an effective project?

- To ensure the plan incorporates best practice
- To identify environmental benefits e.g. to habitats and biodiversity

Where they are present, have health and safety risks been fully addressed?

Section 3: Implementing a project

Sections 3.0; 7.1,
and 7.2 of the

Has the plan been discussed and approved by all stakeholders?

- With government agencies to ensure regulatory compliance
- With conservation groups to minimise impacts and maximise benefits
- With other experts
- With the local community

Sections 7.2 and 7.4.2.1
of the manual

Have all adverse impacts been identified?

- Disturbance to homes, neighbours and land users
- Disturbance to wildlife, species and habitats
- Other impacts

Refer to section 7.4.2
of the manual

Where negative environmental effects are likely, have measures been planned to mitigate them?

- Communicating likely disturbances
- Mitigation to reduce impacts to the natural environment

Refer to section
7.4.1 of the manual

Have the costs of the project been fully considered?

- Funds secured for construction and other costs
- Costs of works agreed with contractors
- Costs of materials and systems
- Running costs- and those responsible for meeting them



Section 4: Post implementation

Refer to section 7.5 of the
manual

Is there a plan in place to implement monitoring?

- To ensure proper functioning of a system
- To ensure the project meets the aims of the project
- To understand benefits and constraints in operation
- To inform future projects

Does monitoring cover the important aspects of the project?

- Monitoring to determine nutrient reductions achieved
- Monitoring of the benefits to habitats and biodiversity
- Communicating with project users to assess functional factors

Conclusions

Have the aims of the good practice guide been met?

- A project implemented to reduce eutrophication
- Wastewater and wetland/ riparian improvements made
- Municipality understands the impacts of eutrophication

Have the objectives of the good practice guide been met?

- Mitigation measures understood and implemented
- Best practice wastewater treatment project implemented
- Riparian zone and wetland projects implemented

This checklist and the accompanying manual are available electronically from:

www.kimointernational.org

Mr Craig Baxter produced this checklist and the accompanying manual during the 2010/2011 Shetland Islands Council Graduate Placement Scheme.

