

SCeNiC

BASIC USER GUIDES FOR LOCAL REPLICATION SCENARIOS



BASIC USER GUIDES FOR LOCAL REPLICATION SCENARIOS PORT AND FISHING HARBOUR CONTEXT

Purpose

This guide supports the replication of the technology package in ports and fishing harbours, with a focus on intercepting polluted inflows before they enter the port basin. It is intended for port authorities, fishing harbour operators, municipalities, and technical staff, providing practical instructions adapted to active maritime environments.

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Scope and Applicability

The guide applies to targeted, low-flow interventions in port-related environments, including:

- Drainage channels and culverts discharging into the harbour;
- Treated wastewater outfalls located near port boundaries;
- Side channels or enclosed inflow points feeding the basin.

The technology is not intended for:

- Treating the full water volume of a port basin;
- Installation within navigational areas or berthing zones;
- Locations with high flow velocity, strong turbulence, or constant vessel movement.



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Port-Specific Pollution Pathways

In fishing harbours and small ports, pollution typically enters through:

- Dedicated water channels carrying urban runoff, mixed wastewater, or industrial effluents;
- Surface drainage from paved port areas (fuel residues, metals, oils);
- Historical contamination re-entering the water column through sediment disturbance.

These channels provide optimal interception points where polluted water can be treated before dispersion into the port basin.

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Site Selection Criteria (Port Context)

Before replication, confirm that the selected location meets the following:

Hydraulic control: Flow is limited, predictable, and can be partially diverted through treatment.

Water quality: Pre-treated or diluted inflow; turbidity and suspended solids are manageable.

Safety & access: No interference with vessel traffic; secure access for maintenance.

Space availability: Area for equipment installation outside berthing and maneuvering zones.

Environmental exposure: Ability to protect equipment from wave action and debris.

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System Configuration

1. Microalgae-Based Remediation (Photobioreactor)

- Install the photobioreactor upstream of the port basin, directly on polluted channels or discharge points.
- Use the unit as a polishing step, not as primary treatment.
- Ensure mechanical robustness (sealed joints, stress-decoupled piping).
- Provide simple pretreatment where needed (screening, settling).

2. Water Quality Monitoring

Fixed nodes: Place at photobioreactor inlet and outlet to verify treatment performance.

Receiving water monitoring: Position fixed or mobile sensors near the channel outlet to track impact on basin water.

Mobile surveys: Use mobile units during low-traffic windows to avoid interference with port operations.



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3. Digital Integration

Enable continuous data transfer and storage.

Use time-stamped and georeferenced data for regulatory reporting and stakeholder communication.

Installation and Commissioning

- Coordinate installation with port management to avoid operational conflicts.
- Secure equipment against vibration, wave action, and accidental contact.
- Perform commissioning tests during normal operating conditions.
- Establish baseline water quality prior to full operation.

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Operation and Maintenance (Port Conditions)

- Schedule maintenance during low-activity periods in the harbour.
- Inspect sensors regularly for fouling caused by oils, sediments, or biological growth.
- Ensure safe working conditions, especially during summer (ventilated or cooled equipment enclosures).

Monitoring, Verification, and Reporting

- Use inlet/outlet data to confirm pollutant reduction.
- Combine with basin monitoring to assess cumulative improvement.
- Share simplified results with port stakeholders and fishing communities to support transparency.

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Troubleshooting – Port-Specific Issues

- High turbidity spikes: Check upstream runoff events; temporarily bypass if needed.
- Sensor fouling from oils: Increase cleaning frequency; use protective housings.
- Access limitations: Improve platform design or schedule work during safe windows.

Replication Checklist (Fishing Harbour)

- Polluted inflow channel identified
- No interference with navigation
- Treatment installed upstream of basin
- Monitoring inlet/outlet operational
- Maintenance access ensured
- Data reporting pathway defined



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Good Practice for Fishing Harbours

- Use multiple small units rather than one large installation.
- Focus on preventing polluted inflows, not “cleaning the whole harbour.”
- Combine technical measures with continuous monitoring and stakeholder engagement.

THANK YOU FOR THE ATTENTION!

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