

# FRESH - SALT

## OPPORTUNITIES FOR RESTORATION OF FRESH - SALT TRANSITIONS IN THE WADDEN REGION

### ADVICE OF THE WADDEN SEA COUNCIL TO THE MINISTRY OF AGRICULTURE, NATURE AND FOOD QUALITY

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# SUMMARY

#### Why this advice?

Governmental policy has for decades focused on restoring the links between fresh and salt water systems. A number of projects have been carried out in the Wadden region, and there are plans and ideas for various locations at a more or less advanced stage of preparation. It is desirable in the context of water and nature policy to turn those words into actions. The Key Planning Decision 'Third Wadden Sea Memorandum' provides a means to evaluate the various plans not only on their own merits, but also in the light of their significance to the ecological functioning of the Wadden region as a whole. The Ministry of Agriculture, Nature and Food Quality (LNV) has asked the Wadden Sea Council to issue this advice on the fresh-salt water transitions in the Wadden region.

#### Value of fresh-salt transitions

The presence of fresh-salt transitions in the Wadden region is indispensable to the completeness of the nature reserve and to strengthening the area's ecological values. Restoring the fresh-salt transitions will increase biodiversity and increase the number of characteristic flora and fauna types and habitats. Restoring the fresh-salt transitions will contribute to meeting the targets of Natura 2000 and the Water Framework Directive at all of the designated locations. Meeting the policy targets for the mainland salt marshes and the Wadden islands strongly depends on the restoration of natural processes and dynamics.

#### Focus on functions

Various types of fresh-salt transitions are found in the Wadden region. There are large-scale dynamic types with open connections to the sea (estuaries, lagoons) and small-scale land based transitions where the fresh-salt gradient in some cases forms only a small element of a large-scale, dynamic system (salt marshes, islands). Each transition type fulfils certain functions with its own value to the Wadden Sea, the hinterland and the transition itself, but not every transition type naturally fulfils all the functions. For that reason it is only possible to restore all types of functions by creating several fresh-salt transitions. The Council recommends to let the 'decision of material importance' of the Key Planning Decision 'Third Wadden Sea Memorandum', stipulating that 'the policy focuses on the optimally natural development of the ecosystem'

prevail over the 'decision of material importance', in which is striven 'to realise only one natural fresh-salt transition' for each drainage area, in addition to the existing transitions.

For the final choice of potentially suitable locations, it is important to establish which functions can contribute at which locations to the functioning of the Wadden ecosystem. The Council advises basing the restoration task primarily on the functions of the fresh-salt transitions rather than focusing exclusively on the naturalness of the fresh-salt transition.

The options for restoring a fresh-salt transition with a high level of naturalness are very limited for the mainland. Because of the drop of the level of the land inside the dikes, it will only be possible to artificially restore the link between the fresh water inside the dikes to the salt outer water. The locations where the restoration of transitions most closely approximates the natural situation are the outer dike areas on the Wadden islands.

#### Potentials at each location

The decision on restoration measures is based on ecological potentials, physical constraints and feasibility in the social context (including the decision-making process) at the envisaged locations.

#### Eems-Dollard

The Council advises the Minister to urge the German authorities to make improvements to the lower reaches of the Eems, in combination with improvements in the Dollard by joint effort of the Netherlands and Germany, to improve and restore the ecological functioning of the Eems-Dollard estuary. Since the options and potentials for the Westerwoldse Aa are limited, the Council advises to focus especially on the Eems-Dollard estuary for the restoration of an estuarine transition in the drainage area of the Eems.

#### Lauwersmeer

The Council considers restoration of an estuarine fresh-salt transition with a permanent brackish water zone in the Lauwersmeer not feasible. The feasible scenarios will at best lead to fresh-salt gradients that function to a limited extent. The inlet of seawater may contribute to the natural value of the region itself, and in particular to meeting

fresh-salt transitions





# fresh-salt transitions

the conservation objectives for the Birds Directive area Lauwersmeer. Expectations are that ongoing forest development can be counteracted by periodic inlets of seawater or by higher fresh-water levels over a longer period of time. Possible negative effects of periodic inlet of seawater on the aquatic community needs further investigation. The latter measure leads to mean higher seepage intensity in the surrounding area than the first measure. Further investigation is needed to show the effects of both measures on seepage intensity and to get information about possibly required additional management measures. There are good potentials in the north-eastern part of the Lauwersmeer (Marnewaard) for the creation of a permanent inner dike fresh-salt gradient.

## **IJsselmeer**

The direct link between the IJssel and the Rhine and the size of the IJsselmeer region make this location potentially the most valuable fresh-salt transition in the Wadden region. The planned expansion of drainage capacity, the necessary adaptation of the Afsluitdijk to the safety standards and the opportunity for power generation (Blue Energy) make it possible now to consider measures intended to restore fresh-salt transitions along the Afsluitdijk. The Council advises to work out all of the tasks and challenges in an integral project. The loss of fresh-water stock can be compensated by slightly raising the level. It will be necessary to chart the effect of this on the IJsselmeer dikes and the seepage intensity in the project. The Council has also identified ways of shaping the setup in such a way that scenic and recreational values are improved in relation to the current situation. The Council advises to focus on a transition in the IJsselmeer for the restoration of an estuarine transition in the Rhine drainage basin.

## **Amstelmeer**

The opportunities for an inner dike fresh-salt gradient in the Amstelmeer are limited because of the lake's water management conditions and functions. Creating a direct link between the Amstelmeer and Balgzand (e.g. drainage lock in the Amstelmeer dike) could present prospects for re-establishing sea grass in the Amstelmeer, but even more so in Balgzand. The Council advises working up the prospects for an outer dike fresh-salt transition at the Amstelmeer.

## **Noard-Fryslân Bûtendyks**

Creating runoff of fresh water over the Frisian salt marsh restores the salt and fresh water mixing process, which is a contributory determining factor for the salt marsh's ecological functioning. The width of the salt marshes will make it possible to make maximum use of the fresh water runoff, which could lead to local ecologically valuable gradients. The Council advises encouraging the current planning developments to also restore this type of transition at a scale that is unique by Dutch standards.

## **Islands**

More natural control of the coastline and outer dunes in such a way that space is provided for natural processes and dynamics will offer prospects for restoring and improving the quality of (existing) fresh-salt transitions. The Council advises working at the outer dike eastern points of the Wadden islands on the sustainable restoration of the characteristic functions of fresh-salt water transitions that are (ultimately) steered by natural processes. In other areas of the islands fresh-salt gradients can be restored by means of small-scale measures combined with (active) management.

## **Fish migration**

The restoration of migration opportunities for fish should be encouraged where possible, while taking the location-specific demands of fish-species (and other organisms) into account, with respect to the design of the passage.

## **Potential contribution of fresh-salt restoration to safety**

The Council believes that the safety of the hinterland has the highest priority and is set as a hard precondition for all possible restoration measures. This also applies for water management measures taken in respect to climate change (WB21). To make the coastline more climate-proof, natural processes should be used where possible. The opportunities for this are however limited and are mainly present at the Wadden islands.

## **Opportunities and restrictions**

Fresh-salt transitions can be set up and managed at the envisaged locations in such a way that impacts on agriculture and other spatial functions can be counteracted. Improving fish migration oppor-





tunities will contribute to a better fish stock, which improves among other things the prospects of better catches for inland fishery. Several locations have opportunities to create recreational added value within the final setup. Available information about the costs and benefits of restoring the fresh-salt transitions appeared to be too limited to use as an assessment criterion. The Council advises carefully monitoring the economic effects of implementing the future projects so that the information can be used to make an effective cost-benefit analysis for future projects.

#### **Social support**

The Council advises to explicitly and transparently incorporate safety principles and preconditions in plans for the restoration of fresh-salt transitions and giving communication on this subject a prominent position before, during as well as after the measures have been put in place. The stakeholders ought to be involved in setting up and implementing the study into anticipated effects. Measures should be carried out in phases in order to accumulate knowledge and support as the work progresses.

