



National Water Plan 2016-2021



our water our future



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National Water Plan 2016-2021

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1



Ambition and steering

The Netherlands is a true water country. In spite of that, the population is scarcely aware of the risks and challenges associated with water and water management, because water management is so well-organised. The Dutch should be made more aware of the consequences of living with water. The changing role of government authorities in general, and that of the central government in particular, affects the way water policy is managed. The financial resources available are decreasing, tasks are being decentralised and society itself is increasingly becoming both initiator and implementer of measures. This leads to a growing demand for other steering options, partnerships and funding arrangements. Moreover, (global) developments, such as climate change, scarcity of raw materials and population growth, are demanding answers.

The new National Water Plan provides the broad outlines, principles and direction of the national water policy for the 2016-2021 planning period, with a preview towards 2050. The Cabinet is responding proactively to anticipated changes in climate in the long term, in order to prevent flooding. The planning period will see realistic measures being implemented that address the challenges in the short term and leave sufficient options open for taking further steps in the longer term. The Cabinet ties in with the results of the Delta Programme. The approach makes the Netherlands a pioneer and a leading example at a global level.

This National Water Plan is the Cabinet's next step towards a robust and future-oriented design of our water system, aimed at effective protection against floods, at the prevention of pluvial flooding and drought, and at achieving good water quality and a healthy ecosystem as the basis for welfare and prosperity.

The Cabinet aims to adopt a comprehensive approach, by developing nature, shipping, agriculture, energy, housing, recreation, cultural heritage and the economy (including earning potential), as much as possible in conjunction with water tasking.

The ambition is that - by 2021 - government authorities, businesses and citizens are made more aware of the opportunities and threats of water in their own immediate environment. Everyone will take their own responsibilities in bringing about together a water-robust spatial design, limiting pluvial flooding and disasters, and acting wisely in extreme situations.

Rationale and delineation

The National Water Plan (NWP) contains the broad outlines for the national water policy and the related aspects of spatial policy. The Cabinet is updating water policy in a number of areas.

- The Delta Decisions adopted in 2014 have meant that policy relating to flood risk management and fresh-water has changed fundamentally. The national policy arising from the proposals for these Delta Decisions has been embedded in the National Water Plan 2009-2015 by way of an interim revision in 2014 and incorporated into this new National Water Plan for the 2016-2021 period.
- In recent years, the Cabinet has made agreements on various policy areas that are connected with water, such as agreements on energy (Energy Agreement), nature (Nature Vision), international use and new administrative relations (including the Framework Vision on Infrastructure and Space, the Administrative Agreement Water and the Delta Programme). These agreements have been incorporated into this National Water Plan. The relevant policy documents will remain in force.
- By adopting this NWP, the Netherlands is also complying with the European requirements to draw up up-to-date plans and programmes of measures in accordance with Water Framework Directive (abbreviated as KRW in Dutch), the European Directive on the assessment and management of flood risks (abbreviated as ROR in Dutch) and the Marine Strategy Framework Directive (abbreviated as KRM in Dutch).

In line with the Environment and Planning Act, the Cabinet is preparing a National Environmental Planning Strategy to replace sectoral visions and policy plans. This NWP is one of its key building blocks. The National Environmental Planning Strategy will be a coherent vision at a strategic level. To this end, it started preparations in 2015 which are to culminate in a National Environmental Agenda in 2016. In 2016 and 2017 this agenda will be deepened and any relevant policy alternatives reviewed. The National Environmental Planning Strategy is expected to be adopted by 2018.

This new NWP does not include a number of topics that were dealt with in the previous NWP. Only the topics that have been marked as being of national importance in the Framework Vision on Infrastructure and Space (abbreviated as SVIR in Dutch) are included in this NWP.

Decentralised topics have been left aside, viz.: the area-based regional elaborations, pluvial flooding and various designated uses such as recreation and pleasure cruising. The relationship between soil subsidence and water management is not dealt with in this NWP either. As a precursor to the National Environmental Planning Strategy, the central government will be launching a joint process of co-creation with other government authorities and stakeholders to identify new policy challenges. It is conceivable that these topics will be dealt with during this process.

Status

The National Water Plan 2016-2021 is the successor to the National Water Plan 2009-2015. It supersedes this plan and its partial revisions (Wind at Sea outside 12 nautical miles and embedding national policy on Delta Decisions Under the Water Act, the National Water Plan also serves as a framework vision for the spatial aspects. The NWP is only binding to the central government. In the Netherlands, the central government is responsible for the main water system. The National Water Plan lays down the central government's strategic goals for water management. The Management and Development Plan for the National Waters (abbreviated as Bprw in Dutch) by Rijkswaterstaat (RWS) outlines the conditions and measures for operational management to achieve these strategic goals. The NWP sets the framework for the Bprw. The Cabinet is asking the other government authorities to translate the NWP into their policy plans.

The National Water Plan is related to policy programmes for the subsoil and drinking water. As such, this plan includes references to the Framework Vision on Subsoil, currently under development, and the Drinking Water Policy Document which has been adopted.

Organisation of water management

Water management in the Netherlands is the joint responsibility of the central government, provinces, municipalities and water boards. Collaboration is an important prerequisite for effective action. The river basin management plans, the Flood Protection Programme, the flood risk management plans, the Administrative Agreement on Water and the Delta Programme are all examples of programmes and plans which, together,

Overview of frameworks and supervision (Administrative Agreement on Water 2011)

Frameworks

A basic principle is that standard-setting is assigned to one general democratic body:

| | |
|---------------------------------|--------------------|
| Flood risk management | Central government |
| Pluvial flooding | Province |
| Water quality of national water | Central government |
| Water quality of regional water | Province |

Supervision

A standardisation body supervises the government authority responsible for implementation:

| | |
|-----------------------------------------------------------|------------------------------------------------------------------|
| Flood risk management of the primary flood defence system | Central government supervises Rijkswaterstaat and water board |
| Pluvial flooding including regional flood defence system | provinces supervise water boards |
| Water quality | Central government supervises Rijkswaterstaat and water board |

are energetically tackling water challenges. The Cabinet would like to continue this collaboration with its water partners. The Cabinet endorses the OECD's conclusion that the organisational structure in water management is functioning effectively¹. As such, the Cabinet sees no reason to suggest any administrative or organisational changes in water management.

The Administrative Agreement on Water (2011) lays down clear agreements as to who is responsible for what aspects of water management. A basic principle in this regard is that no more than two administrative tiers will tackle a topic.

With the presentation of the proposals for the Delta Decisions and preferential strategies in September 2014, the Delta Programme entered a new stage: from the development of policy to its elaboration and implementation. Ongoing elaboration of the generic topic of flood risk management will be taken on by the central government, in close consultation with the region. As for the ongoing elaboration with respect to the generic topics of freshwater and spatial adaptation, the current national programme structure will remain in place on account of the joint responsibility. The region is responsible for following up the area-based sub-programmes and will set up an appropriate administrative structure, which the central government will join as a partner. The intensive collaboration between the various administrative tiers developed within the Delta Programme over the years will be preserved. This was ratified by the administrators in September 2014 in the Administrative Agreement on the Delta Programme.

The evaluation of the Delta Act (before 2017) will be used to assess the future of the organisation of the Delta Programme in the long term. As part of this process, consideration will be given to the involvement of all sections of society regarding the impact of the water policy.

Water awareness

Without a flood defence system, approximately 60% of the Netherlands would be flooded on a regular basis. Nine million people live in this area and 70% of our gross national product is earned here. Floods can lead to large numbers of victims and serious economic damage.

However, the Dutch public is becoming increasingly oblivious to water. If the Dutch knew how to anticipate and respond to extreme situations of drought or floods, such situations would be less likely to have serious consequences.

A study by the OECD has shown that the Dutch are insufficiently aware of the concerted efforts that are needed to keep the Netherlands dry and inhabitable and that the risk of flooding is not simply hypothetical. Likewise, people have little notion of what efforts are required to produce good-quality drinking water. A lack of adequate water awareness can lead to diminished support for measures, especially if the necessary budgets are under pressure.

Together with the partners of the Administrative Agreement on Water (provinces, water boards, municipalities, drinking water companies and Rijkswaterstaat), the Cabinet has launched the 'Our Water' public awareness campaign (www.onswater.nl). This publicity campaign is designed to increase water awareness among the Dutch population, explain the need for new investment and increase the involvement of people and their ability to cope. Using the "am I being flooded" app, people can soon discover the levels which the water around them can reach and the action that should be taken. Awareness begins at an early age. That is why the water partners are encouraging schools to pay extra attention to water in a water education programme.

Principles

Water policy is formulated and implemented according to a river basin approach. The various water challenges are considered within a natural and geographical unit, with administrative boundaries being of secondary importance.

The KNMI (Royal Netherlands Meteorological Institute) has reconfirmed the expected climate change and given an even gloomier forecast in the new 2014 climate scenarios: in the future, the Netherlands will see more and heavier rainfall, a 25-80 cm rise in sea levels by 2085, drier summers and more regional variations. These scenarios form the basis for fleshing out water policy in more detail.

¹ OECD study, Water Governance in the Netherlands fit for the future?, 2014

Given its responsibility for the water system, the central government is embedding the following principles:

- **Comprehensive water management.** The Cabinet continues to maintain a comprehensive approach to the water challenges, by considering the various tasks relating to water quantity (flood risk management and pluvial flooding), water quality and use of (fresh)water under wet and dry circumstances in relation to one another.
- **Preventing shifting.** The Cabinet wants to prevent water quantity and quality problems being shifted in terms of space and time. That is, quality problems caused upstream should not be shifted to downstream waterways. To prevent this shifting, managers are reaching agreements with each other about acceptable quantities and the quality of the incoming water. To this effect, the following sequences apply:
 - **retain-store-discharge.** This sequence means that water is retained in the soil and as surface water for as long as possible to prevent pluvial flooding and inundations and, during dry periods, to retain local water for as long as possible. If necessary, water will be stored temporarily. If retention and storage are no longer possible, the water will be discharged elsewhere. This sequence prevents responsibility for the regional water system being shifted to the main water system. Based on this sequence, Rijkswaterstaat is reaching agreements with regional managers on the discharge of water from the regional to the main water system.
 - **Keep clean-separate-clean.** The main purpose of this sequence is to keep the water as clean as possible. Secondly, clean and contaminated water must remain separated as much as possible. Finally, if keeping clean and separation are no longer possible, cleaning the contaminated water may be the next step (prevention ladder in the Drinking Water Policy Document).
- **Connecting space and water.** In addressing water challenges and implementing measures, the activities are first coordinated with the other relevant spatial tasks and measures in the area. The aim is to ensure the best possible harmonisation or mutual reinforcement of the scope, programming and financing. This approach often makes it possible to improve water management while at the same time reinforcing the economy and the living environment at lower costs.

The Cabinet has adopted the following principles in implementing this National Water Plan:

- **Adaptive approach.** The water partners will anticipate future developments on the basis of an adaptive approach, through phased decision-making, flexible strategies and a comprehensive approach. This will minimise the probability of overinvestment or underinvestment. This approach makes it possible to take effective measures in the short term that can be adapted to new insights or developments in the long term.
- **Collaboration.** The Cabinet sets great store by close collaboration with government authorities and stakeholders, based on a relationship of trust, transparency and equivalence.
- **Inform-encourage-act.** Water users may expect the following roles from the government: government authorities inform users and encourage them to assume responsibility and take measures for themselves.

Together with the partners of the Administrative Agreement on Water, the Cabinet keeps the general public informed about the results of the water policy each year.

Coordination

From an early stage, the water boards and Rijkswaterstaat issued recommendations on the concept of the Draft National Water Plan, in compliance with the Water Review process. These recommendations have been taken into account. In their final recommendation, Rijkswaterstaat and the water boards state that they are satisfied with the process followed.

The text for the Draft National Water Plan has been discussed with provincial authorities and water boards in regional sessions. The Ministry of Infrastructure and the Environment, the provinces (IPO), water boards (Unie van Waterschappen), municipalities (VNG) and water companies (Vewin) discussed the draft text in the Steering Group on Water on 8 October 2014. The draft of the final National Water Plan was discussed by the Steering Committee on Water on 6 October 2015. All parties referred to in the Water Decree are involved in preparing the plan.

Civil society organisations are participating through the Infrastructure and Environment Consultation Committee.

In response to questions from the House of Representatives and the discussion in the House of Representatives on 24 June 2015, amendments have been implemented, particularly with regard to the topic of water quality. The Draft National Water Plan was made available for inspection in the period from 23 December 2014 to 22 June 2015. Over 50 formal points of view were submitted. In its Report of Answers, the Cabinet has responded to all points of view and indicated which passages in the NWP have been revised on the basis of these formal points of view. The Report of Answers also outlines which official changes have been made to include the progress in the period between draft plan and the final plan, particularly with regard to 2015 measures that were included in the draft plan.

In the decision-making process, the Cabinet has kept to the environmental impact statement on this plan. The outcome of the associated Appropriate Assessment of Nature provided no reasons for the National Water Plan not to be adopted. In its July 2015 recommendation the Environmental Impact Assessment Committee expressed

the view that the information in the Environmental Impact Statement (EIS) at the (high) level of abstraction opted for is satisfactory and in line with the level of abstraction of the NWP2. Due to the generality of the effect assessment and the lack of a summarising test as to whether the objective has been achieved, the EIS does not, however, offer any specific handles regarding follow-up decisions. The Committee advises to use the EIS to create a list of considerations for follow-up, partly in relation to the National Environmental Vision and regional water policy, and to suggest how to deal with them. The Committee's advice reflects its view that the overall appropriate assessment provides sufficient information on the potential consequences for Natura 2000 areas and the instruments that can be used to prevent and/or mitigate these consequences. The Cabinet's Report of Answers deals in great detail with the Committee's advice, which comprises seven sub-recommendations, most of which are aimed at paying attention to various items in the National Environmental Vision. This prompts the conclusion that the recommendations will for the most part be adopted.

Table 1 **Milestones in ambition and steering**

| Process | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|-----------------------------------|-------------------------------|--------|----------|--------|--------|--------|
| Delta Act | Evaluate | | | | | |
| Administrative Agreement on Water | Evaluate | | | | | |
| Environmental Vision | Environmental Agenda complete | | Adopt | | | |
| Environment and Planning Act | | | Complete | | | |
| Framework Vision on Subsoil | Draft | | | | | |
| Progress report on water | Report | Report | Report | Report | Report | Report |

2



Flood Risk Management

Ever since the first Delta Plan was put into effect, the number of people living in floodable areas has grown substantially. The economic value in these areas has also increased significantly.

Due to these changes and the effects of climate change, flood risk management calls for efforts and attention in the forthcoming planning period as well.

The Cabinet is pursuing a progressive flood risk management policy. The aim of this is to ensure that everyone in the Netherlands is offered the same tolerable risk level. Areas with large numbers of potential victims or where economic damage can be substantial are given additional protection. These areas have been identified on the basis of costs-benefit analyses and group risk analyses. Areas that are home to vital infrastructure are also afforded extra protection. The standards will be different in terms of form (probability of overtopping) and height. Safety is achieved using the various layers of the multi-layer safety: preventing floods and limiting the consequences of a flood (water-robust spatial organisation and disaster management).

The flood risk management choices made by the Cabinet are outlined in this section. A detailed explanation and description of the spatial aspects are given in appendix 1: Embedding of national policy, Delta Decisions and preferential strategies. This section also provides an explanation of the flood risk management plans.

These choices ensure that the Netherlands will continue to be a country with sufficient protection against floods, where the community and the economy can flourish.

Figure 1

Standard specifications for each dyke stretch



Dyke stretches

- 43-1 dyke stretch number
- trajectory border

Table with standard specifications per dyke stretch

- 1/300
- 1/1.000
- 1/3.000
- 1/10.000
- 1/30.000
- 1/100.000

Category for protection stretch (per event)

- 1/10
- 1/1.000.000 separate category for protection nuclear power plant

New flood risk management standards

New standards

The Cabinet will continue to adapt the flood risk management policy and, to this end, will draft a bill setting new standards for primary flood defence systems. New standards are necessary, because the current requirements for primary flood defence systems mostly date from the 1960s. Since then, the population and economic value of land protected by the dykes have risen significantly. In addition, new knowledge has become available about the operation of the barriers and the consequences of floods.

The flood risk management policy is derived from the risk-based approach. This not only takes the probability of a flood into account, but its potential consequences too. The greater the probability and consequences, the stricter the standard must be. In addition, the new standards differ in nature (probability of a flood rather than probability of overtopping).

With its flood risk management policy, the Cabinet aims to achieve the following goals:

- The flood risk management policy offers everyone living behind a dyke in the Netherlands a tolerable risk level of at least 1 in a 100,000 per year. This means that the probability of dying as a result of a flood for any individual should be no greater than 0.001% per year.
- Moreover, additional protection is offered in areas where there may be:
 - potentially large groups of victims;
 - and/or major economic damage;
 - and/or serious damage as a result of the failure of vital and vulnerable infrastructure of national importance.

These targets have been computed into standard specifications for the flood defence systems. These are no longer based on dyke 'rings' but on dyke 'stretches'. Each dyke stretch is assigned a standard specification commensurate to the consequences in the specific area. The standard specifications have been classified into six categories, with probability of flooding ranging from 1/300 per year to 1/100,000 per year (see Figure 1). These standard specifications provide the basis for setting the statutory standards and the assessment tools. This will make it possible to conduct anticipatory assessments and ensure robust design. The standards will be laid down in an amendment to the Water Act. The Cabinet aims to effectuate this amendment as of 1 January 2017 and have the associated statutory assessment tools in place by then

as well. The aim is for all dykes to meet the new standards by 2050. The following national assessment of primary flood defence systems will take place from 2017 onwards on the basis of the new flood risk management policy and the associated, updated set of assessment tools. Where necessary, the Cabinet will adjust policy and regulations.

The Coastal Policy has been revised and will be adopted before the end of 2015. In 2015 the Cabinet started with the evaluation of the Major Rivers Policy, and in 2016 it will decide whether the Major Rivers Policy needs revising. Central government has concluded agreements with the water boards on the costs associated with these new standards (see section 8).

Implementation of new standards

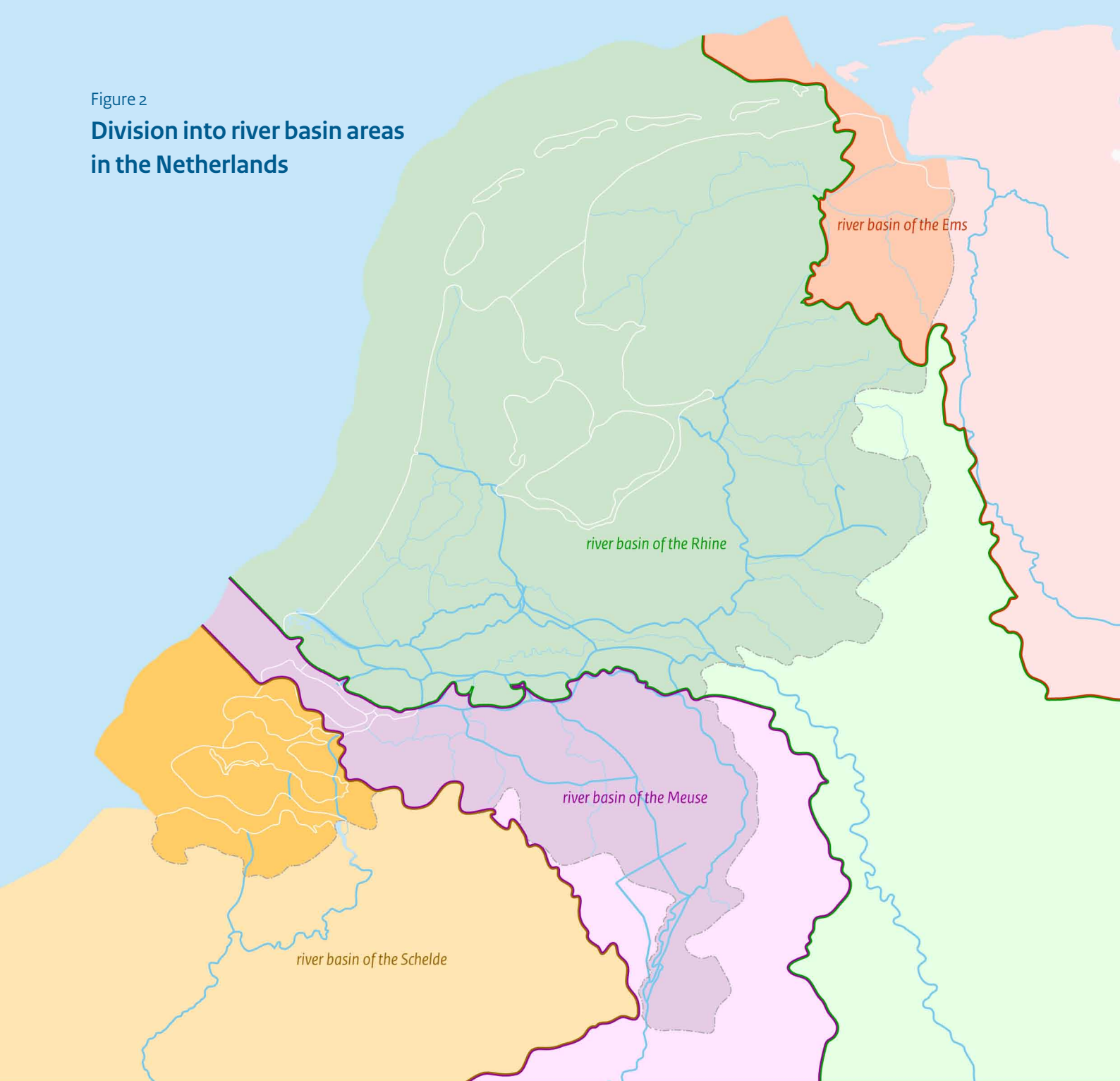
Efforts designed to ensure the required protection level will continue to focus on prevention. This can be done by improving dykes, dunes and storm surge barriers and by taking river-widening measures. In specific situations, for example, where dyke improvement is very expensive or has a far-reaching impact on the community, smart combinations with spatial organisation and/or disaster management can be made to achieve the same level of protection. The application of a 'smart combination' means that tailored agreements can be reached with respect to tasks, responsibilities and funding on a case-by-case basis. The starting point for financing is that the resources which are made available are balanced by savings made in the Flood Protection budget, achieved because fewer measures are taken that qualify for a subsidy from that budget. Together with the water boards, provinces and security regions, the central government will ensure that disaster management is effective and that citizens and businesses will know what to do in situations where flooding is imminent.

There are various ways of improving safety, such as dyke improvement, storm surge barriers, sand replenishments, river widening and smart combinations. Where possible, the Cabinet promotes integrated implementation, taking into account area-based development and a timely approach to the safety risk. Working out more detailed flood risk management challenges always requires proper spatial incorporation. The ambitions of other parties may be linked to these flood risk management measures through co-financing. This contributes to quality, support and efficiency.

More opportunities will arise for such links, as the required flood risk management measures envisage the

Figure 2

Division into river basin areas in the Netherlands



situation in the period leading up to 2050: by clarifying the long-term challenges at this stage already, it is possible for other parties to ascertain more easily how developments can be coordinated with the flood risk management measures. These opportunities are identified in the exploratory stage of the safety measures.

Prior to the statutory embedding of the standards, for projects that are launched as part of the new Flood Protection Programme, the water boards will take the new standard specifications into account by using the 2014 design tools, based on the new standard specifications. The ongoing implementation programmes - Flood Protection Programme, Room for the River and Meuse Projects - will continue as agreed.

Sections 5 and 6 provide an area-based elaboration of these flood risk management choices for the larger waterways and the coast.

The European Directive on the assessment and management of flood risks

The purpose of the Directive on the assessment and management of flood risks is to limit any adverse consequences of floods for human health, the environ-

ment, cultural heritage and economic activities. Each EU country is required to draw up a flood risk management plan for the national part of the international catchment area.

The Netherlands is situated in the delta of major European rivers with cross-border catchment areas. As such, the Netherlands has an interest in the solidarity principle laid down in the Directive on the assessment and management of flood risks.

Land use and measures taken in one country may impact risks in downstream countries. Central government seeks to prevent any adverse cross-border consequences and coordinates these with neighbouring countries. As such, the flood risk management plans consist of an international component and a national component.

The Netherlands has drawn up a flood risk management plan for the four basins of the Rhine, Meuse, Schelde and Ems rivers (see Figure 2). These management plans provide an overview of the risks, the targets for reducing risks, and the measures in the period 2016-2021. The flood risk management plans include an appendix with a table of measures that the central government has compiled in consultation with the other stakeholders. The flood risk management plans contain current policy only. The four flood risk management plans form a complete appendix to this National Water Plan.

Table 2 Milestones in flood risk management

| Process | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|--------------------------------------------------------------------|----------------------|-------------------------|------|------|------|------|
| Amendment to the water act standards + new set of assessment tools | | Entry into force | | | | |
| Major Rivers Policy | Decision on revision | | | | | |
| National assessment of primary flood defence systems | | Start of implementation | | | | |

3



Freshwater

Robust freshwater supplies are vital to our economy and society. 16% of the Dutch economy depends on a sufficient supply of freshwater; together these sectors account for an annual turnover of more than €193 billion.

Even now there is sometimes not enough freshwater to meet demand. This is expected to become more frequent in the future due to climate change, salinisation and socio-economic developments, such as population growth and economic expansion.

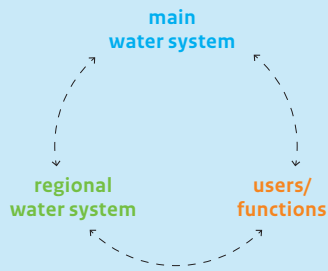
Clear goals and a coherent approach are necessary, in conjunction with measures in the main water system and the regional water system and among users (such as agriculture, industry, nature, shipping and drinking water).

The Cabinet is preparing for climate change by basing freshwater policy on the availability of freshwater and the probability of water shortages in a specific area under both normal and dry conditions. The freshwater choices made by the Cabinet are outlined in this section. A detailed explanation and description of the spatial aspects are given in appendix 1: Embedding of national policy, Delta Decisions and preferential strategies.

The introduction of the new ‘supply level’ tool provides an insight into the availability of freshwater and the division of responsibilities. No-regret measures are making the water system more robust and less vulnerable in the short term. The Cabinet is investing in an implementation programme to this end.

Figure 3

Freshwater measures



Freshwater measures

short term

- efficient and economical water consumption
- permanent freshwater buffer IJsselmeer and Markermeer lakes 20 cm (including robust design, with shore faces)
- smart water management (Hollandsche IJssel, Amsterdam-Rijnkanaal, Noordzeekanaal and weirs at Driel, Amerongen and Hagestein)
- practical test with erosion control dams constructed parallel to the river flow
- expand alternative supply routes to 15 m³/s
- bypass Irene locks for small-scale water supply
- optimise management of Bernisse-Brielse Meer lake (including use of intake at Spijkenisse)
- optimise management of Volkerak-Zoommeer
- improve freshwater/saltwater separation at locks
- increase Noordervaart capacity from 4 to 5 m³/s

medium term (opportunities)

- efficient and economical water consumption
- increase permanent freshwater buffer IJsselmeer lake and Markermeer lake further (max. 40-50 cm) (not expected before 2050)
- water-saving measures during lockage in Meuse
- transport water from Waal to Meuse
- scaling up erosion control dams constructed parallel to the river flow
- expand alternative supply routes to 24 m³/s, possibly with permanent supply from the east
- increase Bernisse-Brielse Meer lake buffer/small-scale
- alternative robust freshwater supply in Volkerak-Zoommeer lake supply area
- increase Noordervaart capacity from 5 to 6 m³/s
- connect with Liemers area

long term (opportunities)

- efficient and economical water consumption, accept water shortages
- further increase permanent freshwater buffer in IJsselmeer lake
- adjust discharge distribution during low water
- replace Maeslantkering storm surge barrier after 2070 (may help prevent saltwater intrusion)
- extend alternative supply routes to >24 m³/s, possibly permanent eastern supply
- (large-scale) alternative supply Bernisse-Brielse Meer lake

Freshwater regions

- Western Netherlands region
- IJsselmeer region
- Elevated Sandy Soils region
- River region
- Southwest Delta region and Wadden region

Subsoil

- freshwater
- salt water/brackish water
- area outside the dykes
- border

National freshwater objectives

The current foundation for freshwater supplies continues to provide the basis for freshwater policy, even in the long term. The aim is to secure supplies in areas that receive water from the main water system. This calls for a critical view of the water demand and the options for retaining and storing water in the region as much as possible. In areas without such supply, the Cabinet wants to change from an approach focused on discharge to one that is also focused on proper conservation and better utilisation of freshwater. One aspect of this approach is combating salinisation in susceptible areas to the fullest extent possible. Despite all efforts, salinisation will, however, increase in certain places. At an international level, the Cabinet is committed to reaching agreements to protect the Rhine and Meuse as supply routes for freshwater supplies in the Netherlands, designed to ensure sufficient water of the required quality. The aim is always to combine the various water challenges aspects within the river basin areas.

The water-dependent sectors include a number of crucial designated uses. These uses are protected during periods of water shortages, as they are given priority in accordance with the statutory list of priorities. In cases where the international competitive position of the water-related economy is at issue, the Cabinet invests in measures to maintain or even improve freshwater supplies.

The Cabinet advocates a more economical and effective use of available water. The Cabinet will provide clarifying information on the risk of water shortages and put forward action strategies to anticipate future climate change. A number of pilots designed to contribute to innovation and knowledge development for climate adaptation have been launched. These pilots are geographically well-distributed across the Netherlands and differ from one another in terms of problems and urgency.

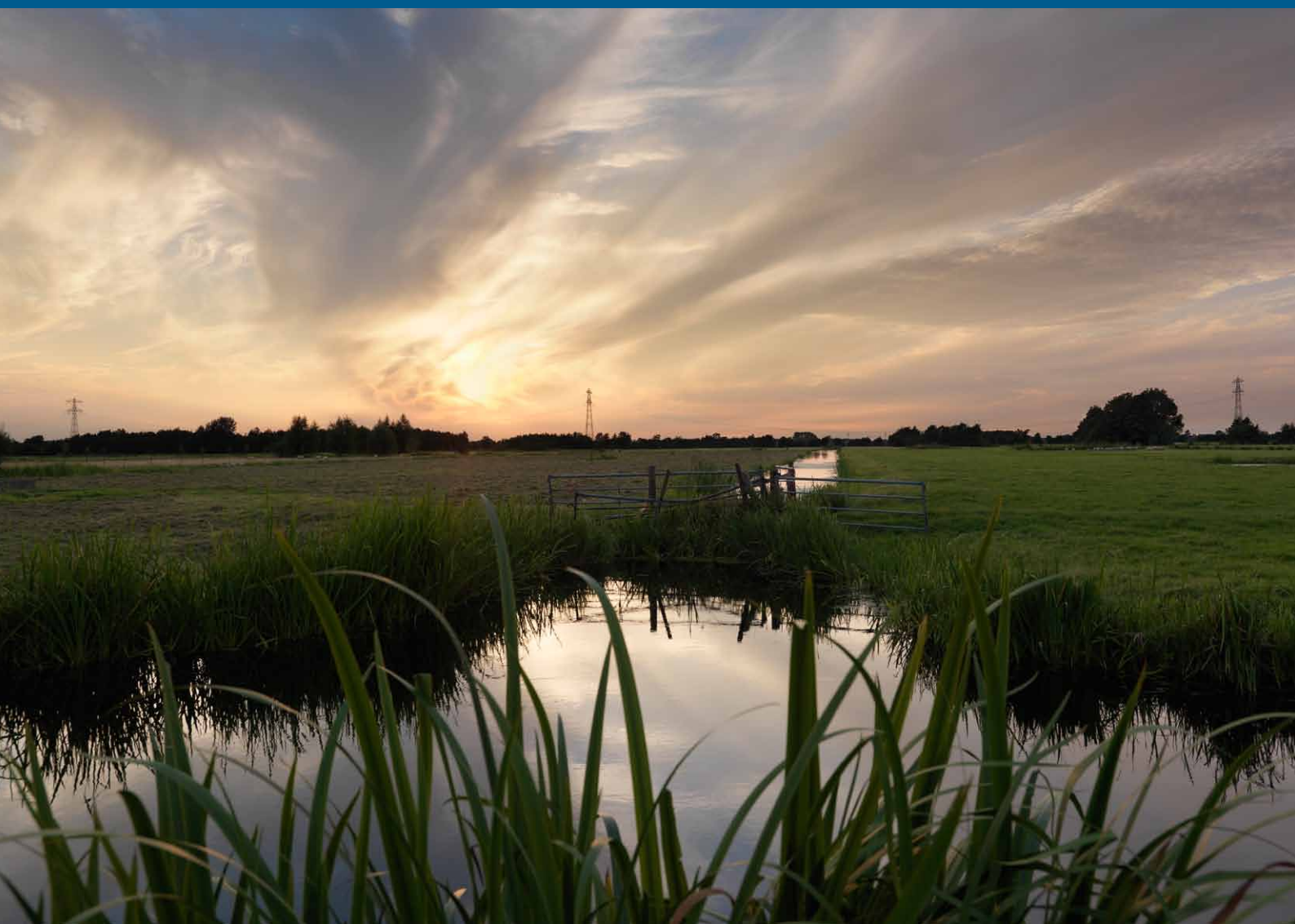
Supply levels and measures

Together with the users, the government authorities involved will specify the availability and (where relevant) the quality of freshwater in the form of supply levels. The 'supply level' indicates the availability of freshwater and the probability of water shortages in a certain area, under both normal and dry conditions. A start will be made on working out the first group of areas in greater detail. The supply levels will be available to this group by 2018 and will be evaluated; by 2021, supply levels will have been agreed and laid down for all areas.

The existing (main) water system will be protected and reinforced as a buffer and supply route for freshwater by a number of targeted investments in the short term. Investments will be made, for example, to increase the freshwater buffer in the IJsselmeer region in the summer and to bring about a more stable freshwater supply in the Western Netherlands. In areas that do not receive water from the main water system - the elevated sandy soils and parts of the Southwest Delta - investments in good conservation and better utilisation will be helpful.

Smart water management, with the collaborating water managers making use of up-to-date, shared information, will improve the balance between supply and demand in times of water shortages.

The freshwater stress test has demonstrated that the Delta Plan on Freshwater contains enough measures to maintain the supply of freshwater to the regional water systems at the current level when combining a salt water Volkerak-Zoommeer lake, deepening of the Nieuwe Waterweg and construction of a new sea lock at IJmuiden. When implementing these measures, some of the freshwater measures will probably have to be implemented more frequently or sooner. In certain cases, these are more drastic measures that require careful consideration.



The initiators of measures that lead to more salinisation are responsible for mitigating or making up for the adverse effects. Salinisation of drinking water intake points in excess of the statutory limit is prevented. The water distribution is one of the aspects considered. In the case of a major increase in the freshwater demand in the long term, tightening the Delta Plan on Freshwater may be required, but - especially in the coming years - there is no need for that.

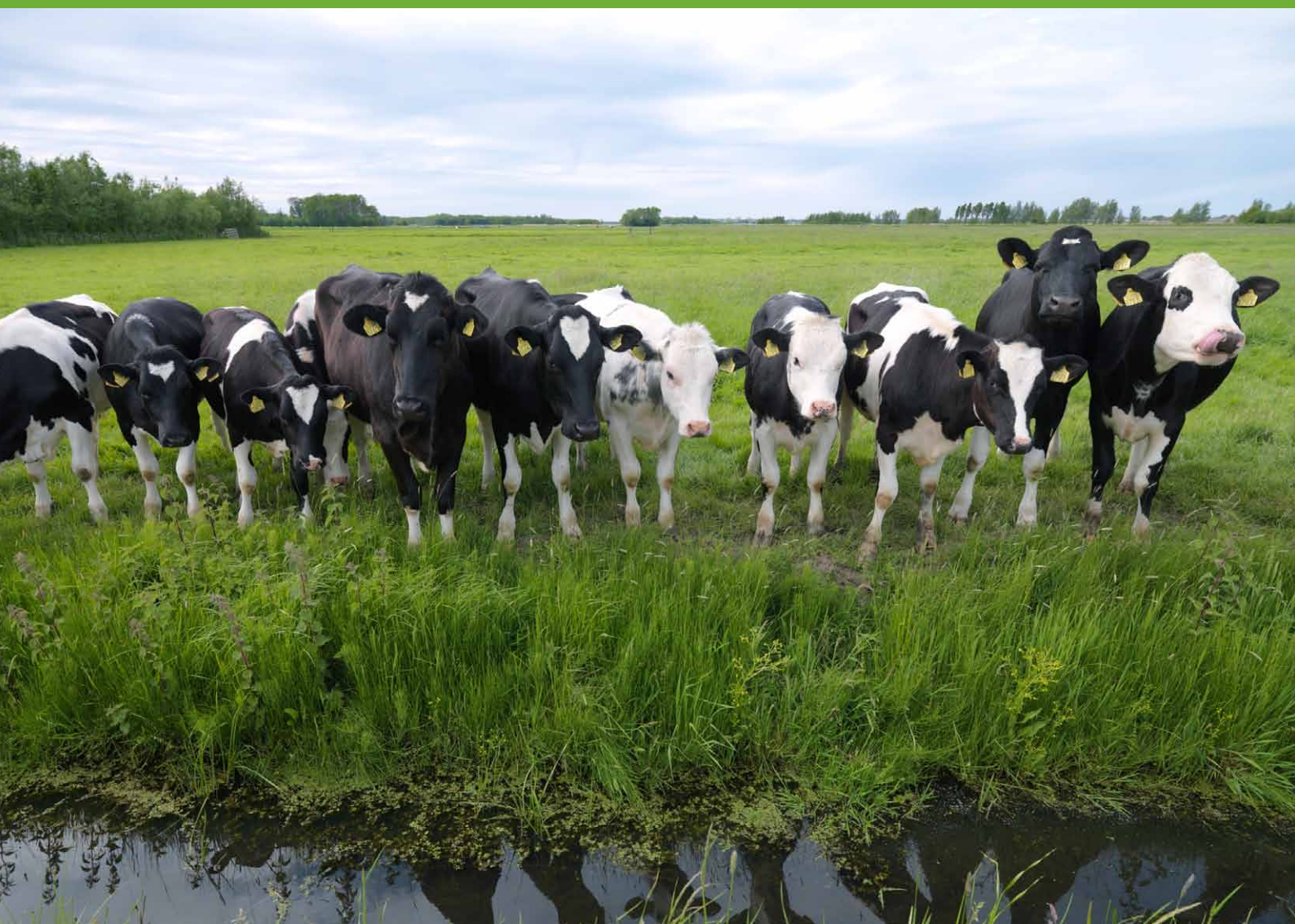
Section 5 provides an area-based elaboration of the freshwater choices. Figure 3 shows the adaptive measures for freshwater in the short, medium and long terms.

The financing of central government measures is outlined in section 8

Table 3 **Milestones in freshwater**

| Process | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|--------------------------------------------------------------------------|------|------|------------------------------------------------|------------------|-----------------------------|----------------------------------|
| Elaboration of supply levels | | | First group ready and evaluation | | | Laid down for all areas |
| Implementation of Delta Plan on Freshwater (measures and pilot projects) | | | Evaluation of Delta Plan on Freshwater Phase 1 | | | Delta Plan on Freshwater Phase 2 |
| Knowledge development and strategy | | | | Problem analysis | Review of adaptive strategy | |

4



Water quality

Monitoring results show that the water quality has improved substantially in recent years. Nevertheless, additional policy efforts are required: achieving the ecological and chemical water quality targets for the Water Framework Directive is still a major challenge.

For example, the Organisation for Economic Co-operation and Development has stated that progress with respect to nitrogen, phosphorus and pesticides and the recovery of natural dynamics (OECD, March 2014) has been stagnating. Part of the reason for this is that the Netherlands is situated downstream and the pressure on the water quality is high on account of the intensive land use. New substances entering the water also entail risks.

The Cabinet is intensifying its control over the improvement of the water quality.

The Cabinet sets great store by achieving the goals set out in the European Water Framework Directive. In the 2015 budget, permanent funding has been earmarked for the hydromorphological measures under the Water Framework Directive in the main water system. The Cabinet will continue to pursue the approach already adopted in reducing emissions of various substances. Clear objectives have been formulated, for both the substances mentioned by the OECD and new substances that may cause problems, such as medicines. The Cabinet is making arrangements with various parties in order to jointly arrive at effective measures.

The ambition is for the Netherlands to be well on the way to achieving the goals of the Water Framework Directive at the end of 2021. Important issues have been put on the agenda and are being effectively tackled. In this way, significant steps have been taken towards clean and ecologically healthy water for an attractive living environment.

European Water Framework Directive

In 2000 the EU member states adopted the Water Framework Directive. The key objectives of the Water Framework Directive are the general protection and improvement of the quality of groundwater and surface waters, groundwater quantity, specific protection and improvement of nature reserves, motivated by the sustainable use of water. Using monitoring information and (environmental) targets, the condition of the bodies of water is being quantified and the challenge determined. The measures that the Netherlands is taking can be divided into nation-wide and regional measures. Nationwide measures include the policy concerning sewage treatment and manure legislation. The regional measures form part of the plans of the water managers. The Cabinet is safeguarding the implementation of the regional measures in the main water system as part of the Management and Development Plan for the National Waters. The European Commission is being kept informed about every river basin by means of a river basin area management plan. The river basin management plans designate the bodies of surface water that are managed by the central government.

River basin management plans

Each country is required to formulate a river basin management plan for each of its catchment areas. Apart from a national component, this plan also has an international component that has been formulated together with the countries in the cross-border catchment area. Sections of the international catchment areas of the Rhine, Meuse, Schelde and Eems are located in the Netherlands. The national sections of these catchment areas are shown in figure 2 (section 2).

The implementation of the river basin management plans for the first planning period (2010-2015) is virtually complete. In consultation with the provincial authorities, water boards and municipalities, the four river basin management plans for the first planning period have been updated for the period 2016-2021. The second Water Framework Directive planning period will start on 22 December 2015. Together with a summary of the sets of measures, the updated river basin management plans constitute an appendix to this NWP. In addition to ensuring a good chemical and ecological quality in all bodies of water governed by the Water Framework

Directive, specific water quality requirements are envisaged for protected areas (for Natura 2000, for instance swimming water and drinking water). The implementation of Water Framework Directive measures also contributes to the goals of the Marine Strategy Framework Directive. The financing of the Water Framework Directive design measures in the main water system is outlined in section 8.

In the Netherlands the programme of measures is the sum total of all measures for the implementation of the Water Framework Directive that are incorporated in the water plans under the Water Act: the National Water Plan, the Management and Development Plan for the National Waters, the regional water plans and the management plans for the regional waters. Central government is responsible for the general directing and for laying down targets and measures for the national waters.

Controlling improvement of water quality: policy boost

In the most recent planning period, the quality of the surface water underwent further improvements. The current water quality suffices for most designated uses. This is partly down to the implementation of the 2009-2015 river basin management plans and measures that have been implemented as part of other programmes and plans. This applies to both the nation-wide measures taken by the central government and the area-based measures taken by water managers and other partners. Many waters are becoming clearer, creating opportunities for water plants and increasing the diversity of fish stocks. The Cabinet is striving towards healthy ecosystems with sufficient open water and fish.

The Cabinet sets great store by achieving the ecological and chemical Water Framework Directive objectives by 2027 and by countering new substances that impact the chemical water quality, such as medicines and micro-plastics. The regions, the Netherlands Environmental Assessment Agency and the OECD have indicated that additional efforts are required in this area.

The Ministry of Infrastructure and the Environment and the Ministry of Economic Affairs, together with the

partners of the Steering Committee on Water, will therefore exercise more control over improving the water quality. As the Steering Committee on Water now also comprises the Delta Programme, all water tasks are discussed in connection with one another. Under the direction of the Steering Committee on Water, an initial joint water quality work programme was drawn up in November 2015. This work programme is updated annually.

This work programme is based on what is called the “Declaration of Amersfoort” (*Verklaring van Amersfoort*, 27 May 2015), in which the authorities, companies, social organisations and knowledge institutes have indicated with what intention and in what role they wish to contribute to the joint approach to the tasks to be performed to ensure a sufficient supply of clean water.

The Cabinet:

- will involve not only the targets under the Nitrates Directive but also the targets under the Water Framework Directive, including those for drinking water production, when evaluating the Manure Act in 2016;
- encourage manure processing and the development of manure processing capacity by tightening the manure processing obligation;
- will involve the social partners in the interim evaluation of the “Healthy Growth, Sustainable Harvest” (*Gezonde Groei, Duurzame Oogst*) policy document in 2018 with regard to the policy on pesticides;
- will promote the collaboration between enforcing organisations to improve the effectiveness of their enforcement;
- encourages the 2014-2020 Rural Development Programme to support the performance of regional tailor-made activities to be agreed by agricultural businesses and water managers, so that, in addition to the effects of applicable laws and regulations, the water quality continues to improve and scarce freshwater is utilised more effectively during drought.

The measures planned by the Cabinet are expected to ensure that by the end of 2021 the Netherlands is still on course with regard to the objectives of the Water Framework Directive. In the 2016-2018 period the Cabinet will examine, together with the partners of the Steering Committee on Water, whether the Water Framework

Directive objectives are still feasible in 2027 and whether any additional measures are necessary and possible (feasible and affordable) in order to achieve those objectives by late 2027.

There is still plenty of work to do. In regional waters in particular, targets for nitrogen, phosphorus and pesticides have not yet been reached. This is part of the reason why the conditions for certain plants, fish and other animal species are not yet favourable everywhere. Moreover, there are new substances that entail risks. The hydromorphological condition of many waters also needs to be improved so that more room is available for riverbank plants and migratory fish to develop.

Manure policy

At present, the fifth nitrate action programme is underway (2014-2017). The effects thereof on nutrient levels in the groundwater and surface water are visible, but will only reach their full potential in the long term. The European Commission has accepted the Action Programme and, based on this, granted the Netherlands derogation, which permits higher fertilisation rates in certain areas..

Tackling pesticides

In the “Healthy Growth, Sustainable Harvest” policy document (Second Policy Document on Sustainable Crop Protection), the Cabinet has included an implementation agenda containing measures for the period 2013-2023 to significantly reduce pesticide emissions. The aim is a 50% reduction in overruns of the environmental quality standards by 2018 and a 90% reduction by 2023. Similar targets have been set for overruns of the standard for surface water that is to be used for the production of drinking water (50% reduction by 2018 and 90% reduction by 2023). Pesticide producers are drawing up emission reduction plans for situations where there is a plausible relationship between standards being exceeded and the use of a pesticide. Various measures are designed to reduce emissions during the use of pesticides. Eventually greenhouse farmers will be required to purify drain water.

Tackling medicines

The presence of medicines in the surface water has adverse effects on aquatic ecosystems. The Cabinet has opted for reducing the impact of medicines by means of a chain-oriented approach. The aim of this is to encourage



a source-oriented approach at the beginning of the chain, supplemented by measures at the end of the chain (purification). Care institutions, which form a major source of medicinal residue, are working to make their business operations more sustainable. Despite measures that are taken at the source, measures may also have to be taken at wastewater purification plants. In the period until 2017 it will be examined which measures will be the most effective and how they can be funded. The Cabinet is making agreements with the water boards and drinking water companies about the national chain approach, which means that all parties in the pharmaceutical chain jointly subscribe to the urgency and jointly identify the tasks and potential solutions for each phase (at the source, at the prescription point, at the user end and at the disposal stage). The national approach must culminate in an implementation programme in 2018. In parallel to drawing up the national chain approach, pilot projects and no-regret measures are already being facilitated and carried out.

Delta Plan on Agricultural Water Management

The Delta Plan on Agricultural Water Management is an initiative of the National Agricultural and Horticultural Organisation (LTO Nederland). The Steering Committee on Water supports this initiative to address the water challenge using a customised approach: area-based and issue by issue. And entails both an improvement of the water quality (nutrients, pesticides, medicines) and more effective use in drought conditions. The collaboration between agricultural entrepreneurs and water managers required for this purpose is further optimised within the compass of the Rural Development Programme on the basis of the Delta Plan on Agricultural Water Management pilot projects carried out and other practical experiences. This involves facilitating the local and regional processes in which agricultural businesses and water managers need to come to terms and take joint responsibility for developing and carrying out the tailor-made activities.

Tackling litter

Plastic and other litter causes serious economic and ecological damage, likewise through the water system. Microplastics, for example, can jeopardise the smallest organisms at the beginning of the food chain, which can harm the productivity of the entire ecosystem. The Cabinet is seeking to prevent plastic and other litter from ending up in the environment at the earliest possible point in the chain. Arrangements for this are being made

with the sectors. Policy intensification for litter in the sea has been elaborated in the Programme of Measures for the Water Framework Directive (appendix 5). In 2013 55 parties (meanwhile, around 90) signed the *Plastics Chain Agreement*, one of the aims of which is to reduce plastic litter. In the 2014 OSPAR Marine Litter Action Plan countries in Northeast Atlantic region agreed on measures to reduce litter in the sea.

Monitoring

Substances and layout affect the condition of the ecosystem. Non-indigenous plants and animal species (exotic species) also impact that condition. Future measures increasingly need to be tailored to solve the remaining issues, for which a proper knowledge of the water is indispensable. The current monitoring programmes do not always suffice for this purpose. Moreover, the monitoring must be adapted on account of new requirements set by the European Commission. There are, for example, new requirements for measuring chemical substances in biota. The monitoring of chemical substances the production or use of which is already banned can (partly) be reduced. On the other hand, it is important to identify new substances and developments in the environment at an early stage. Therefore, the Cabinet will evaluate the monitoring programmes together with the other government authorities and adapt them as necessary.

Water Quality Objectives and Monitoring Decree

The Water Quality Objectives and Monitoring Decree 2009 stipulates the quality requirements that reflect the good condition of the bodies of water. The national measures operate through the source-oriented track. For all sources of contamination, licences or general rules prescribe the best available techniques to reduce discharges and emissions. It will then determine whether additional measures are necessary in order to meet the quality requirements. The substances and figures included in the Water Quality Objectives and Monitoring Decree and underlying Ministerial Monitoring Regulation may serve as the starting point for both the Water Framework Directive waters and other waters. The Water Management Laws and Regulations Handbook discusses the best way of dealing with a large number of substances that are not provided for in the law, that may exceed regional or local water quality standards and that are

not subject to the reporting obligation under the Water Framework Directive. These substances include the so-called 'very alarming substances' that have been selected on the basis of other European requirements and treaties. These are substances with serious hazardous properties that must not be discharged. The impact on the surface water is gradually reduced by taking measures at the source and minimising residual discharges, as well as imposing the obligation to continue to minimise residual discharges by way of permits or general rules.

Soil, groundwater and drinking water

The central government is working with provinces, municipalities and water boards on a multifaceted Soil and Subsoil Programme. The objective is: to ensure a sustainable, safe and efficient use of the subsoil, and

strike a balance between utilisation and protection.

The use of groundwater, including groundwater extraction, for the purpose of drinking water production, is part of the programme.

The central government has adopted a joint vision on the use of the subsoil as an approach to the Framework Vision on Subsoil. This framework vision, whose draft is expected to be complete by 2016, forms the framework for the spatial assessment of activities in the subsoil that are of national importance and need spatial detailing at the national level. These include mining activities and drinking water production. Where necessary, the Framework Vision on Subsoil will make reservations for national groundwater reserves. The other policy tasks for the use of groundwater, such as geothermal energy, brine discharges and storage of water in the soil, are detailed in the Soil and Subsoil Programme.



There are places where the quality of the surface water and groundwater does not meet the requirements for the production of drinking water. This is due to such factors as agricultural pollution, old soil contamination, urbanisation and new substances (see 2014 Drinking Water Policy Document). For each drinking water extraction area, the provinces have prepared a file with the area-specific issues and measures to resolve these issues.

In the coming years (2016-2020), soil remediation operations in the Netherlands will focus on tackling urgent sites. Eliminating human risks is paramount in this regard, as are the prevention of ecological risks and unchecked spread to the groundwater. The most appropriate approach is determined for each case in order to prevent contamination from spreading to groundwater and surface water, to promote natural degradation and

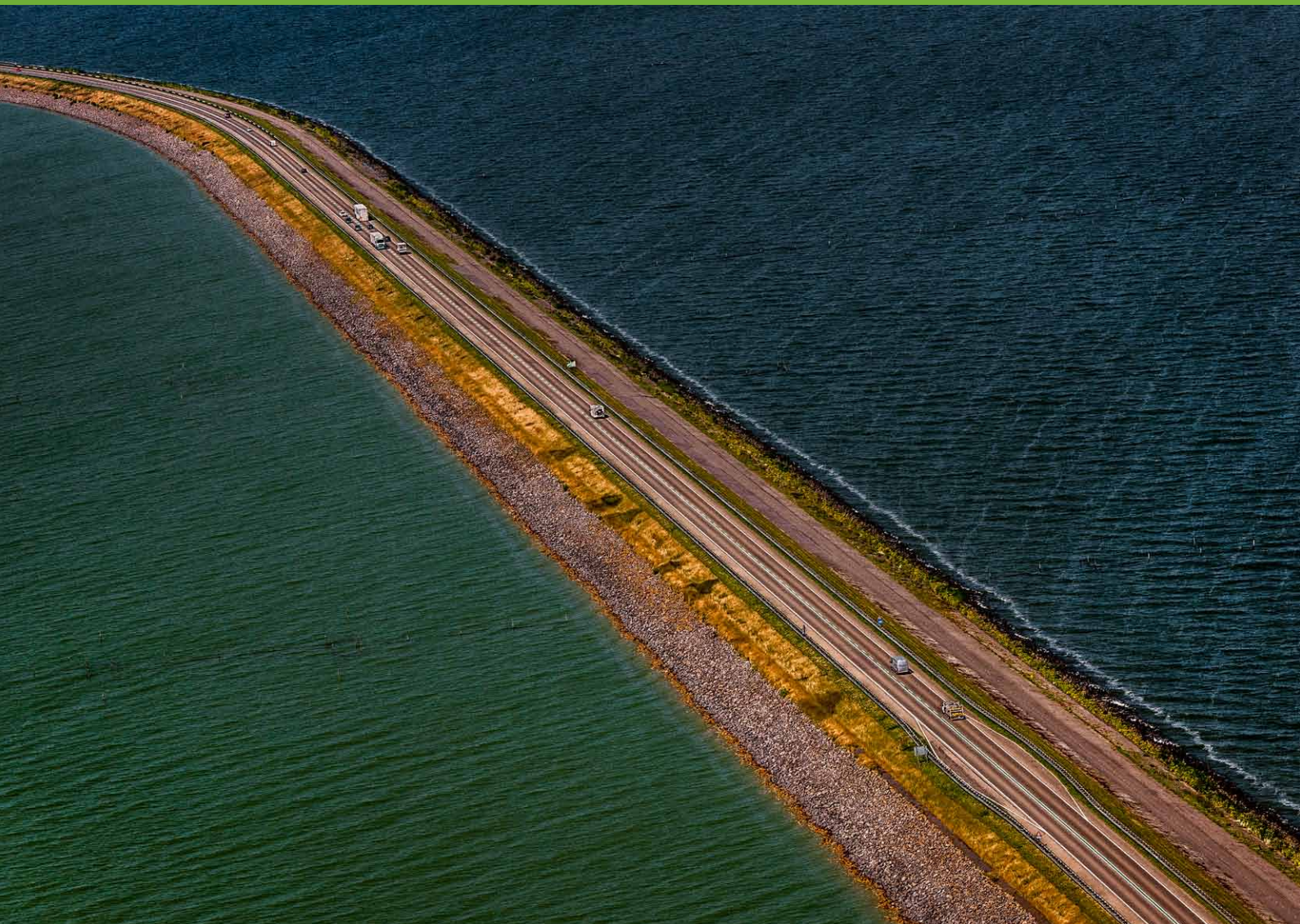
to protect vulnerable objects such as drinking water collection plants. To this end, administrative agreements have been concluded with the local and regional government authorities and business community. In addition, agreements have been made about the sustainable and efficient management and use of the soil and subsoil. Based on their responsibility, local and regional government authorities each flesh out the policy tasking in relation to specific uses of the soil and subsoil.

The drinking water policy has been elaborated in the 2014 Drinking Water Policy Document.

Table 4 **Milestones in water quality**

| Process | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|-------------------------------------------------------------|--------------------------------------------------------|--------|--------------------------------------------------------------------------|--------|---------------------------------------------------------|----------|
| Water quality work programme | Update | Update | Update | Update | Update | Update |
| Water Framework Directive | Start of second plan period | | Progress report to the European Commission | | | |
| Feasibility of Water Framework Directive objectives by 2027 | | | Analyses complete | | Measures in 2022-2027 draft river basin management plan | |
| “Healthy Growth, Sustainable Harvest” policy document | | | Evaluate in the interim 50% less exceeding of pesticide standards | | | |
| National pharmaceutical chain approach | | | Implementation programme complete | | | |
| Elaboration of Delta Plan on Agricultural Water Management) | Start of implementation of Rural Development Programme | | | | | |
| Fertiliser Act | Evaluate | | | | | Evaluate |

5



Area-based elaborations of major waters

The central government bears responsibility for flood risk management and good freshwater supplies in the major waters. The challenges differs for each area.

In the Rhine-Meuse delta, for example, river discharges are expected to increase and salt water continues to encroach into the delta. The IJsselmeer lake is the largest freshwater buffer in the country, which leads to a specific challenge. Central government has the responsibility for implementing the generic policy in these areas, allowing for regional circumstances.

Where the central government has responsibilities in the fields of flood risk management and freshwater, this plan includes area-based elaborations. These elaborations correspond to the division into areas in the Delta Programme. This section concerns the elaborations for the Rhine-Meuse delta (Southwest Delta, Rhine Estuary-Drechtsteden and the area around the major rivers) and the IJsselmeer region (see figure 4). The Coast and the Wadden Region are included in section 6, together with the North Sea. The areas where the central government is responsible for the water quality are described in the river basin management plans (see section 4).

The starting point for the area-based elaborations is Framework Vision on Infrastructure and Space and the Vision on Cultural Heritage and Space. The

Figure 4

Flood risk management and freshwater challenges



Challenges

Flood risk management

- **** repair flood defence system, major tasking
- repair flood defence system
- flood defence system management
- ⋯ preserve sandy coastal system
- ⊖ storm surge barrier maintenance tasking
- ↖ maintain water discharge into Wadden Sea
- limit the consequences of flooding
- establish climate-proof or water-robust design

Freshwater

freshwater issues

- no freshwater supply and falling groundwater levels
- limited freshwater supply and falling groundwater levels
- salinisation of intake points
- excessive demand on IJssellake water buffer
- river water levels too low (summer)
- salinisation and no freshwater supply

Climate-proof city

- limit the consequences of droughts, heat and heavy precipitation

Causes

- ↑ 0,35-0,85 m rise in sea level
- ↓ soil subsidence
- ↗ salt wedge
- ⋯ coastal sedimentation and erosion
- ⊖ river sedimentation and erosion
- ↗ HW = increased peak river discharge
Rhine: 16.000 → 18.000 m³/s
Meuse: 3.800 → 4.600 m³/s
- ↘ LW = decreased low river discharge
Rhine: 1.000 → 600 m³/s
Meuse: 20 → 10 m³/s

longer periods of heat/drought, weather and more extreme precipitation

Subsoil

- freshwater
- salt water/brackish water
- area outside the dykes
- dunes
- boundary

preferential strategies set out in the Delta Programme are included in this NWP and will be elaborated by the region. Collaboration between the central government and regions will tie in with the MIRT and relevant area agendas.

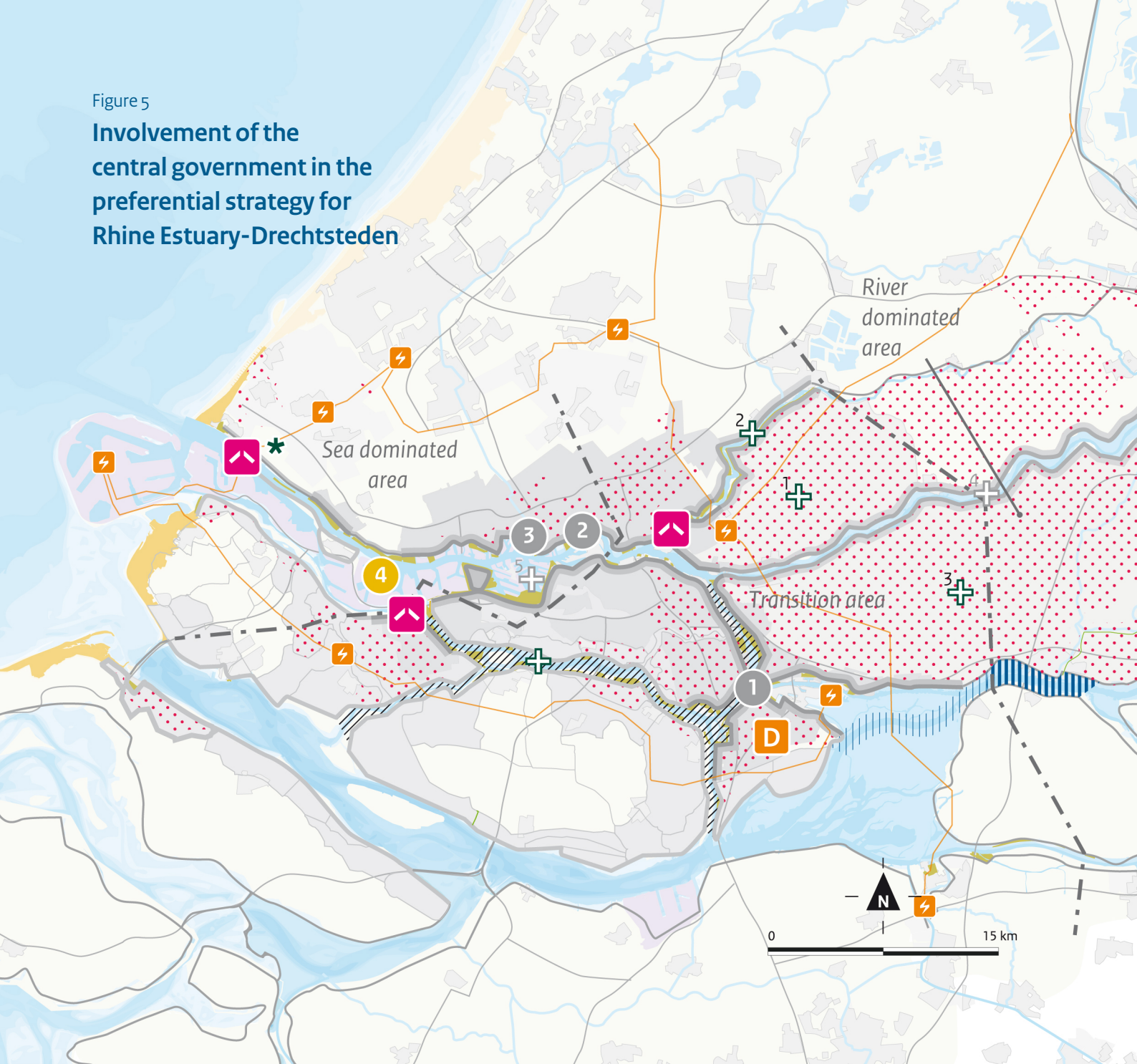
Together with other government authorities, the Cabinet is elaborating measures for river widening and dyke improvement, water level management in the IJsselmeer lake and freshwater supplies in the Southwest Delta and the Western Netherlands. In doing so, the Cabinet is keeping to the most recently adopted discharge distribution across the Rhine distributaries. In addition, the Cabinet is seeking to bring about synergy between water policy and other interests, such as the business climate in Rhine Estuary-Drechtsteden.

Appendix 1 provides a further substantiation and elaboration, and also identifies the spatial aspects.

By late 2021, flood risk management around the major waters will have been improved and the freshwater issues will have been tackled. Moreover, opportunities for synergy with other interests around these waters will have been seized.

Figure 5

Involvement of the central government in the preferential strategy for Rhine Estuary-Drechtsteden



Flood risk management (At in grey information is the central government not involved)

1 Prevention as the basis for flood risk management

maintaining coast by means of replenishments

2 Always an optimal combination of preventive measures

replace storm surge barrier in long term

dykes – also consider forelands in assessing and designing dykes

before 2050: river widening – Merwedes optimal combination of river widening and dyke improvement

after 2050: river widening – Merwedes optimal combination of river widening and dyke improvement

3 Safety and spatial development

strong urban dykes

robust marine-clay islands

future-proof river dykes

4 Limit risks in areas outside dykes with customised regional measures

Develop adaptation strategy, starting with:

historical Dordrecht dock area

Noordereiland Rotterdam

Rotterdam Merwe-Vierhavens

Rotterdam Botlek

5 Multi-layer safety

Dordrecht (MIRT)

protection of vital and vulnerable objects:

electricity grid

6 Knowledge and research

Krimpenerwaard pilot

Hollandsche IJssel area process

Alblasserwaard area process

Building with Nature pilot at Lek

exploration of river as tidal park

erosion prevention and control

partial functioning of Maeslantkering storm surge barrier

Subsoil

freshwater

salt water/brackish water

floodable area

urban area

dock area

primary flood defence outside area covered by the plan

electricity grid

motorway

areas that are submerged very rapidly and deeply in the case of a flood

Rhine-Meuse Delta

As a precautionary measure, the Cabinet is allowing for an increase in the current maximum river discharges in the coming decades. The Cabinet will maintain the distribution across the Rhine distributaries, as laid down in policy, at least until 2050. The Rhine-Meuse delta will continue to be protected in the long term by a closable, entirely open storm surge barrier in the Nieuwe Waterweg.

The main water system in the Rhine-Meuse delta can be divided into three areas. The approach differs for each area. In places where the water level is chiefly determined by the sea water level, the Cabinet will safeguard flood risk management mainly by means of dyke improvements in conjunction with the storm surge barriers. In that part of the area around the major rivers where the water level is chiefly determined by the (peak) discharge of the rivers, flood risk management will primarily be safeguarded by a combination of dyke improvement and - where relevant and possible - river-widening measures.

In the transitional area between the sea-dominated area and the river-dominated area, a combination of both approaches will be used.

For the flood risk management challenges around the Hollands Diep, Haringvliet and the Merwedede, the Cabinet has opted for dyke improvement instead of peak water storage in the Grevelingen lake. For freshwater supplies in the western and south-western Netherlands in the short and the medium term, the Cabinet has opted for optimising the current freshwater supplies and alternative supply routes. These measures form a whole with the measures in the regional water system and among freshwater users.

The measures in Rhine Estuary-Drechtsteden and the Southwest Delta are outlined in figures 5 and 6 respectively, to the extent that the central government is involved in their elaboration. The preferential strategy for flood risk management in the area around the major rivers is shown in figure 7.

Rhine Estuary-Drechtsteden


Protection by means of an optimal combination of primary flood defence systems, storm surge barriers and river widening will continue to form the basis for flood risk management in Rhine Estuary-Drechtsteden in the future. Local and regional government authorities, together with the central government, will identify opportunities for mutual reinforcement between water policy and other spatial challenges (such as an attractive business climate). For Dordrecht, opportunities will be identified to achieve the required tolerable risk level by implementing spatial solutions.


The aim for freshwater supplies in the western Netherlands is to expand alternative supply routes from the Lek or the Amsterdam-Rhine Canal in phases. Freshwater supplies in the Bernisse-Brielse Meer lake will be gradually optimised.


Figure 6


Involvement of the central government in the preferential strategy for the Southwest Delta



 dealing sand demand Oosterschelde

 MIRT-study Oosterschelde, delivery end of 2016


 Research Agenda for the Future, implementation period 2014-2018


 Planning area central government framework vision on the Grevelingen and Volkerak-Zoommeer lakes


 Replenishments coast


Subsoil


 fresh water


 salt water / brackish water


 floodable area

 urban area

 port area

 primary flood defence

 motorway

 boundary

Southwest Delta

The Delta Works have significantly improved flood risk management in the Southwest Delta. The flip side of this is that the tidal movement and natural freshwater-salt water transitions have largely disappeared, as a result of which the quality of the water and nature has deteriorated. This also slows down the economic development of the area. The central challenge for the Southwest Delta is to restore a stable balance between safety, the economy and ecology. A comprehensive development approach - with a better connection being established between water and spatial planning - is paramount.

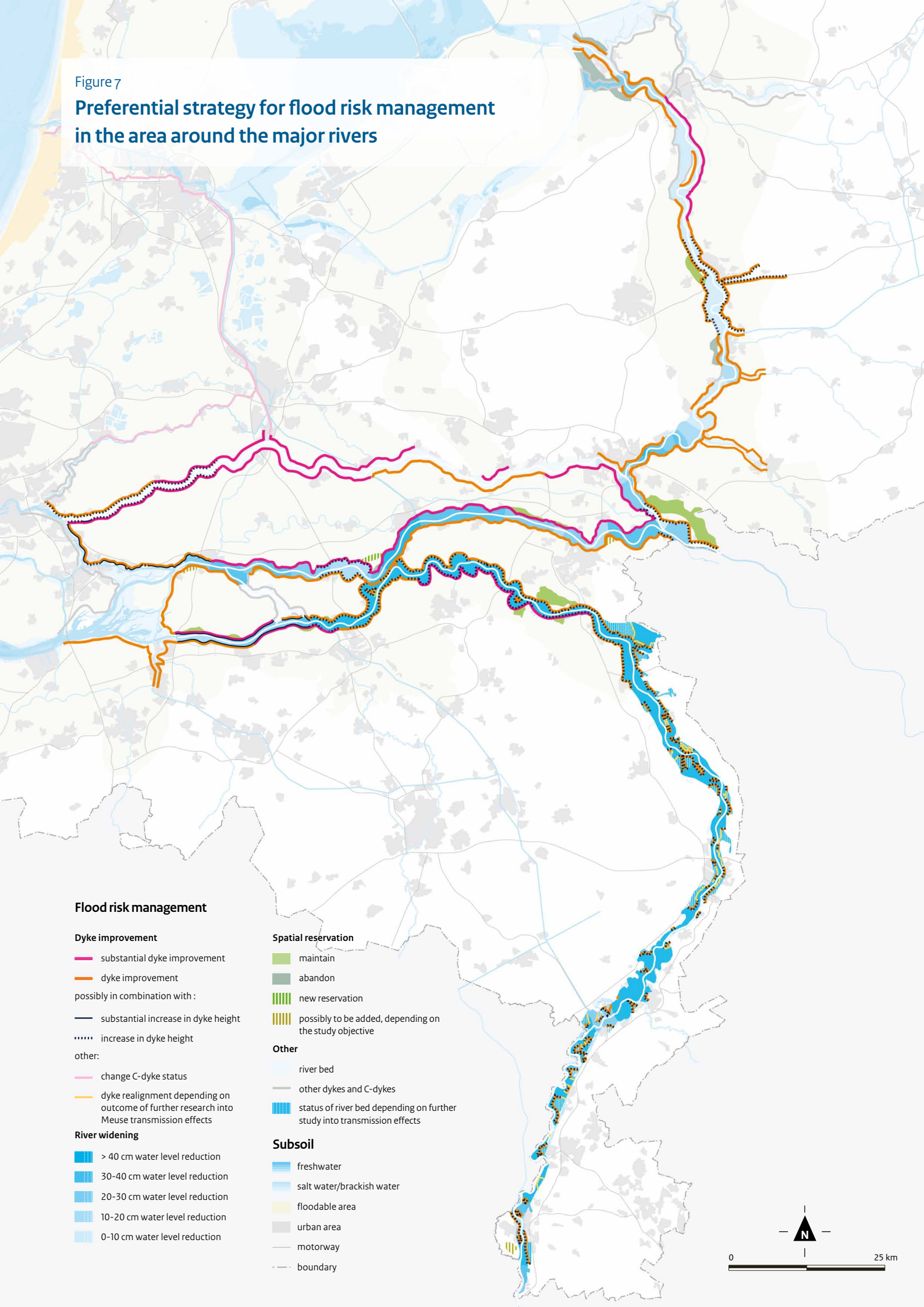
The current system of dykes and flood defence systems will continue to form the basis for future flood risk management in the Southwest Delta. Peak water storage in the Grevelingen lake is not necessary to improve flood risk management in the Rhine-Meuse delta. For the Oosterschelde and the Westerschelde, the Cabinet has decided to optimise the current flood risk management strategy. To maintain the strength of the coastal flood defence system, the Cabinet has opted for improvement using sand ('soft where possible, hard where necessary').

In the central government framework vision on the Grevelingen and Volkerak-Zoommeer lakes, the Cabinet is studying the desirability and feasibility of restoring a limited tidal system in the Grevelingen and salt water in the Volkerak-Zoommeer lake. The funding of the measures required for this must be further secured in order to be able to adopt the government's framework vision definitely. To this end, the government authorities involved signed an administrative agreement in March 2015 on the development of Grevelingen and Volkerak-Zoommeer. Decision-making is expected to take place in 2016.

For the freshwater supply in the Southwest Delta, the strategic supply route of freshwater via Biesbosch/Hollands Diep/Haringvliet will be preserved (see also figure 3 in section 3).

Figure 7

Preferential strategy for flood risk management in the area around the major rivers



Flood risk management

Dyke improvement

- substantial dyke improvement
 - dyke improvement
- possibly in combination with :
- substantial increase in dyke height
 - increase in dyke height
- other:
- change C-dyke status
 - dyke realignment depending on outcome of further research into Meuse transmission effects

River widening

- > 40 cm water level reduction
- 30-40 cm water level reduction
- 20-30 cm water level reduction
- 10-20 cm water level reduction
- 0-10 cm water level reduction

Spatial reservation

- maintain
- abandon
- new reservation
- possibly to be added, depending on the study objective

Other

- river bed
- other dykes and C-dykes
- status of river bed depending on further study into transmission effects

Subsoil

- freshwater
- salt water/brackish water
- floodable area
- urban area
- motorway
- boundary



Rivers

The flood risk management policy in the area around the major rivers is based on two cornerstones: river widening and dyke improvement.

The area reservations, for further river widening, in the Spatial Planning (General Rules) Decree are expected to be revised by 2016

The Cabinet will earmark €200 million until 2028 to be able to capitalise on opportunities for river widening. Moreover, the Cabinet highlights the importance of an energetic and adaptive approach to dykes covered in the Flood Protection Programme.

The Cabinet has found that a primary flood defence system along the canalised Hollandse IJssel will no longer be necessary if the dyke stretches along the Neder-Rijn and the Lek are improved in accordance with the proposed new standard.

For the freshwater supplies, in the interim revision to the National Water Plan, the Cabinet has opted for optimisations that facilitate better control and use of the water in the rivers, at the weirs at Driel, Amerongen and Hagestein, for example. The option of transporting water from the Waal to the Meuse in the medium term will be left open.

IJsselmeer Region

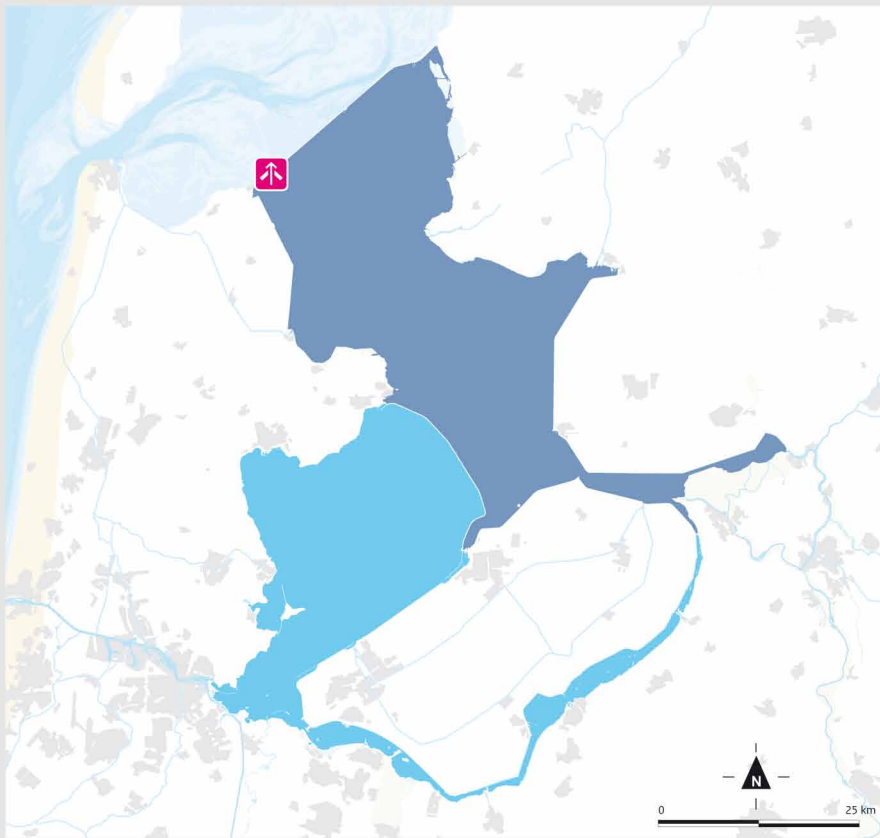
The Cabinet's broader ambition for the IJsselmeer region is to elaborate the policy objectives as outlined in Framework Vision on Infrastructure and Space, the Central Government Framework Vision on the IJsselmeer Closure Dam and the Government Framework Vision on Amsterdam-Almere-Markermeer lake in the most comprehensive way possible. To this end, the central government intends to work with regional government authorities, industry, knowledge institutes and civil society organisations to take further steps on the basis of the joint area agenda for the IJsselmeer Region. A coherent package of measures must bring about a more robust water system, with an optimal balance between the designated uses. As part of this, concerted efforts are being made to identify opportunities for synergy between spatial-economic challenges, nature development, flood risk management challenges, freshwater measures and cultural heritage. The 2050 IJsselmeer Region area agenda will provide input for the environmental visions of the central government, provinces and municipalities.




In the IJsselmeer region, the supply of nutrients to the water system has decreased. This helps to improve the water quality, but makes the ecosystem less ideal for certain target species. The water quality measures do, however, have a positive effect on other aspects of the ecosystem. Measures aimed at increasing the diversity in habitats, such as phase 1 Markerwadden and the Hoornse Hop sheltering measures, can make the water system more robust in the future. The connections between land behind the dykes and the water may contribute significantly to improving the quality of the ecosystem.

The average winter water levels in the IJsselmeer will not be allowed to rise to sea level until at least 2050. The water discharge to the Wadden Sea will be safeguarded by a combination of pumping and discharging by gravity. Allowing winter water levels to rise to sea level to a limited extent after 2050 is an option that is being left open: the Cabinet is allowing for a maximum rise of 30 cm in winter water levels in the IJsselmeer lake after 2050. The average winter water level for the other lakes in the IJsselmeer region will remain the same after 2050.

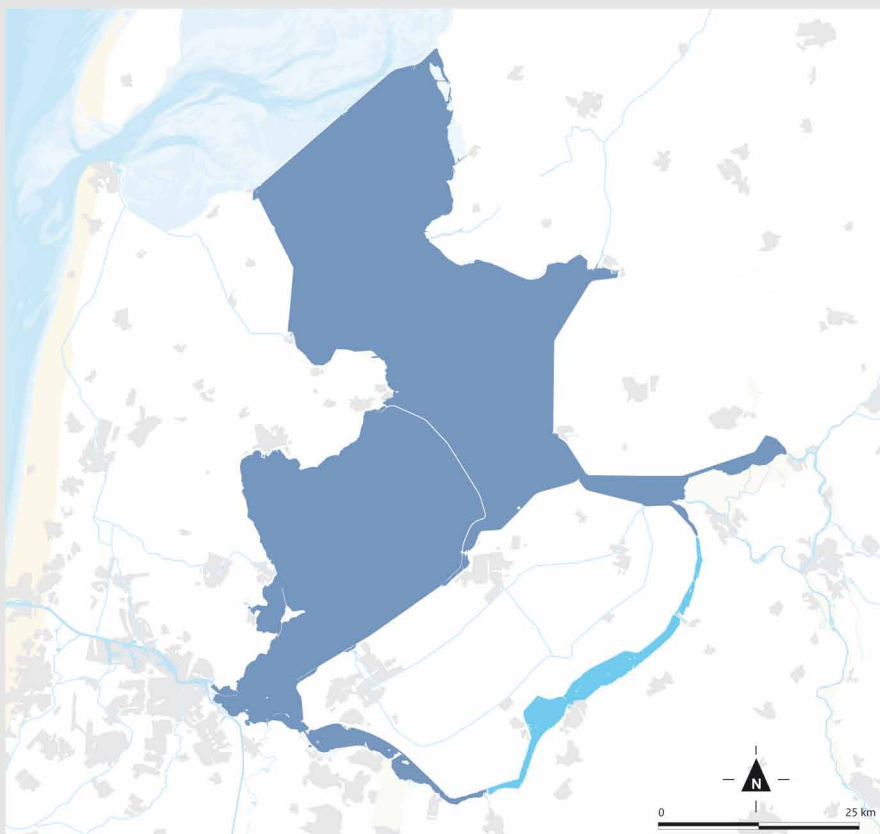
Figure 8 **Water level management in the IJsselmeer region in winter and in summer**



Water level management winter



-  No level increase until 2050, after 2050 possibly allow to adapt to rise in sea level restricted
-  No level increase before and after 2050
-  Combination of discharging and pumping

Water level management summer



-  From 2020 first step flexible water level management, possibly follow-up after 2050
-  No change

The strategic freshwater function of the IJsselmeer region is reinforced by more flexible water level management in IJsselmeer lake and Markermeer lake-IJmeer lake and the connected Zuidelijke Randmeren lakes (Gooimeer, Eemmeer and Nijkerkernauw lakes). The first step in flexible water level management will lead to an available freshwater buffer of 400 million m³ in the spring and summer, which is expected to be sufficient until 2050. Figure 8 shows these choices in a diagram. The Cabinet intends to implement the measures in the main water system in conjunction with measures in the regional systems and among the users.

In the IJsselmeer region, too, preventive measures, such as dykes, will continue to be the primary measures for achieving and maintaining the required flood risk management level. In Marken and the IJssel-Vecht delta, options for achieving the required tolerable risk level by means of spatial solutions have been explored. The evaluation study carried out in 2015 into the use of multi-layer flood risk management in three pilot projects provided greater insight into the wide range of uses and conditions for success of the concept of multi-layer flood risk management. Based on this evaluation and practical experiences, an assessment can be made of whether the introduction of a generic statutory provision for smart combinations under the Environment and Planning Act is desirable.

Table 5 Milestones in area-based elaborations of major waters

| Process | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|-------------------------------------------------------------------------|--------------------------------------------|---------------------------|-------------------------|------|----------|------|
| Adjust area reservations in the Spatial Planning (General Rules) Decree | Expected to be complete | | | | | |
| Spatial safety pilot in Marken | Determine preferred alternative Plan study | | Start of implementation | | Complete | |
| Spatial safety study in IJssel-Vecht delta | Implementation of follow-up steps | | | | | |
| Spatial safety pilot in Dordrecht | Operationalisation of MIRT study | Determine follow-up steps | | | | |

6



Area-based elaborations for the sea and coast

One kilometre off the coast and further, the central government is the only competent authority and, as such, responsible for the North Sea policy. The North Sea is used intensively and has many designated uses and associated policy objectives. The preservation and reinforcement of these uses call for clear, well-considered choices. Land area preservation is the key theme in the coastal zone, on account of ongoing erosion of the coastline. Flood risk management is well organised along the entire Dutch coast.

The policy for the North Sea is incorporated in the 2016-2021 North Sea Policy Document. This policy document forms an integral part of the National Water Plan and is included in appendix 2, which also describes the spatial aspects. The key points are included in this section. This section also includes the area-based elaborations for the Coast and Wadden Region on account of their close connection with the North Sea. For the entire North Sea coast the Cabinet aims to use sand replenishments where possible and pursue a permanent balance in the coastal foundation zone. In addition, the central government is listening to the wishes of regional authorities with respect to spatial development in the coastal foundation zone. On the Wadden Sea side of the islands and mainland coast, the strategy of dyke improvements currently in place is being consolidated.

On the back of these efforts, the central government intends to contribute to a healthy and economically vital North Sea and coast, and a Wadden Sea where heritage and nature can come into their full advantage.

North Sea

The central government's North Sea policy sets frameworks for the spatial use of the North Sea in relation to the marine ecosystem. The spatial aspect of the North Sea Policy Document applies to the Dutch Exclusive Economic Zone and the non-administratively classified territorial sea. Other aspects may also relate to the area that has been administratively classified, given that the marine ecosystem and the designated uses at sea interact with (the water on) the land. The 2016-2021 North Sea Policy Document outlines the current use and developments in the North Sea and the relationship with the ecosystem, as well as the vision, tasking and the applicable policy. The North Sea Policy Document, including the appendix Marine Strategy Part 3 (programme of measures), forms an integral part of the National Water Plan.

Long-term vision

The vision on the North Sea has been laid down in the North Sea 2050 Spatial Agenda and incorporated into the North Sea Policy Document.

The Netherlands will benefit from a safe, clean, healthy and ecologically diverse North Sea that helps to provide for economic and social needs. The sea is also of great socio-cultural and historical significance to the Netherlands and it is a source of knowledge. The sea can make an optimal contribution if the natural resilience is (further) restored and increased and its attraction is preserved for everyone. The use of the sea is in a state of transition. The crux of the new policy for the North Sea is: together with civil-society organisations, steering towards desired use in terms of space and time, ecology and economy, and continuing to develop the natural potential of the sea and coast. Central government is aiming for a development-based approach to the sea, one that leaves room for new initiatives and flexible management of the sea.

Based on this vision, the emphasis in the period up until 2050 will be on five themes: building with nature; energy transition; multiple/multifunctional use of the space; connecting land and sea; and accessibility/shipping. International collaboration and export opportunities play a role in all five themes.

The marine ecosystem and designated uses

The North Sea is a highly complex, open marine ecosystem, without borders and with specific habitats. The shallow and nutrient-rich area is a habitat for marine mammals, a breeding ground for fish and an important migratory route and wintering form many bird species. The marine ecosystem can be used to acquire ecosystem goods (such as fish, sand, shells, oil, gas, wind, tidal and wave power) and to facilitate services for Dutch society (shipping routes, recreation, absorption of CO₂, perception, value).

The expected intensification in the use of the North Sea, which is partly the result of an increase in the number of designated uses, demands responsible use of the limited available space. Increasing use is exerting pressure on the marine ecosystem. Policy is required to coordinate the various designated uses and ensure a healthy ecosystem. The 2016-2021 North Sea Policy Document outlines the desired policy for the use of space, within the frameworks of the marine ecosystem.

The central government sets the spatial frameworks, allowing the use of space in the North Sea to develop in an efficient and sustainable manner. Multiple use of space is an important principle in this regard. It offers balanced opportunities for all forms of use of the North Sea.

The Framework Vision on Infrastructure and Space presents the following national spatial challenges for the North Sea:

- the preservation of the coastal foundation and the area-based implementation of the Coastal and Wadden Region sub-programmes of the Delta Programme in association with local and regional government authorities;
- the preservation and protection of Natura 2000 areas and the marine ecosystem;
- maintaining the unobstructed view of the horizon up to 12 nautical miles from the coast;
- providing spatial possibilities for the main network for the transport of (hazardous) substances via pipelines;
- the protection of archaeological values (submerged settlements, shipwrecks and other archaeological values).

Within the European frameworks (Water Framework Directive, Marine Strategy Framework Directive, Birds Directive, Habitats Directive and the Malta convention),

the Cabinet is giving priority to the activities that are of national interest to the Netherlands:

- Oil and gas extraction: as much as possible, natural gas and petroleum are extracted from the Dutch fields in the North Sea, in order to optimise use of the potential of natural gas and petroleum reserves in the North Sea.
- CO₂ storage: sufficient room for the storage of CO₂ in depleted oil and gas fields or in underground aquifers.
- Shipping: a whole system of traffic separation schemes, clearways and anchoring areas that can accommodate shipping safely and swiftly.
- Sand extraction: sufficient room for sand extraction for coastal protection purposes, countering flood risks and sand for elevating the land.
- Generation of renewable energy: sufficient room for wind energy and other forms of renewable energy, combined wherever possible.
- Defence: sufficient exercise zones in the North Sea.

The overview on the following pages presents the policy choices laid down and detailed in (the relevant section of) the North Sea Policy Document.

The spatial implications of the above are shown in the framework vision map (see figure 9) of the North Sea.

Realization of societal demands

As part of the Marine Strategy Framework Directive, measures have been and will be taken to make and keep the ecosystem healthy and make its use more sustainable. Moreover, the developments in wind energy at sea and sand extraction are leading to a major challenges that calls for new policy for the period 2016-2021.

1 Programme of measures for marine strategy

The Water Framework Directive provides an integrating legal framework for the protection and preservation of the marine environment, the prevention of its decline and recovery of the environment where it was harmed and where this is feasible. In addition, the framework is designed to prevent, reduce and eliminate, pollution, creating a coherent and representative network of protected areas in the North Sea and encouraging sustainable use. The ultimate goal is to achieve and preserve a 'good environmental status of the marine environment' by 2020 at the latest.

The crux of the Water Framework Directive for the Netherlands is the obligation to adopt a marine strategy for the Dutch part of the North Sea. The marine strategy should take an 'ecosystem-oriented approach to the management of human activity' and allow the 'sustainable use of marine goods and services for current and future generations.

The marine strategy comprises the following three steps: (part 1) initial assessment of environmental status, description of the good environmental status in 2020, environmental targets and indicators and the policy challenges until 2020, (part 2) Water Framework Directive Monitoring Programme and (part 3) programme of measures. The first two steps were laid down in 2012 and 2014 respectively; the third step – the Water Framework Directive programme of measures – is summarised in the 2016-2021 North Sea Policy Document and has been added to this NWP as appendix 5. For a complete overview, the descriptions of the good environmental status, the environmental targets and the indicators are included in Appendix 5. The measures set out in the programme will help ensure that the good environmental status is within reach in 2020 or in the subsequent period. The crux is that the current policy efforts to reduce pollution of and disruption to the ecosystem must be continued in order to achieve the good environmental status. Additional policy efforts are needed to protect the ecosystem of the Frisian Front soil and Central Oyster Grounds and to reduce marine litter ('plastic soup'), including microplastics). The environmental status will be reassessed in 2018.

2 Space for wind energy at sea

The parties to the Energy Agreement for Sustainable Growth have agreed that 4,450 MW of wind power at sea will be in operation by 2023. This means that an additional 3,500 MW of wind power at sea must be installed, in addition to the existing wind farms and the ones under construction.

The NWP 2009-2015 designated the Borssele and IJmuiden Ver areas and named the Coast of Holland and the area to the north of the Wadden Islands as search areas. In 2014 - through an interim revision of the NWP 2009-2015 – the Coast of Holland the area to the north of the Wadden Islands were designated for wind energy at sea. This policy is being continued in the NWP 2016-2021.

Additional policy efforts and investments are needed to achieve this objective. Given the space available within

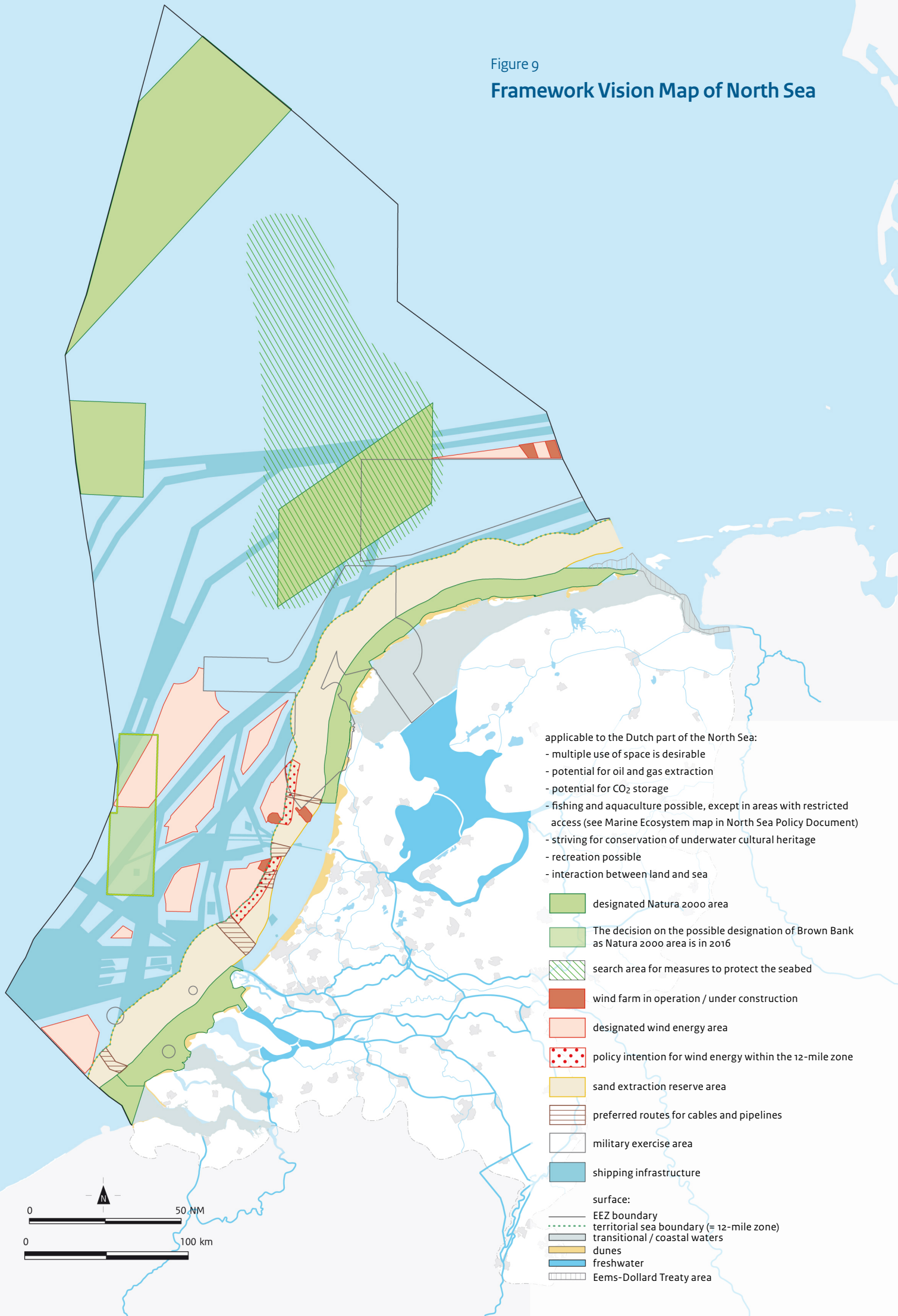
Overview of the policy choices laid down and detailed in (the relevant section of) the North Sea Policy Document.

| | Policy choices | Section |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Marine ecosystem | • The conservation and recovery of the marine ecosystem are assessed when making spatial planning decisions on activities . | § 5.3 |
| | • Natura 2000 sites at sea: Voordelta, North Sea Coastal Zone, the Vlakte van de Raan and probably from 2016 onwards: Dogger Bank, Cleaver Bank and Frisian Front The decision on the possible designation of Brown Ridge as Natura 2000 area (Bird Directive) is in 2016. | § 3.2 |
| | • Programme of Measures for Marine Strategy: | |
| | - Existing measures, including in terms of the marine ecosystem, invasive exotic species, eutrophication, pollutants, litter and underwater noise; - New measures with regard to litter; - New measures with regard to seabed protection. | § 4.2 |
| Renewable energy | • Generating renewable energy (from the wind or otherwise) is an activity in the national interest. | § 3.3 |
| | • Space for operational capacity of 4,450 MW of wind energy at sea by 2023. | § 3.3 |
| | • Wind energy areas: Borssele, Coast of Holland, IJmuiden Ver and North of the Wadden Islands. Search areas: strip between 10 and 12 NM adjacent to the Coast of Holland wind energy area. The Central Government does not grant permission for wind farms to be built outside of designated wind energy areas. Within the designated areas, permission is only granted for wind farms to be built within the bounds of the Offshore Wind Energy Act (Wet windenergie op zee, being developed). | § 4.3 |
| | • Development in harmony with other uses of the North Sea: - design criterion 'distance between shipping routes and wind farms'; - design process 'distance between mining sites and wind farms'; - policy development with regard to 'passage and multiple use'. | § 4.3 |
| Surface minerals | • Sand extraction for coastal defences and filling is an activity in the national interest. | § 3.4 |
| | • Sand extraction strategy with preferred routes for cables and pipelines. | § 4.4 |
| Oil and gas extraction | • Activity in the national interest. | § 3.5 |
| | • Making the most of the potential of the oil and gas reserves. | § 3.5 |
| CO₂ storage | • Activity in the national interest. | § 3.6 |
| | • Sufficient space for CO ₂ storage as a temporary tool in the process of developing a fully renewable energy supply. | § 3.6 |
| Cables and pipelines | • The activities (wind) energy, oil and gas extraction and CO ₂ transport, including requisite cables and pipelines, are in the national interest. | § 3.7 |
| | • Bundling cables and pipelines; removal obligation for cables and pipelines no longer in use. | § 3.7 |
| | • Tighten up removal obligation for pipelines. | § 3.7 |
| | • Checklist for determining removal obligation for cables or pipelines revised. | § 5.3 |

| | Policy choices | Section |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Shipping | • Activity in the national interest. | § 3.8 |
| | • Maintaining a system of traffic separation schemes, clearways and anchorages capable of accommodating vessels safely and smoothly. | § 3.8 |
| | • Implementing measures to reduce pollution caused by shipping (merchant vessels, fishing vessels, offshore, supply and recreation). | § 4.2 |
| Defence | • Activity in the national interest. | § 3.9 |
| | • Sufficient exercise zones in the North Sea. | § 3.9 |
| Fishing, aquaculture and mariculture | • Fostering responsible fishing and aquaculture practices and balanced use of fish stocks, striving towards a state of equilibrium between fishing and nature and a different division of responsibilities between government and industry. | § 3.10 |
| | • Continuing to contribute to the primary objectives of the Common Fisheries Policy (CFP) and implementing measures with regard to the marine ecosystem. | § 4.2 |
| Underwater Cultural Heritage | • The conservation of underwater cultural heritage is assessed when making spatial planning decisions on activities. | § 5.2 |
| Tourism and recreation | • Facilitating and encouraging the tourism and recreation sector as a network partner to a partnership between entrepreneurs, market institutions and research institutes. | § 3.12 |
| | • Engaging in dialogue with local and regional government authorities and other parties where spatial planning or other policy developments in terms of the North Sea impact marine and coastal recreation. | § 3.12 |
| Interaction between land and sea | • When formulating spatial planning policy, specific attention needs to be paid to the interaction between land and sea, having due regard for the implementation of the directive on maritime spatial planning. | § 3.13 |
| International cooperation | • Thematic approach to partnerships with neighbouring countries. | § 6.3 |

Figure 9

Framework Vision Map of North Sea



the designated areas and the wind energy areas yet to be designated, the task is to find wind farm locations where 3,500 MW can be installed cost-effectively, while allowing for other interests in the North Sea.

In September 2014, the Cabinet indicated its wish to achieve the 3,500 MW target in the wind energy areas of Borssele, Zuid-Holland and Noord-Holland. Installing wind energy capacity closer to the coast costs less than further offshore. The Cabinet wants to add a strip of no more than two nautical miles to the Zuid-Holland and Noord-Holland areas within the 12-mile zone, allowing the area to be used more efficiently in terms of cost and space. The strip/areas within the 12-mile zone have not yet been designated and are beyond the scope of the present Policy Document on the North Sea. The designation decree will be worked out in greater detail in the partial revision of the National Water Plan 2016-2021. To this end, an environmental impact statement will be drawn up, reviewing the alternatives An Appropriate Assessment will also be drawn up.

As part of the Energy Agreement, it has been agreed that the government will provide a robust statutory framework to achieve the agreed target for wind energy at sea. To be able to put this new system into practice, the wind energy at sea act has been prepared in consultation with the wind energy sector. This act allows the central government to direct the spatial incorporation of wind energy and carefully balance all interests in the North Sea.

The system contributes to an efficient use of space, cost reductions and accelerating the rollout of wind energy at sea. Within a designated area, the central government will take so-called parcel decisions, laying down the site-specific conditions for the construction of a wind farm on that parcel. When drawing up a parcel decision, the central government will also study the structure of the relevant parcel and the soil, local wind speeds and information on water in the relevant parcel. Together with the parcel decision, these studies will provide essential information on which market parties can base their tender, by way of a subsidy tender. The party submitting the best tender will then be granted the exclusive right to build a wind farm on the parcel.

3 Room for sand extraction

The sand extraction strategy is aimed at proper and cost-effective management of available sand reserves in this zone. Cost-effective sand extraction can be achieved

by extracting sand as close to where it is needed, on the coast or on land. Priority is given to the sand demand for the coming years and the sand extraction areas required to provide suitable sand for replenishment and elevation. The areas with the lowest extraction costs have the highest priority.

Cost-effective sand extraction in the reserved zone is put under further pressure due to the construction of wind farms at sea and power cables through the areas with the most cost-effective sand reserve. If, for other uses (such as cables, pipelines and wind turbines), it is desirable to use the zone between the continuous isobath at NAP (Amsterdam Ordnance Datum)-20 metres and the 12-mile limit, solutions will be sought that do not materially harm the extractable sand reserve. As for cables and pipelines, the aim is to combine these with the existing infrastructure. Preferred routes for this have been marked on the framework vision map of the North Sea Policy Document. If a solution that does not affect the sand reserve proves impractical, an economic assessment will be made on the basis that the costs associated with the other use must balance the costs of sand extraction. If this means additional costs for the sand extraction, these will be borne by the party proposing the other use.

Assessment framework for activities in the North Sea

The assessment framework outlined in the North Sea policy document is the mechanism that the central government uses to ascertain whether activities at sea are permitted. The assessment framework combines relevant policies and outlines how decisions on new activities are arrived within the European and international frameworks. It also outlines what action to take if various activities of national importance clash. The assessment framework is a policy rule and requires the competent licensing authority to act in accordance with this framework. The assessment framework applies to all activities in the North Sea that require a permit under all laws and regulations governing the North Sea, the territorial sea and the Exclusive Economic Zone (Water Act, Earth Removal Act, Nature Conservation Act, Flora and Fauna Act, Environmental Management Act, Wind Energy at Sea Act, a number of shipping acts and the Mining Act^{2,3}). As such, the assessment framework is










² To the extent that aspects that impact the North Sea water system are involved

³ <http://www.noordzeeloket.nl/ruimtelijk-beheer/beleid-en-regelgeving/wetten/>

Figure 10

Processes in the sandy system



-  structural decline coastline due to sea level rise
-  coastal foundation zone sand shortage
-  "channels that encroach on the coast"
-  outer deltas change form and decrease in volume
-  sediment shortage in the open basins - non-sand-sharing
-  sediment shortage in the open basins - sand-sharing
-  hard sea wall
-  freshwater
-  salt water

particularly important for North Sea users who want to apply for a permit and for licensing authorities. It is also instrumental in achieving and maintaining the good environmental status under the Water Framework Directive. The North Sea has been put on the National Environmental Vision agenda. When preparing the National Environmental Vision, the Cabinet will ascertain to what extent the North Sea policy plan and the Marine Strategy provide sufficient scope for follow-up decisions about the use of the North Sea.

Coast

The coastal foundation zone is the sand bed between the inside edge of the dunes and the NAP (Amsterdam Ordnance Datum) -20m isobath in the North Sea. The sand bed is part of the coastal zone, which consists of dunes, dykes and coastal locations with a wide variety of uses.

The coast is now safe, partly because the weak links have been fixed. However, the coastline is subject to ongoing erosion caused by sea-level rise. Without intervention, the Netherlands would shrink by an average of 1 m a year along the entire coastline. As such, preservation of land area is paramount in relation to the coast. Combined with this are the goals for safety in the long term and good spatial development.

Coastal safety and sandy system

The Cabinet once again acknowledges the decision to use sand replenishments to prevent the coast of the Netherlands from shrinking as well as providing a stable basis for long-term flood risk management of the Southwest Delta, the Coast of Holland and the Wadden region.

To this end, the Cabinet aims to achieve a lasting balance in the coastal foundation zone, with the volume of sand replenishments being adjusted to the rise in sea level. A better understanding of the sandy system is required to be able to programme replenishments effectively and efficiently. To this end, the research and monitoring programme entitled 'Coastal genesis 2' is being

stepped up. Until 2020, this programme will include small-scale pilot projects and the replenishment volume of 12 million m³ per year is maintained. In around 2020, the knowledge gained from the Coastal Genesis 2 programme will be pooled and a decision taken with respect to increasing the replenishment volume and/or carrying out two large-scale pilot projects to achieve a balance in the coastal foundation zone. All processes in the sandy system are shown in figure 10.

The strength of the coastal flood defence system will be maintained according to the principle of 'soft where possible, hard where necessary'. The consequences of the bill for new flood risk management standards and the decision to preserve the current flood defence system will be translated into criteria for the management of dunes and other parts of the coastal flood defence system. With regard to the safety in areas outside the dykes in 13 coastal locations, the Cabinet has decided that apart from maintaining the basic coastline⁴, the central government does not have to take any additional measures safety to keep safety outside the dykes stable.

The Nature Vision of the Cabinet (see section 7) places a great deal of emphasis on building with nature. The central government encourages this by, for example, using natural sand movement in coastal management and dealing flexibly with the basic coastline wherever possible. In recent years, dynamic coast and dune management has been applied frequently in the coastal zone. The best example is the Sand Engine for the coast of Zuid-Holland, which scatters 20 million m³ of sand through natural processes in the coastal foundation zone. Dynamic coastal management is continued and further operationalised by collaboration between coast and dune managers, supported by a guide for coastal management. This creates more opportunities for commensurate growth for the dunes behind the first row of dunes and for biodiversity.

With a view to the sustainability objectives, the central government is aiming for a reduction in CO₂ emissions during the implementation of sand replenishments.

⁴ The coastline that serves as a reference for the coastal conservation policy

Spatial development of the Coast

The Netherlands continues to aim for applying *Integrated Coastal Zone Management* according to the 2012 European recommendation. The 2013 National Coastal Vision presented collectively by the government authorities represents a comprehensive vision for the development of a safe, attractive and economically robust coast. The regional government remains responsible for spatial development. The Cabinet wants to contribute to the regional preference for multiple use of the flood defence systems and to experiment with agreements on adaptation concepts for areas around the flood defence systems while preserving safety. The Coastal Policy has been revised and is still in 2015.

In the coming period, an attempt will be made to ascertain how more social goals can be served with the amount of sand available for sand replenishment. In this context, possibilities for further flexibilisation of the

coastline preservation will be reviewed. This means that nature will be given more free rein in certain places and less in others, depending on the requirements for flood defence system, beach recreation or other purposes.

The Coastal Policy underlines the importance of preserving the coastal foundation zone when it comes to the production of drinking water. The importance of drinking water has also been included in the update of the RWS implementation framework for coastal licensing.

Developments along the coast have an impact on the sea and vice versa. In the coastal zone, for example, connections are required for cables and pipelines at sea and supply and construction terminals for wind farms at sea and other offshore activities. The Cabinet considers these land/sea interactions important and has incorporated these in the process for maritime spatial planning, in accordance with the new European directive



on maritime spatial planning and, hence, in the North Sea Policy Document. An unobstructed view of the horizon on the sea from the coast remains a spatial quality of national importance. Any conflicts between this interest and other national interests will be given careful consideration.

Wadden Region

In line with the policy choices regarding the sandy system, the Cabinet has opted for maintaining the strength of the coastal flood defence system of the Wadden islands according to the principle of ‘soft where possible, hard where necessary’. For the Wadden Sea side of the islands and for the mainland coast, the existing strategy of dyke improvements will be continued and an innovative, comprehensive approach will be pursued. Apart from focusing mainly on the coastal foundation zone, the

research and monitoring programme for the sandy system will devote specific attention to the Eems-Dollard estuary.

In 2007 the Framework Vision on the Wadden Sea was adopted. The main objective of the Framework Vision on the Wadden Sea is “the long-term protection and development of the Wadden Sea as a nature reserve and conservation of the unique, panoramic landscape”. The Framework Vision on the Wadden Sea outlines the Cabinet’s development outlook for the Wadden Sea for the period up to 2030. This development outlook reflects the sustainable development envisaged for the area. As the planning period of the Framework Vision on the Wadden Sea ends in early 2017, the Framework Vision on the Wadden Sea and, by extension, the relevant sub-section in the Spatial Planning (General Rules) Decree were therefore evaluated in 2015 in anticipation of a potential Framework Vision on the Wadden Sea.

Table 6 **Milestones in area-based elaborations for the sea and coast**

| Process | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------|---------------------------------------|------|--------------------------------------------------------------------------------|-----------------|
| Coastal genesis | | | | | Decision-making continued | |
| Coastal Policy | Expected to be incorporated in the Spatial Planning (General Rules) Decree | | | | | |
| Framework Vision on the Wadden Sea and sub-section on the Wadden Sea in the Spatial Planning (General Rules) Decree | | | Revise after evaluation, if necessary | | | |
| Water Framework Directive | | | Revision part 1 | | Achieving and maintaining good marine environmental status. Revision part 2 | Revision part 3 |

7



Water and environment

Water is never isolated from the environment. It affects other interests and other interests, in turn, have consequences for the water. Central government therefore directs the coordination between the water challenges and environmental issues.

This section presents the Cabinet's vision on the link-up between water and spatial development and spatial adaptation. Later, there will be a discussion about the policy frameworks for a number of specific topics, in anticipation of the Environmental Vision: water and nature, water and renewable energy and shipping. Drinking water is left aside here, as its great importance has already been described in the 2014 Drinking Water Policy Document. This section also provides an overview of the uses allocated to the national waters. Finally, the water policy is outlined in an international perspective, in which innovations play an important role.

As such, the central government is committed to better connect challenges and measures relating to water and space with each other, in terms of both spatial design and decision-making. The intended effect is that opportunities for incorporation, linkage, comprehensive elaboration and smart combinations are taken maximum advantage of (see figure 11).

Figure 11

Incorporation, linkage, comprehensive elaboration and smart combinations.

Connecting water and space

Working together for the water: customization with broad vision



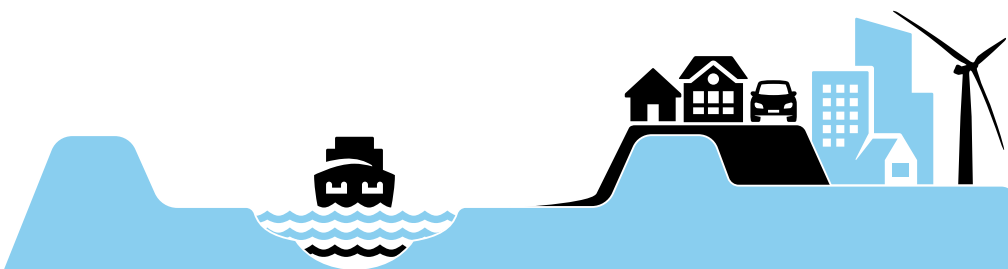
Incorporation - e.g. dyke reinforcement, taking into consideration existing use



River widening - instead of dyke reinforcement



Linkage - with limited extension of designated uses



Integrated area development - with large-scale extension of designated uses



Smart combinations - measures in spatial developments and/or emergency response can also ensure protection (against flooding)

Better connection between water and space

It is important to connect water and space more effectively. The performance of the water challenges and implementation of water measures are therefore coordinated with other relevant spatial challenges and measures in the area, so that scope, programming and financing are better harmonised or, even better, reinforce each other. In this regard, the Cabinet is also striving for comprehensive combinations, in which the spatial organisation plays an important role in resolving the water challenges. Conversely, when addressing the spatial challenges, it is important to take account of the water challenges and the resilience of water systems at an early stage. The more effective connection which is desired between water and space applies to all challenges in the area of flood risk management, freshwater and water quality.

A reinforcement of the relationship between the Multi-year Programme for Infrastructure, Space and Transport (abbreviated as MIRT in Dutch) and water can contribute to this in the short term. This reinforcement has, in part, already been put into effect, as water is on the area agendas that the central government and the regions have drawn up together. The rules of the MIRT (exploration, plan elaboration and realisation) are also applied within the Delta Programme. In the Flood Protection Programme, for example, each dyke improvement project starts with a wide-ranging exploration phase. The manager involves the area partners in this in order to jointly identify linkage opportunities.

Over the last few years, steps have been taken, both in the Delta Programme and in the central government-regional programme for MIRT Update, to connect water and space. For example, by analysing challenges more in relation to each other and by looking for tailor-made solutions with the various parties. The water tasking is now part of the area agendas and will be updated during the next update. In addition, the MIRT rules are applied in the world of water. Moreover, looking for linkage opportunities is an integral part of the working method associated with the Delta Programme. This is reflected in, for example, the annual consultation on the ongoing programming of the Flood Protection Programme.

In connection with the Update of the MIRT, the central government, provinces and water boards jointly consider how water and space can be interconnected even better and what role MIRT can play in that regard. Practice will eventually have to demonstrate whether a combination of consultations adds value.

The MIRT Administrative Consultations are a logical forum to discuss the challenges and projects of the Delta Programme with a (potentially) comprehensive nature. This is the case if the challenges or potential solutions are closely related to topics other than flood risk management, freshwater and water quality. And if multiple parties are involved. In various bodies of the MIRT, water managers can participate in discussions and decision-making on this and the challenges related to water.

The Delta Programme 2015 describes how the consultation structure of the Delta Programme can help in the selection of stretches and areas where broad, combined solutions are envisaged, such as river widening, and stretches calling for 'regular' dyke improvement with linkage opportunities.

In the Administrative Agreement on the Delta Programme 2014, parties state that *"combining water policy and spatial policy permanently on account of their mutual dependence is essential to achieving the objectives of the Delta Programme"* and that *"this obliges the central government, provinces, municipalities and water boards to strive for the mutual reinforcement and interconnectivity on the various scales"*. There is time to integrate the water challenges, where possible, in its entirety with other ambitions, for nature and construction, for example. This is an important feature of adaptive delta management, as it brings new, efficient and sustainable solutions within reach. The rules of the Flood Protection Programme offer opportunities for linkage, on condition of co-financing if need be. All parties involved will be consulted, at the level of the projects and at the level of the programming of the Flood Protection Programme (which looks six years ahead, with a preview of the next six years).

The experiences with these methods will be evaluated in 2017. Based on the evaluation, the central government will determine the subsequent steps in consultation with the local and regional government authorities.

Spatial adaptation

The central government, provinces, municipalities and water boards have a shared ambition that - by 2050 - the spatial planning in the Netherlands is as climate-proof and water-robust as possible, eliminating any incidental flood-related risks of damage and victims, to the extent that this is reasonably feasible. Climate-proof or water-robust design will therefore be part of policy and practice by 2020. Central government is also involved in a number of regional and local spatial deliberations. In those cases, the central government, together with the government authorities involved, will analyse the water-robustness and climate-proofness of the relevant plan area, translate the results of this analysis into a supported ambition and an adaptation strategy with concrete goals, and safeguard the policy-based and legal operation of this ambition for the purposes of implementation ('knowing, wanting and working').

Central government will ensure that the Water Review is preserved as a statutory process tool to allow climate-proof and water-robust design to factor in spatial developments at an early stage of the spatial process. The explanatory notes to the Environment and Planning Act state that the motivation requirements and consultation obligations, which are now intrinsic features of the Water Review, will be included in the implementation regulations of the Environment and Planning Act so that the target range of the Water Review is fully safeguarded.

The government authorities will draw up the Guide to Spatial Adaptation together and make an Incentives Programme for Spatial Adaptation available as helpful tools. During spatial planning, these tools can be used to carefully consider the expected consequences of climate change (flooding, pluvial flooding, torrents, drought and heat).

As the central government is responsible for ensuring that vital (and vulnerable) national functions - such as energy supply, wastewater chain, drinking water supply, hospitals and emergency communication during disaster management - are more flood-proof by 2050 at the latest and will adopt policy and, if necessary, legislation for the purpose by 2020 at the latest.

Nature Vision

In 2014, the Cabinet presented the national nature vision "Natuurlijk verder" (Moving On Naturally). Central and provincial will be responsible for the joint development of an associated social implementation programme. The essence of the nature vision is radical change in thinking: from protecting nature from society to reinforcing nature with society. The central government wants to set an example in this regard.

In the implementation of measures for flood risk management, water quality and freshwater supplies, the Cabinet sees opportunities to link in nature objectives. The central government will provide opportunities for this wherever it can. The aim of doing so is, on the one hand, to have nature combinations included at an early stage - the exploratory phase - and, on the other, to select actual design and implementation solutions that are able to adapt to natural processes and build with nature (eco-engineering). A good case in point is our North Sea coast, where the replenishment sand is scattered across the coastal foundation zone through natural processes. In the national nature vision, the Cabinet has also concluded that, due to changes in climate and society there is an increasing need for managing by the conditions of natural processes and less for managing by specific species and habitats. The preservation goals for the designated Natura 2000 areas will remain in force. This is an important notion for water and aquatic nature: over the last few centuries, the whole of the Netherlands has undergone redevelopment, the Dutch waters being no exception. Since the end of the nineteenth century, the rivers have been straightjacketed in their beds, the Zuiderzee was dammed in 1932 and the Delta in Zeeland has changed drastically in the course of the twentieth century as a result of its damming following the 1953 flood disaster. The morphological processes in those waters are still trying to discover a new equilibrium, the result being that the conditions for nature are in a constant state of flux. A well-known example is the sand demand in the Oosterschelde and the Wadden Sea. In river areas, for example, agricultural businesses, in their capacity as managers of plots of land with a non-primary agricultural use, can use their business, collectively or individually, to connect water and nature.

By way of linkage – within the changing conditions - the best possible conditions are thus preserved and created for nature in the national waters. For this planning period of the NWP (2016-2021), the Cabinet will safeguard the financing of the Natura 2000 measures in the major waters. The Cabinet will use the planning period to determine the challenges for the following generation of Natura 2000 management plans.

The experiences in the area of synergy between water and nature will be used in the preparations for the National Environmental Vision.

Renewable energy

In September 2013, a large number of parties signed an energy agreement under the auspices of the Social and Economic Council of the Netherlands (SER). The Cabinet has adopted this. Some of the goals are to increase the renewable energy share to 14% in 2020 and to 16% in 2023, to save energy and to modernise the environmental policy. These have been included in the 2050 Climate Letter and the 2014 Environmental Modernisation letter. By way of the NWP, the water policy can contribute to the objectives for renewable energy, especially in the area of energy generation, energy storage and energy transport.

The Cabinet has formulated the following policy challenges elements:

- 1 Utilising and making space (state-owned land) available for renewable energy. An exploration will be launched into the potential space within the central government's own land (such as flood defence systems, engineering structures, shore faces, dykes and waterways) for renewable energy. The Cabinet also wants incorporation of renewable energy (generation, storage and transport) to become an integral part of the area policy, by making the MIRT more sustainable.
- 2 Within the bounds of flood risk management, there may be room in the land for taking advantage of synergy and opportunities for energy generation or energy storage. To assess whether this is the case, the central government started a study in 2015 to ascertain the possibilities for using state-owned land for renewable energy.
- 3 Being in charge of the main water system, the central government provides a role model for other participants in the water policy. For this reason, the

central government's implementation contracts for Rijkswaterstaat include goals for the generation of renewable energy. Implementation will be formed in a comprehensive and sustainable manner.

- 4 Rijkswaterstaat will make land available for initiatives aimed at the use of renewable energy for user fees based on market rates. This may involve expanding current initiatives for wind energy and seawater/freshwater action. There are already initiatives underway, such as:
 - wind turbines in areas managed by the central government, such as the Krammer locks, the Tweede Maasvlakte and the IJsselmeer Closure Dam;
 - osmotic power plant in the IJsselmeer Closure Dam;
 - tidal power plant in Brouwersdam;
 - biomass on and around the flood defence system;
 - using engineering structures for renewable energy (such as solar cells).

The experience gained with these pilot projects will demonstrate whether wider application is possible and desirable.

Shipping

Partly given its economic importance, the shipping function has been elaborated in detail in the Management and Development Plan for the National Waters, which lays down how Rijkswaterstaat maintains the navigation channel and deals with locations with actual shipping problems.

The depth of the channel is maintained by means of dredging. The implementation of measures for the Water Framework Directive, Room for the River and other river measures (such as modification of quays) may cause the channel to sand up.

The party taking the initiative must prevent its initiatives from having consequences for the management and maintenance of the channel or compensate for these consequences. Financial compensation for any additional dredging will be the final step; the aim is first and foremost to prevent sanding up by choosing the right location and optimising design. The starting point for this is the directive from the Central Commission for the Navigation of the Rhine. For the Waal, this directive assumes a guaranteed bottom position of 2.80 m below the agreed the low river level.

Designating uses for national waters

| Use | Explanation | Map image |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Drinking water protection | <p>The drinking water intake points in the national water are designated in the NWP. The bodies of water containing intake points are the bodies of water referred to in article 7 of the Water Framework Directive.</p> <p>As part of the implementation of the Water Framework Directive, drinking water protection zones are introduced. The protection zones around the existing intake points are laid down in the Bprw.</p> | Figure 12 |
| Natura 2000 areas | <p>A large part of the national waters has been designated as Nature 2000 areas. These areas are demarcated in the designation decrees. The current boundaries are stated in the river basin management plans.</p> | Figure 12 |
| Swimming water | <p>The swimming water use is allocated to individual locations in the national waters in the Bprw. The provinces designate the swimming water locations on an annual basis. A province can only designate a swimming water location in a national water with the permission of the Minister for Infrastructure and the Environment through designation of the 'swimming water' use in the Bprw. Was the water manager, Rijkswaterstaat is responsible for the quality of the swimming water in all swimming water locations in national waters.</p> | In Management and Development Plan for the National Waters |
| Shellfish waters | <p>Implementation of the Water Framework Directive makes it possible to meet most water quality requirements for the shellfish water use. The aspect of bacteriological quality is beyond the scope of the Water Framework Directive. Good bacteriological quality is important for the safe consumption of shellfish. Designation as shellfish water therefore means that requirements can be set for the bacteriological quality of shellfish waters.</p> | Figure 12 |
| Shipping | <p>The waterways are designated in the Framework Vision on Infrastructure and Space (SVIR). The shipping use is elaborated in detail in the Bprw.</p> | In SVIR |

The Cabinet has concluded that meeting the policy goals for shipping, flood risk management, water quality and nature at specific locations presents a major challenge for initiators and managers. However, there are also opportunities for taking measures that will contribute to multiple goals. An example are the erosion control dams constructed parallel to the river flow. These can contribute to maintaining the depth of the channel, lowering the water level and meeting water quality targets.

As part of Room for the River, Rijkswaterstaat is carrying out a pilot project with erosion control dams constructed parallel to the river flow. The effects will be monitored for a period of 3 years. Based on the results, a decision can be made as to whether it is useful to construct more erosion control dams parallel to the river flow of the Rhine distributaries, including the IJssel. The erosion control dams constructed parallel to the river flow are expected to provide a (local) solution for sanding up in certain river sections, but they cannot be applied everywhere. This means that dredging will remain necessary, but probably on a smaller scale.

Designating uses for national waters

The Water Act dictates that the designated uses of the national waters be laid down in the National Water Plan. The Cabinet has opted for designating uses with caution. This plan only designates uses that, under (statutory) obligations, set specific requirements for the management or use of the national water in question.

In or on the basis of this NWP, the following uses are designated: drinking water protection, Natura 2000, shellfish waters and swimming water. The national waters designated as waterways are also indicated.

Specific measures for these areas are outlined in the Management and Development Plan for the National Waters (Bprw). In addition to the designation of uses in the NWP and Bprw, there is the Register of protected areas. A summarised version of this register forms part of the river basin management plans and hence of the NWP. The register contains an overview of the areas that, under specific regulations, are designated as protected areas.

International

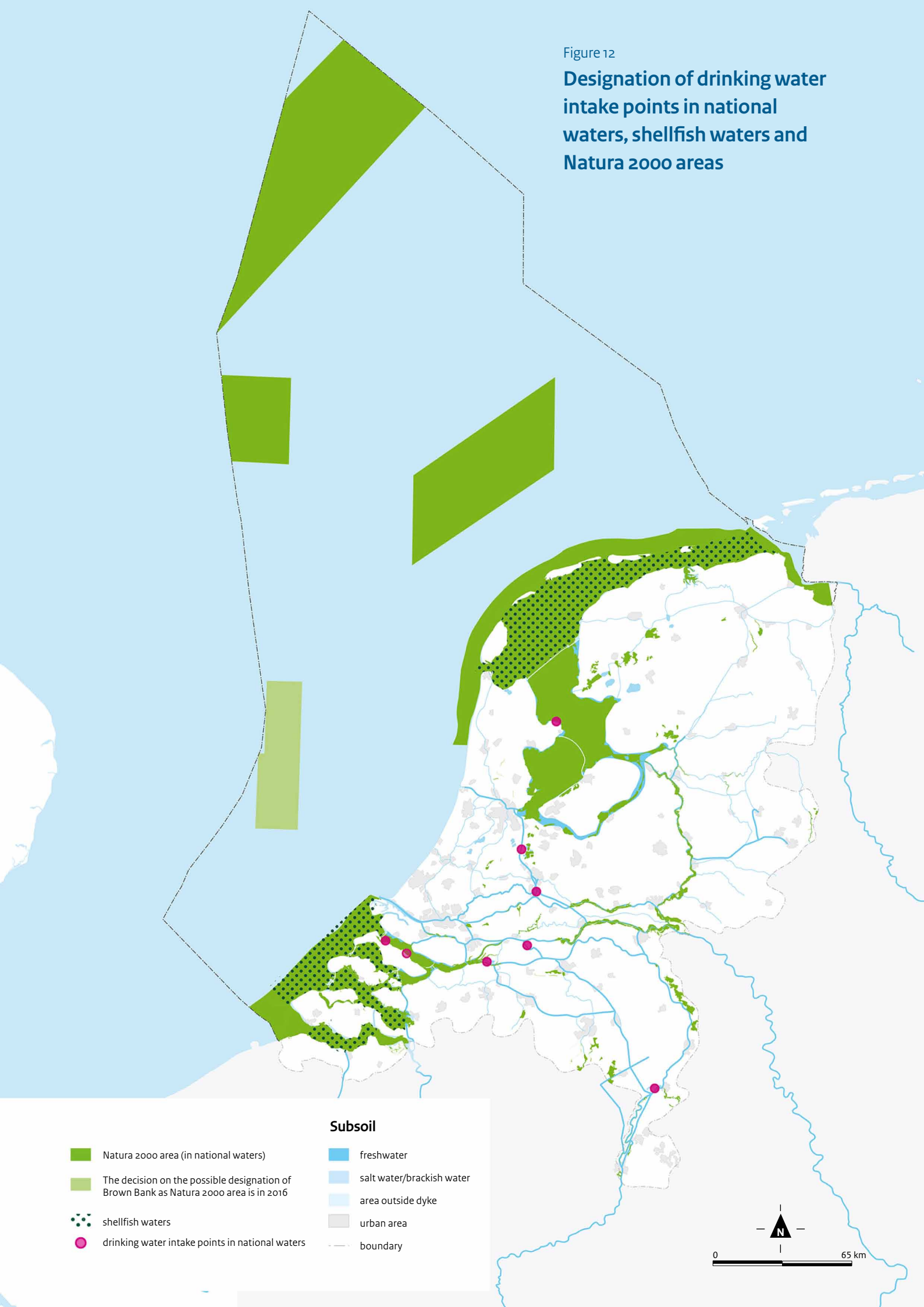
The 'International Water Ambition' reflects central government's vision on the entire international water chain: politics, diplomacy, administrative organisation, legislation, management of infrastructure, maintenance, technology, innovation, knowledge and finance. This sub-section summarises the essence. A link between the national approach and the international market is an important motive for successful international collaboration. Dutch knowledge and expertise of water contributes to water security and resilience in the face of water-related disasters. This spawns synergy between trade promotion, development cooperation, knowledge development and water diplomacy, aimed at sustainable growth worldwide.

Worldwide, water management is paramount in adapting to climate change. The awareness is growing that prevention of water-related disasters costs a fraction of the expenditure associated with water damage and recovery after the disaster, while at the same time preventing a great deal of human sorrow. In many places in the world, substantial amounts will have to be invested to defend populations against the changing climate and rise in sea levels. This calls for new coalitions in water management, urban planning, agriculture, industry, nature management and the energy sector, bringing with it a great need and - at the same time - opportunities for innovation and intensifying international collaboration. That is an excellent opportunity to put Dutch knowledge and expertise into practice in the rest of the world. In international collaboration, the Cabinet, bearing in mind the experience that proactive, prevention-oriented water protection works, the Cabinet, is giving priority to reducing the risk of water-related disasters and reinforcing defences. With regard to water quality, thanks to its involvement in the international Rhine and Meuse Committees, the Netherlands has a great deal of experience with a joint approach at the level of the entire catchment area.

The agenda for aid, trade and investments contributes to a just world, while at the same time offering room for enterprise. Key items on the agenda are: sustainability; sharing knowledge; co-creation; co-operation between the central government, other government authorities, the business community, knowledge institutes and non-governmental organisations; and maximum

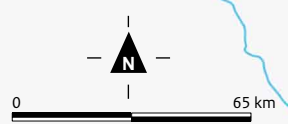
Figure 12

Designation of drinking water intake points in national waters, shellfish waters and Natura 2000 areas



- Natura 2000 area (in national waters)
- The decision on the possible designation of Brown Bank as Natura 2000 area is in 2016
- shellfish waters
- drinking water intake points in national waters

- Subsoil**
- freshwater
 - salt water/brackish water
 - area outside dyke
 - urban area
 - boundary



utilisation of opportunities for private earning, so that water security is less dependent on public budgets. Scale and complexity of global (water) issues are increasing rapidly. The necessity of a comprehensive approach requires more interaction with other industries, such as the energy and food supply sectors. With its knowledge, the Netherlands is assisting the World Bank in tackling water problems in the world.

And the Cabinet will collaborate closely with the WASH alliance (Water, Sanitation and Hygiene) of non-governmental organisations to integrate sustainability into the foreign water and sanitation programmes,

The main purpose of the International Water Ambition is to enhance the water security of the urban deltas and the supplying systems. Dutch knowledge institutes, social organisations, companies and government agencies (including water managers) will make a greater contribution to this. The ambitions are: to deal with water in a more sustainable and more efficient manner, better prevention of risks, and to contribute to fighting poverty, food security and the circular economy.

New starting points in the policy agenda are:

- The focus shifts from a reactive treatment of symptoms to a preventive approach to water risks, in a coalition with national and international partners.
- A balance is sought between public and private governance: without proper public embedding, no proper private water business.
- The search for financing is being expanded: from primarily public funds to private earnings models, enterprise and innovative concession granting.
- The focus on master plans shifts to the implementation of no-regret actions.

Innovation

As described in the International sub-section, there is a close relationship between the national approach and international market. The Cabinet sets great store by the application of innovative solutions for water management and water-robust and climate-proof design, in order to tackle its own challenges. As such, the Cabinet wants to create a strong home market. Examples include the design of smart IT solutions (such as smart cities and smart water management) and the smart use of natural processes in the improvement of flood defence systems (such as the

sandy solution for the Houtribdijk). The Netherlands is thus showcasing innovative solutions that can then be marketed abroad, which is in line with the Cabinet's ambition in its policy on top sectors. The water sector adds great value to the Dutch economy thanks to its strong position in the areas of flood risk management and freshwater supplies. The Top Sector Water is intensively involved to develop this position further. By drawing up a 2016-2019 Knowledge and Innovation Agenda and continuing the development of projects in the Netherlands (experimental garden NL), Top Sector Water together with other top sectors ensure that the Dutch water sector is able to continue to compete internationally, using and consolidating its earning power. This is also achieved in part by managing the crossovers between the top sectors 'Agro/food' and 'Water' in order to tackle the challenges relating to the emissions of fertilisers, pesticides and veterinary drugs and an efficient use of (increasingly scarcer) freshwater in an innovative and efficient manner, so that the slogan 'bring in the Dutch' is not only relevant to safety in the future but also to water quality and sustainable agricultural production.

Joining forces in the area of knowledge and innovation makes the Netherlands stronger as a whole. The national Water and Climate Knowledge and Innovation Programme is aimed at coordination and collaboration at all stages, from fundamental research to practical applications, with the direct involvement of the knowledge seekers and end users. Pooling financial resources will make it easier to acquire external funds from, for example, the EU.

A focal point in innovation is smart water management. New technologies and data mean new opportunities for water management. ICT and the growing amount of information that is generated provide opportunities for monitoring the water system more accurately, for example, with respect to water quality, water levels, the condition of the flood defence systems and any damage incurred. Examples include the use of sensors (as in the IJkdijk, for example), the collation of data from other sources ('big data') and opportunities to respond to or even anticipate changes to the water system more quickly and effectively, preventing consequential damage. Other parties, including individual residents, are also becoming involved in planning and implementation. Parties with open data are able to develop new applications with new social initiatives and innovations. Especially in urban areas, where many different challenges come together



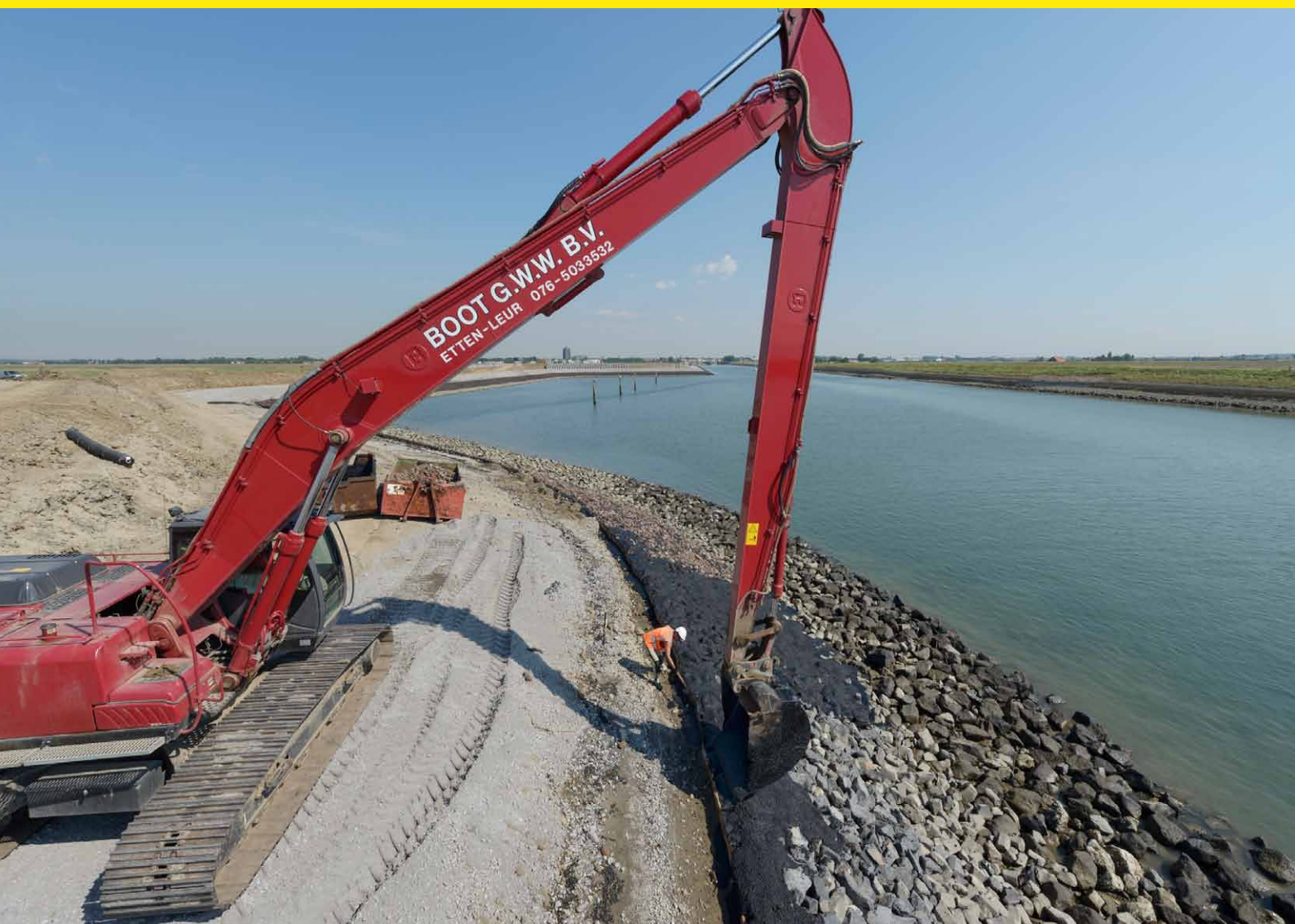
and many parties are involved, such smart solutions and new technologies offer new opportunities for a satisfactory operation of the water system and seizing linkage opportunities. Examples include dynamic traffic management (quicker diversionary routes in case of pluvial flooding on roads), energy generation (the 'smart polder') or recovering raw materials (for example, phosphates from urine).

The Cabinet is working on an open-data policy. The Cabinet also aims to develop an area-based, comprehensive approach according to the concept of 'smart cities' in a number of cities, using design. Actual cases in point are Digital Delta and the NL Smart Cities platform. For the National Environmental Vision, a study is being made of what is required to restore the digital infrastructure and integrate it into the physical water infrastructure.

Table 7 **Milestones in water and the environment**

| Process | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---------------------------------------------------------------|----------------|----------------|--------|--------|--------|--------|
| Method to establish better connection between water and space | | Evaluate | | | | |
| Knowledge Portal and Guide to Spatial adaptation | Update | Update | Update | | | |
| Incentives Programme for spatial adaptation | Implementation | Implementation | | | | |
| Policy and regulations on vital and vulnerable uses | | | | | Adopt | |
| National Adaptation Strategy | Adopt | Evaluate | | | | |
| Social implementation agenda 'Nature for the Future' | Update | Update | Update | Update | Update | Update |

8



Financing

Tackling the water challenges costs money. This section provides an insight into the financing implementation of the National Water Plan during the planning period, with a preview of the water policy in the long term. The Cabinet's ambition is that the central government's challenges - in financial terms - remains at a socially acceptable level within the planning period and in the long term.

Central government, water boards, provinces, municipalities and drinking water companies are investing approximately €7 billion a year (2013) in the Dutch water tasking. The central government covers approximately 17% of all costs. This percentage was lowered in recent years due to efficiency measures at the central government in construction, management and maintenance, and a shift of part of the costs to the water boards.

Flood risk management

The proper protection of the Netherlands will require several billion euros in investment over the next few decades. A combined approach to the flood risk management tasking resulting from, for example, the new standardisation, soil subsidence and climate change, ensures optimal and efficient investments. A cost estimate of the new investment tasking associated with the Delta Programme 2015 up to and including 2050 comes to approximately €20 billion, of which around €19 billion is required for flood risk management and €0.8-1 billion for freshwater. The financial tasking is explained in more detail in the Delta Programme 2015. The Delta Fund contains the required resources up to and including 2028.

The Administrative Agreement on Water and the establishment of the Delta Fund form a strong basis for financing flood risk management measures. The Administrative Agreement includes agreements with the water boards on the co-financing of the Flood Protection Programme (abbreviated as HWBP in Dutch). The central government, provinces, municipalities, water boards and drinking water companies have reached agreements on more efficient water management. The parties are jointly aiming to achieve ongoing efficiency gains up to €750 a year as from 2020 compared to the reference year of 2011. These efficiency gains consist of €450 million in the water chain - with the water boards and municipalities accounting for €380 million and the drinking water companies for €70 million - and €300 million in the management of the water system by the central government, water boards, provinces and municipalities. The pursuit of efficiency gains is designed to limit cost rises and mitigate local expense increases. This is annually reported on to the House of Representatives in the report 'The Status of Our Water' (*De Staat van Ons Water*). The evaluation from late 2013 shows that the parties are well on course.

Agreements on the financing of the new flood risk management policy have been reached with the Unie van Waterschappen (Union of Water Boards). The starting point for the financing is a comprehensive approach to the flood risk management tasking (tightening of standards, new technical insights, climate change and soil subsidence) that is designed to meet the new standard everywhere in 2050. The comprehensive approach to the improvement tasking, including the tasking ensuing from the new standards, will be financed from the new HWBP. The remaining part of the central government resources released will continue to be available for the flood risk management tasking within the Delta Fund. The agreements on the manner in which the new HWBP is filled will be continued. Consequently, the contributions from the central government and water boards to measures for improving the flood defence systems managed by the water boards can remain the same until 2028. Once the National Report on Review 4 is complete (in 2023), more details will be known about the scope of tasking. Based on this information, the question of whether additional agreements are required will be looked into after 2023. The evaluation of the agreements on financing in 2016, which is laid down in the Administrative Agreement on Water, will therefore be postponed until 2023. An important priority of the evaluation is the development of local expenses, partly in relation to the project-related contribution of 10%. For water boards with a major tasking, the tasking should remain manageable. This can be achieved by means of smart programming, smart capitalising or evening out the effects within the programme. These options will be examined more closely in the coming period. The question of whether additional measures are wanted will be considered in 2023.

Where extra costs are incurred for river widening, the Cabinet is prepared to use resources from the Delta Fund, on condition that measures contribute substantially to safety, offer opportunities for achieving synergy at an area level (for example, for the economy, cultural history, nature and recreation) and are funded by means of co-financing. The Cabinet has earmarked approximately €200 million for this in the Delta Fund up to and including 2028.

Freshwater supplies

For economic development, investing in freshwater supplies is of great importance: Until 2050, freshwater supplies can be made more robust and optimised by investing in a number of targeted measures.

The cost of the future freshwater tasking is estimated at approximately €0.8-1 billion up to and including 2050. €150 million has been earmarked for this in the Delta Fund for the period up to and including 2028. This reservation is a first step towards making the system more robust by means of cost-effective measures. The reservation is more than enough to be able to pay at least the central government's contribution to the first package of freshwater measures, as outlined in the Delta Programme 2015.

Resources from other partners

In comprehensive projects that serve more goals than just flood risk management and freshwater supplies, financial responsibility is borne by more partners. Even when flood risk management and freshwater measures entail additional costs but also additional benefits, a contribution from financial sources other than the Delta Fund is expected.

Spatial Adaptation

In the Delta Decision on Spatial Adaptation, the central government, provinces, municipalities and water boards have agreed to consider flood risk management and climate proofness as a whole in relation to spatial developments. The ambition is for climate-proof action and water-robust design to be an integral part of policy and implementation by 2020, to ensure that the Netherlands is actually climate-proof by 2050.

The goal of the Incentives Programme for Spatial Adaptation is that water-robust and climate-proof design is a matter of course by 2020. The Delta Fund provides a budget of €800,000 a year for this Incentives Programme for 2015, 2016 and 2017.

Water quality (Water Framework Directive)

The Cabinet remains committed to achieving the goals set out in the European Water Framework Directive (KRW). The 2015 budget includes permanent financing for Water Framework Directive measures for the entire planning period up to and including 2027 (€574 million in total). It also includes notes on how the required resources have

been released and the manner in which they have been allocated to the Delta Fund.

Long-term financing

In 2014, the OECD investigated which developments impact Dutch water management, what risks the Netherlands should expect in the future and whether the Netherlands is sufficiently prepared for them. The OECD has concluded that water management is well organised in the Netherlands and has a stable financial structure.

The Cabinet endorses these conclusions. However, there are a number of long-term challenges that require a durable, future-proof financing system. Economic incentives to deal more efficiently with “too much”, “too little” and “too polluted” water can be increased. The Cabinet endorses, as a starting point, the principle that those who benefit from or take measures that impact water management bear the associated costs (“the user/polluter pays”). If this can be done efficiently, funding will be organised at a local level. The Cabinet has therefore launched an exploration of a future financial structure together with the water partners. This demonstrates that the current funding system focuses on recovering the fixed costs incurred, with the advantage being that it is certain that the necessary costs will be borne. Since the main funding comes from the general resources, the largest part of the costs associated with water management in the Netherlands is paid by households. Although principles such as ‘the user/polluter/originator/stakeholder pays’ are applied in the funding of water management, there is room for improvement in certain areas; for example, in preventing water pollution, using and extracting groundwater and surface water, and the discharge and treatment of rainwater. For this reason, the Cabinet wants to examine in a broader context, together with the administrative partners, how these principles can be better applied in the long term, with other instruments, other areas of policy and international aspects being taken into consideration. The ongoing research into the modernisation of pollution tax will also be looked into. The Cabinet and the administrative partners will examine whether it is useful or necessary to involve the water system tax in this. The first results are expected by early 2017.



Table 8 **Milestones in financing**

| Process | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|-------------------------------------------|---------------------------------------------------------------|------------------------------------|------|------|------|------|
| Exploration of future financial structure | Study of potential optimisations and report on results so far | Results of promising optimisations | | | | |

Appendices

- 1 Embedding of national policy, Delta Decisions and preferential strategies (Interim Revision of NWP)
- 2 2016-2021 North Sea Policy Document
- 3.1 Ems river basin management plan 2016-2021
- 3.2 Meuse river basin management plan 2016-2021
- 3.3 Rhine river basin management plan 2016-2021
- 3.4 Schelde river basin management plan 2016-2021
- 3.5 Programme of Measures for the Ems under the Water Framework Directive
- 3.6 Programme of Measures for the Meuse under the Water Framework Directive
- 3.7 Programme of Measures for the Rhine delta under the Water Framework Directive
- 3.8 Programme of Measures for the Schelde under the Water Framework Directive
- 4.1 Ems Flood Risk Management Plan
- 4.2 Meuse Flood Risk Management Plan
- 4.3 Rhine Delta Flood Risk Management Plan
- 4.4 Schelde Flood Risk Management Plan
- 5 Marine Strategy for the Dutch Part of the North Sea 2012-2020 (Part 3)
(Programme of measures under the Marine Strategy Framework Directive)



our water our future

Our Water is a public campaign designed to raise the awareness of water among the Dutch. We're never done with our water. Please visit www.onswater.nl for information, stories and tips. Our Water is an initiative of the Ministry of Infrastructure and the Environment, Rijkswaterstaat, Unie van Waterschappen (Union of Water Boards), the provinces (IPO), municipalities (VNG), water companies (Vewin) and the Delta Programme.

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