



Ministry of Infrastructure and the Environment

# Our Water in the Netherlands

new National Water Plan 2016-2021



**our water** our future

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# ‘Connect spatial planning tasks and water-related tasks’

Throughout the world the Dutch are famous for having built a flourishing economy and a prosperous society in this vulnerable, low-lying, water land. In fact, we have been so successful at doing so that we take our achievement for granted. But we should not, as maintaining the status quo requires the efforts of hundreds of people day in, day out. Checking dykes, widening rivers, dredging watercourses, maintaining the sewer system, purifying dirty water, reinforcing the coast with extra sand and so on and so forth. A total of some €7 billion per annum is spent on such tasks in the Netherlands.

## Necessity, not luxury

Germany, England, the United States - various Western countries have been hit by flooding in recent years. The pictures testify to the fact that flooding is always disastrous, just as it was in the Netherlands in 1953. There are victims to mourn, the damage is immense. People lose their homes, their livelihoods, their everyday surroundings. It puts society in disarray. A decade on, the city of New Orleans is still recovering from the major flood that ravaged it.

Good protection from flooding is a necessity, not a luxury. So too are tackling pluvial flooding and efforts to ensure a sufficient supply of clean freshwater for the sake of our health, nature and the economy.



## Water-conscious when it comes to spatial planning tasks

Climate change is having considerable consequences in this vulnerable delta: higher storm surges at sea, an increased volume of water passing through rivers, more frequent downpours, heat and drought. We need stronger dykes and wider rivers, and more options for retaining rainwater in those places where it falls. This will cost a great deal of money and require plenty of space.

If we wish to continue living and working safely and comfortably in this delta of ours, it is imperative to combine water-related tasks and other spatial planning tasks wherever possible: dyke improvement with nature development, combating pluvial flooding with urban redevelopment, better supply of freshwater with economical usage in the region. This will be possible if government authorities, businesses, social organisations and research institutes explore and seize opportunities.

If everyone works towards organising the Netherlands in a water-conscious manner, keeping our delta safe, climate-proof and attractive will be an affordable prospect. This is the crux of the new National Water Plan.

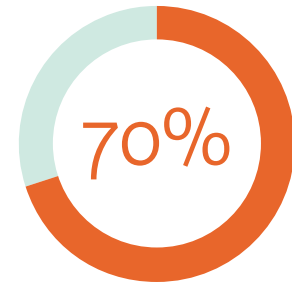
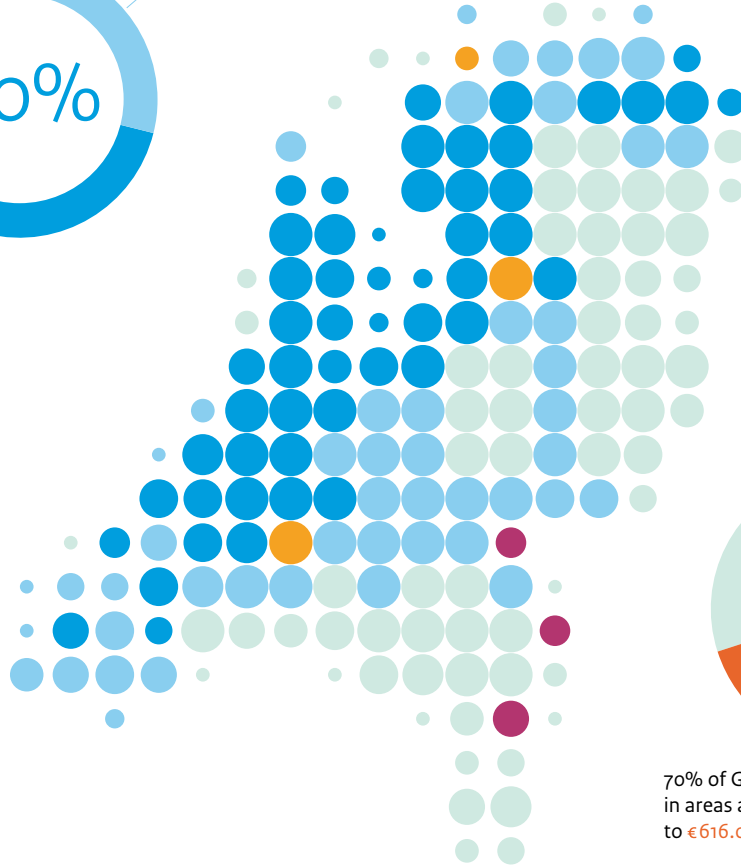
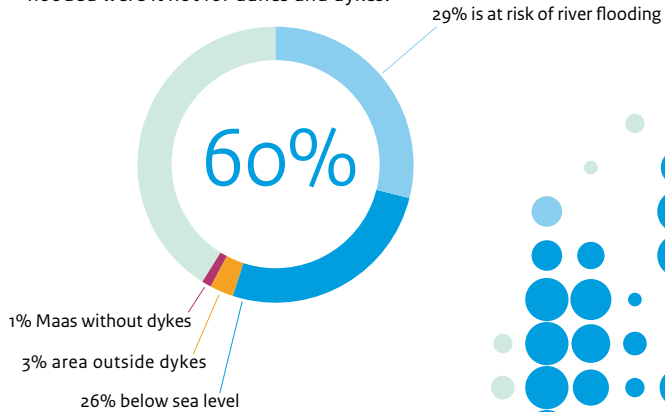
Melanie Schultz van Haegen  
*Minister for Infrastructure and the Environment*

The draft of the new 2016-2021 National Water Plan is available for inspection from 23 December 2014 to 22 June 2015. The definitive version of the plan will be produced by 22 December 2015 at the latest.

The full draft National Water Plan 2016-2021 can be found at [www.government.nl](http://www.government.nl).

## Facts about water

60% of the Netherlands would be regularly flooded were it not for dunes and dykes.



70% of Gross Domestic Product is earned in areas at risk of flooding, which equates to €616.000.000.000 per year.

More than half of the Dutch population live in areas at risk of flooding (♀ = 100.000 people).



# The Netherlands: a country of water

## Facts about water

- Without strong dykes, 60% of the Netherlands would be underwater on a regular basis.
- 9 million people occupy this area.
- 70% of our gross national product is earned there.
- The water in canals, lakes, rivers and the sea is not always clean enough for swimming, drinking water preparation and production processes.
- 16% of the economy depends on a sufficient supply of freshwater.
- These water-dependent sectors account for an annual turnover of more than €193 billion.

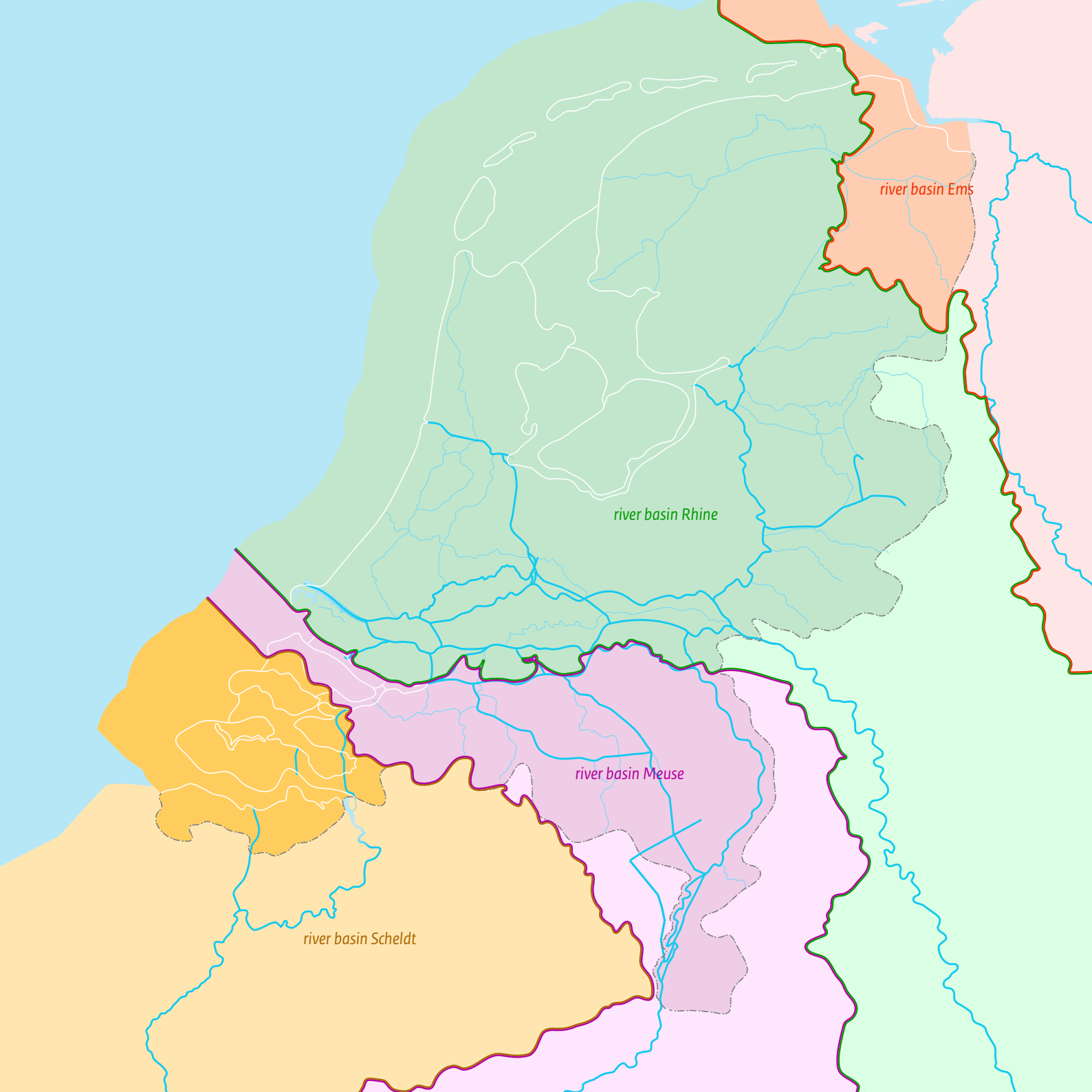
## 5 ambitions

A new National Water Plan is being produced for the Netherlands. The aim is to bolster our health and safety, living environment and the economy with climate-proof water management.

Five ambitions are pivotal:

- 1 To make the Netherlands the safest delta in the world.
- 2 To ensure Dutch waters are clean and healthy and that there is a sufficient supply of freshwater.
- 3 To render the Netherlands climate-proof and water-robust.
- 4 To ensure the Netherlands is and continues to be a paragon of water management.
- 5 To raise water awareness among the Dutch.

Anyone working on the spatial organisation of the Netherlands is responsible for fulfilling these ambitions – all government authorities, businesses, social organisations and research institutes.



river basin Ems

river basin Rhine

river basin Meuse

river basin Scheldt



# Trends in water

## Connecting space and water

Organisational measures for the water tasks and other spatial planning tasks are becoming increasingly intertwined. This is unsurprising, as interventions such as dyke improvements and retention of rainwater have a significant impact on the living environment, in cities and in rural areas. Conversely, interventions in terms of urban development, infrastructure, energy supply, nature and agriculture often have considerable effects on flood risk management and water quality. Consequently, government authorities are increasingly seeking combined solutions by connecting tasks in planning and implementation.

## Co-creation in the water policy

The past five years have seen close cooperation between government authorities, businesses and research institutes within the Delta Programme. Together they have been working on advice on flood risk management and freshwater supplies which has wide-ranging support throughout the Netherlands. This has enabled the Cabinet to incorporate the main features of this advice into government policy within a short space of time – a form of co-creation in the water policy. Close cooperation also continues to be necessary when it comes to

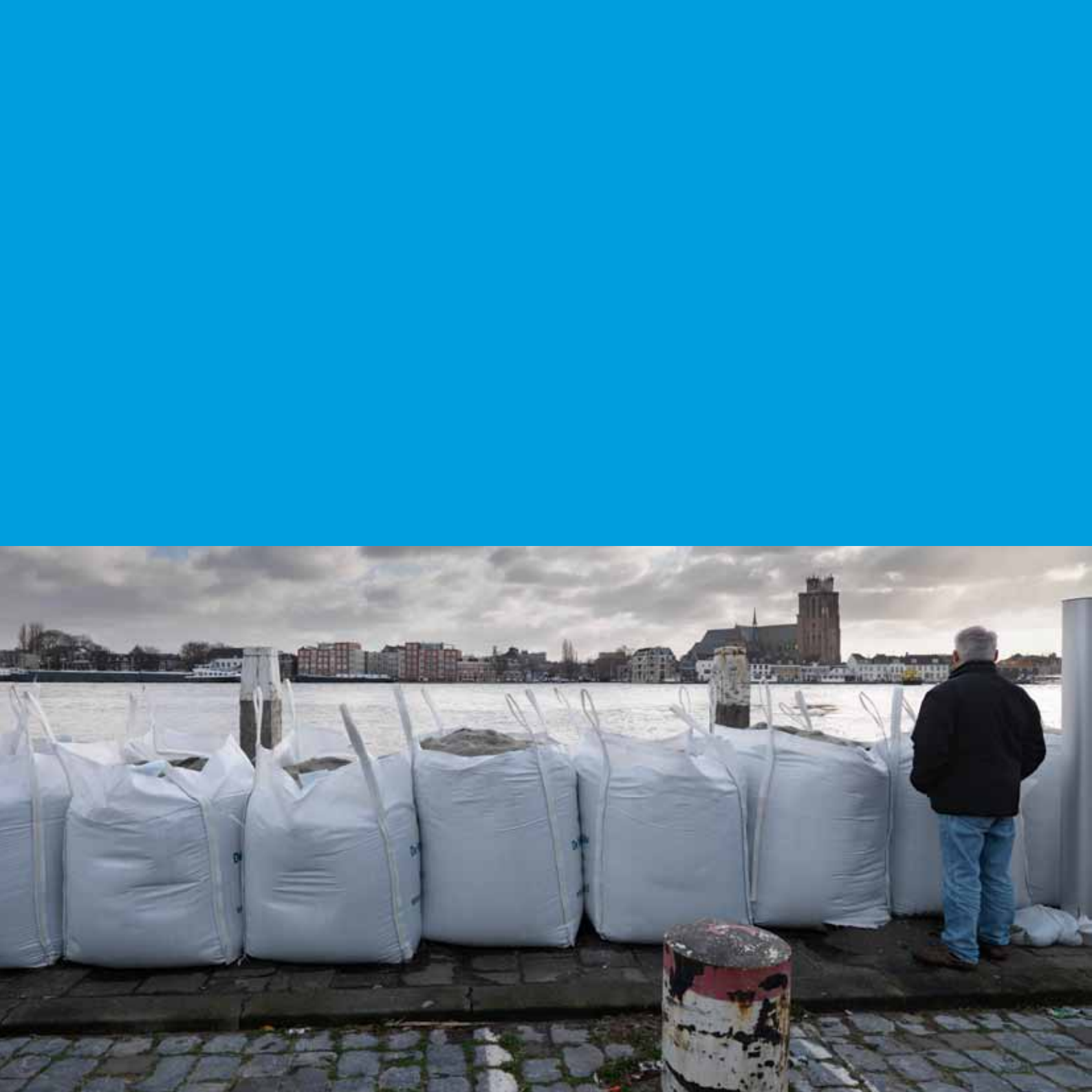
implementation of the policy, as water affects so many other interests. All government authorities (municipalities, water boards, provinces and the Central Government), the business community, research institutes and social organisations have a role to play.

## Solidarity in terms of water in the EU

Water does not recognise borders. The countries of the EU have therefore agreed that they will draw up joint plans for flood risk management and water quality in a basin. The countries mutually agree what objectives they will pursue and what measures they will implement. It has been agreed that the countries will act in unison: they will not implement any measures that impair flood risk management or water quality in neighbouring countries. This is particularly important for the Netherlands, because our delta lies at the end of the Rhine, Meuse, Eems and Schelde basins. The countries are working in line with three European directives: the Directive on the assessment and management of flood risks (flood risk management), the Water Framework Directive (water quality) and the Marine Strategy Framework Directive (the marine environment).

## Water Agenda Zwolle

33 parties have signed the Strategic Water Agenda Zwolle. They are looking to engage in smart cooperation in order to make the city climate-proof, greener and more appealing. The signatories include the province, municipalities, water boards, security region, research institutes, (local) associations, entrepreneurs, social institutions and a bank.



## Ambition 1

# To be the safest delta in the world

Over the past 50 years the Netherlands has become more vulnerable to flooding – there are more people and things of economic value to protect. This vulnerability is set to increase due to climate change.

The focus of the new National Water Plan is: To ensure the Netherlands is and continues to be the safest delta in the world. To ensure that protection against flooding is even better by 2050. On and around the flood defences increased opportunities are arising for other spatial planning tasks.

### Even safer by 2050

Large parts of the Netherlands are protected from flooding by means of dykes and other flood defences. The cabinet is set to revise the standards for these. Fundamentally, everyone in the Netherlands is entitled to the same basic protection level. The aim has been to increase safety wherever there is potential for large numbers of victims or substantial economic damage. This is also the case for locations where vital or vulnerable functions exist, such as the nuclear power station in Borssele. The new standards will be enshrined in legislation by 2017; by 2050 they will have been achieved everywhere. Nearly €20 billion will be required to this end.

The new level of safety will be effected by means of dyke improvements, river widening, sand replenishment and improvements to storm surge barriers. In order to limit costs and use of space, it would be desirable to combine these activities with other spatial planning developments. This calls for alertness and effort on the part of all government authorities. Where dyke improvements or other interventions are required for flood risk management, the authorities will jointly look into whether combinations with other developments in the area are possible. This new way of working will be evaluated in 2017.

### New opportunities in terms of flood defences

On and close to the flood defences, the Cabinet is keen to create space more often for other developments, such as nature, sustainable energy generation and energy storage. In 2015 the state will be investigating what legislation allows and prohibits in terms of sustainable energy on and around flood defences. The precondition is that safety is not impaired. There will also be more opportunities for new-build projects along the coast. Input is required from companies, consultancy firms, universities, municipalities, provinces and flood defence managers to come up with creative solutions.

### Climate Dyke Tiel

Tiel is to receive a dyke that is higher and wider and has a greater degree of incline than usual. The benefits: a lower incidence of pluvial flooding in Tiel; it will even be possible for homes to be built on the extra-strong dyke and Tiel will continue to be safe, if the climate changes. The Rivierenland Water Board, the municipality of Tiel, the province of Gelderland and the Government Service for Land and Water Management (DLG) have jointly prepared the plan.

### Flood defence and renewable energy

Over the next few years Rijkswaterstaat will be exploring opportunities for sustainable energy generation around flood defences – wind turbines on the Krammer locks, a tidal power station in the Brouwersdam, energy from biomass on flood defences, solar cells on engineering structures. Government authorities and market parties themselves can also take initiatives in consultation with the flood defence manager.

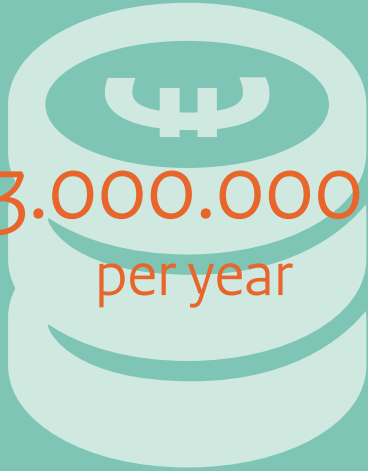
### Natural dyke improvement

The Prins Hendrik Dyke on the island of Texel is not being improved with stone but with sand instead. This is more expensive, but it has environmental benefits. The Hollands Noorderkwartier Higher Water Board, the province of North Holland, the municipality of Texel and the Wadden Fund are contributing financially.

## Facts about water

The water-dependent sectors in the Netherlands generate annual turnover of €193 billion.

€ 193.000.000.000  
per year



16% of the Dutch economy depends on a sufficient supply of clean fresh water.



The supply of fresh water in the Netherlands is sometimes inadequate:



for manufacturing processes



for agriculture



for nature



for swimming



for shipping



for drinking water supply



for water management



for drinking water preparation

Furthermore, the water in canals, lakes, rivers and the sea is not always sufficiently clean:

## Ambition 2

# To have a sufficient supply of healthy water

Every summer municipalities are forced to close bathing water locations because the water contains cyanobacteria, which are hazardous to human health. One of the causes of this is an excessive quantity of fertilisers in the water. Less visible, but no less unhealthy, are the increasing quantities of medicines and microplastics in the water. The EU countries have agreed multi-lateral targets for water quality in the Water Framework Directive. All waters must be compliant by 2027. Even in the Netherlands this will be no mean feat. In addition, the Dutch will probably find themselves faced with protracted dry periods more often, with there being insufficient water for all major water users.

### Continuing to work on persistent problems

In recent years Dutch waters have become much cleaner, but fertilisers and pesticides constitute a persistent problem. These substances impede the healthy development of plants and animals in the water and make drinking water preparation more problematic. There are no ready-made solutions as yet. Government authorities, farmers, drinking water companies and research institutes can explore new customised solutions by joining forces.

### Flevoland Soil & Water Action Plan

LTO Noord, the Zuiderzeeland Water Board and the province of Flevoland wish to improve soil fertility, water quality and water availability. They have developed the Soil & Water Action Plan to encourage the exchange of knowledge and new applications between farmers, water managers, research institutes and companies, for example by means of demonstrations of new technologies.

The focus of the new National Water Plan is: by 2027 the most persistent problems pertaining to water quality and new materials such as microplastics will have been solved. By 2018 the number of sites found to have excessive levels of pesticides will have been reduced by 50% and reduced by 90% by 2023 (compared to 2013). Furthermore, government authorities and major water users are working together on ensuring a sufficient supply of freshwater in dry periods.





## Attention to new substances

In recent years new problems pertaining to water quality have cropped up. The water in canals, lakes and rivers contains an increasing quantity of medicine residues and small particles of plastic (microplastic). These new pollutants present a risk to nature, human health and economic processes. It is important to minimise the quantities of these substances ending up in the water. This requires effort on the part of such parties as health-care institutions and industries. All government authorities have the capacity to encourage this. To supplement these efforts, the Central Government, water boards and drinking water companies are modifying the water purification equipment. Countries around the North European seas enter into agreements on reducing litter at sea.

## Sufficient freshwater, economical use

Sufficient freshwater in the right place. This is vital to our economy and society. Climate change means that water shortages are liable to occur more frequently. The Central Government intends to improve a number of freshwater supply routes. Furthermore, Rijkswaterstaat, water boards, provinces and municipalities will be providing insight by region into the chances of a water shortage occurring. This will have been done for all areas by 2021. Major water users, such as agriculture, industry, nature, water management, shipping and drinking water provision, will be able to use this knowledge to implement measures so as to render themselves less vulnerable to water shortages. The government authorities can help by encouraging innovations for economical water usage.

## Sneek hospital demo site

At the Antonius Hospital in Sneek companies can test innovative technologies to make the hospital's wastewater cleaner, by extracting medicines from urine for example. The demo site is an initiative of Wetterskip Fryslân, the municipality of Súdwest-Fryslân, a research institute, a health-care group and an engineering firm.

## South-west Delta climate pilot

The province of Zeeland, the water board, municipalities, Evides, ZLTO and other parties have set up the Proeftuin Zoet Water ('Freshwater Experimental Garden'). There they are investigating how Zeeland can make better use of rainwater and reduce demand for freshwater, for example by conserving water and increasing plants' tolerance to saltier water (improvement).

## Connecting water and space



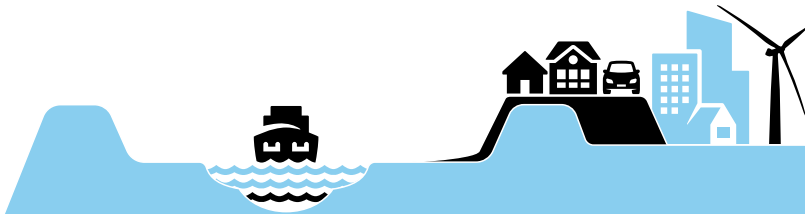
**Incorporation** - e.g. dyke reinforcement, taking into consideration existing use



**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 development and/or emergency response can also ensure protection (against flooding)



## Ambition 3

# Establish climate-proof or water-robust design

However well we protect ourselves, we cannot rule out the possibility of flooding. Furthermore, climate change means that we will experience heavy rainfall, drought and heatwaves more frequently. We can minimise the damage by taking this into account at the design stage.

The focus of the new National Water Plan is: by 2050 the Netherlands will be less vulnerable to water and climate change. By 2020 the authorities will have drawn up policy and regulations to this end. Vital and vulnerable functions will be given special attention. The website [www.ruimtelijkeadaptatie.nl](http://www.ruimtelijkeadaptatie.nl) features a guide.

## More resistant to water and climate change by 2050

The Central Government, provinces, municipalities and water boards have agreed to make the Netherlands more resistant to floods, pluvial flooding, heat and drought. To the fullest extent possible they are combining this with other work,

such as the replacement of sewerage, redevelopment of urban areas and industrial estates, and natural development. In the case of new developments they are testing in advance whether the risk is increasing. The Water Review is an important tool in this regard. The Central Government is seeing to it that the Water Review retains its statutory status.

## Special attention to vital and vulnerable functions

Hospitals, power stations, drinking water supply, emergency communication systems for disaster management and other so-called 'vital functions' have to continue working during flooding. This is of vital importance. The Central Government will see to it that the national vital functions are more resistant to flooding by 2050 at the latest. The same will be done for vulnerable functions that could cause serious damage to human health or to the environment during flooding, such as elements within the wastewater chain.

## Kraanbolwerk climate-proof

Zwolle is set to make the former Kraanbolwerk industrial estate *deltaproof*. If the estate's quay is submerged, the new properties remain dry and are accessible by way of an elevated route. The car park can be closed to make it waterproof. The water board, municipality and province have drawn inspiration from *Hafencity* Hamburg.

## Westpoort Amsterdam

The Amsterdam harbour area of Westpoort is home to a large number of vital and vulnerable functions, such as a power station, petrol storage and data centres. If there is flooding in this area, this will have serious consequences for the power supply, the kerosene supply to Schiphol and telecommunications.

The municipality, the water board, the province and the Central Government have investigated scenarios to render these vital functions less vulnerable.



## Ambition 4

# To serve as a paragon of water management

Throughout the world the Netherlands is famous for its progressive water management. This is good for the Dutch economy. The Delta Works still attract foreign delegations seeking solutions to their own water tasks. Even the way in which the Netherlands managed to incorporate water works into spatial planning in the past is unique in the world.

The focus of the new National Water Plan is that the Netherlands will continue to be worldwide leader in the field of water management by disseminating knowledge throughout the world.

### Disseminating and enhancing knowledge

The Dutch Top Sector Water comprises the water managers and companies, engineering firms and research institutes working in the water sector. By acting collectively, the top sector has more influence abroad when it comes to international aid, trade and knowledge development. The Cabinet is making the most of all opportunities to put the top sector in the spotlight during foreign missions. Partly as a result of this, the Dutch water sector is regularly asked for advice on water-related problems abroad and in turn is acquiring new knowledge there. This enables the water sector to further increase its lead and come up with new innovations that are also applicable in the Netherlands. It enables regions utilising innovations to boost the local economy. For example, since the construction of the Zandmotor (Sand Engine) the beach at Ter Heijde has been attracting international delegations in the field of water management and an increased number of recreational users.

### Bring in the Dutch

In recent years the Delta Programme Commissioner has explained in various international forums how the Netherlands intends to deal with climate change step by step ('adaptive delta management'). This approach is held in high regard abroad. A variety of countries are currently working on their own delta plan with the help of the Netherlands.

In 2012 Hurricane Sandy caused considerable damage along the east coast of the United States, New York included. On the initiative of a Dutchman and with Dutch expertise, the American government set up the 'Rebuild by Design' competition. Teams were invited to submit plans to render the affected areas resilient to the effects of climate change. And at least two thirds of the winning teams were Dutch.

# ons water in Nederland

Vul hier je locatie in



Kies een locatie

Schoon, veilig en voldoende water zijn niet vanzelfsprekend

ons water en jouw NAP



Een kwart van Nederland ligt onder zeeniveau. Vul je postcode in en bekijk hoe hoog of laag jij woont.

Reil

## Ambition 5

# To raise water awareness among the people of the Netherlands

Water provides prosperity, but it also makes us vulnerable. We live in the safest delta in the world, but it is still possible for flooding to occur. Heavy rainfall occasionally causes sudden pluvial flooding. And during dry summers our water-rich land can even experience water shortages. Floods, pluvial flooding and water shortages will become more frequent as the climate changes. Consequently, attention to our water must become a matter of course again.

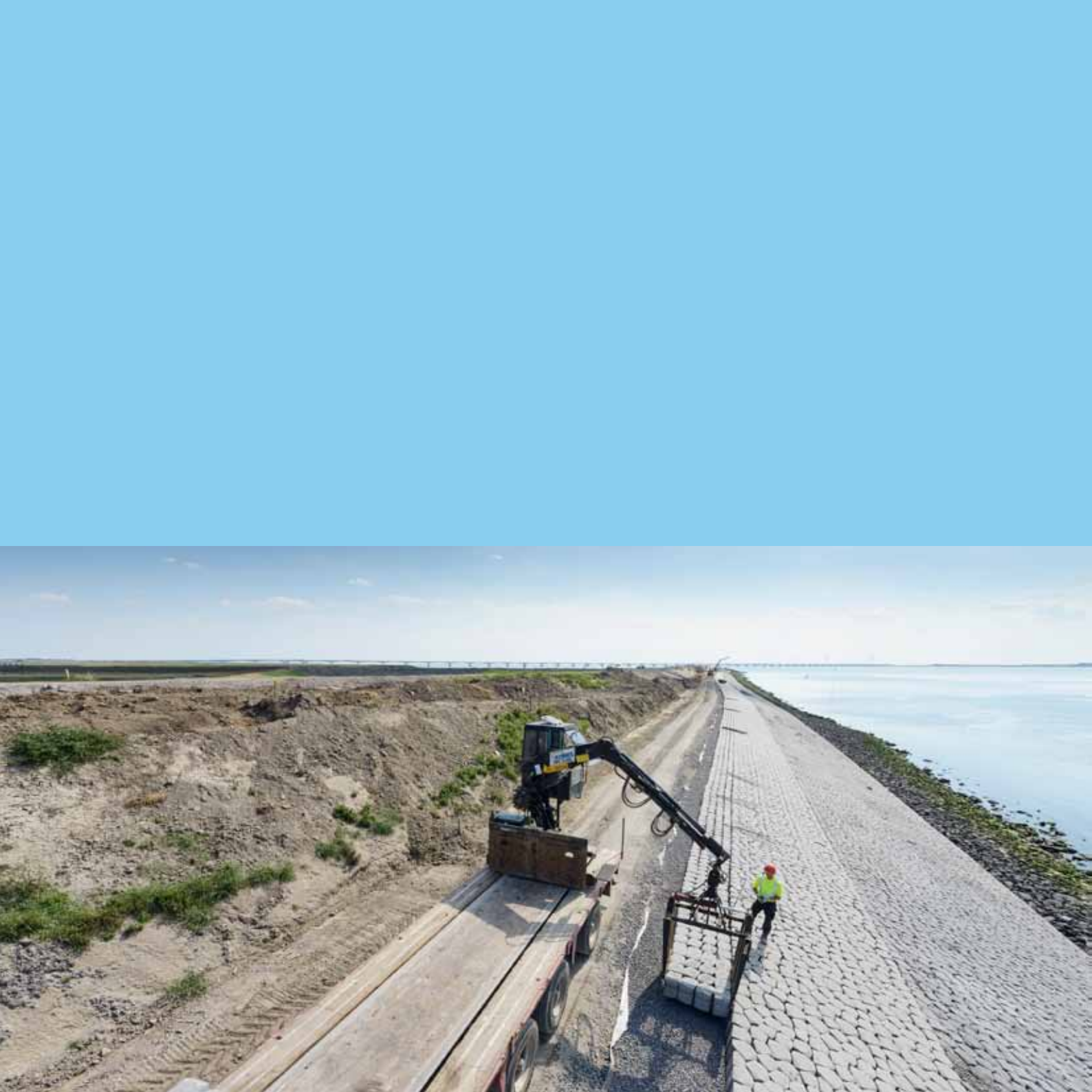
The focus of the new National Water Plan is: by 2021 government authorities, companies and residents will be more aware of the opportunities and threats presented by water in their environment. 'Our Water' calls for a water-conscious population.

### Our Water

Safe, clean and sufficient water, these things don't come about of their own accord. The Netherlands must continue to work on them. The joint public communication 'Our Water' by the Dutch government authorities and water companies outline what kind of things go on day in, day out, what is needed for the future and what people can do. The website [www.onswater.nl](http://www.onswater.nl) includes information, anecdotes and tips for visitors, which they can also select according to postcode.

The website has an accompanying app, 'Overstroom ik? (Will my area be flooded?)'. This enables everyone in the Netherlands to see how high the water would get in their area during a major flood. The app indicates what would be a sensible course of action in such a case – to look for a safe place in the vicinity or to leave the area. 'Our Water' is a long-term programme by which the water partners aim to raise water awareness among the Dutch public.





# Working on our water

The new National Water Plan will make the Netherlands safer, more appealing and economically strong. The Cabinet is fully committed to this aim. The actual realisation of the plans also requires the efforts of other parties: municipalities, provinces and water boards, construction companies and consultancy firms, farmers, drinking water companies and nature managers, hospitals, universities and universities of applied sciences.

## Pay together, make plans together

The Netherlands has a national fund for water management: the Delta Fund. In excess of €1 billion per annum of state funding has been made available until 2028 for investments in flood risk management, water quality and freshwater supplies. Water boards, municipalities, provinces and drinking water companies are also contributing to water management with their own budget. Water management in the Netherlands is thus firmly anchored in financial terms, but the tasks are also considerable.

In order to be able to continue to live safely and comfortably in our delta, combined solutions are required for water-related tasks and other spatial planning tasks. This will require authorities and other parties to harmonise their plans, projects and means of financing. In 2018 the Central Government will draw up a comprehensive vision of the physical living environment: the National Environmental Vision.

## Continuing to innovate

It is to the benefit of everyone to limit the costs and use of space associated with water measures. This can be done by seeking smart combinations of water, living, infrastructure, renewable energy and nature. This way, the Netherlands will continue to innovate and we will re-establish our position as an exemplary country for water and spatial planning.

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# our water our future

'Our Water' is the public campaign to raise the awareness of water-related matters among the population of the Netherlands. Managing our water is a task without end. See [www.onswater.nl](http://www.onswater.nl) for information, stories and tips. 'Our Water' is an initiative of the Ministry of Infrastructure and the Environment, the Department of Waterways and Public Works (Rijkswaterstaat), the Association of Water Boards (Unie van Waterschappen), the provinces (IPO), municipalities (VNG), water companies (Vewin) and the Delta Programme.

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