



Dutch Flood Protection Programme

# Flood protection in the Netherlands

*Integrated Flood Risk  
Management*

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# Content

## Flood Protection Programme

- Governance, Organisation, Funding and Scope
- Prioritization, financing projects and state of the art
- Programme goals (tactical goals)
- Challenges



## Governance: two water management authorities

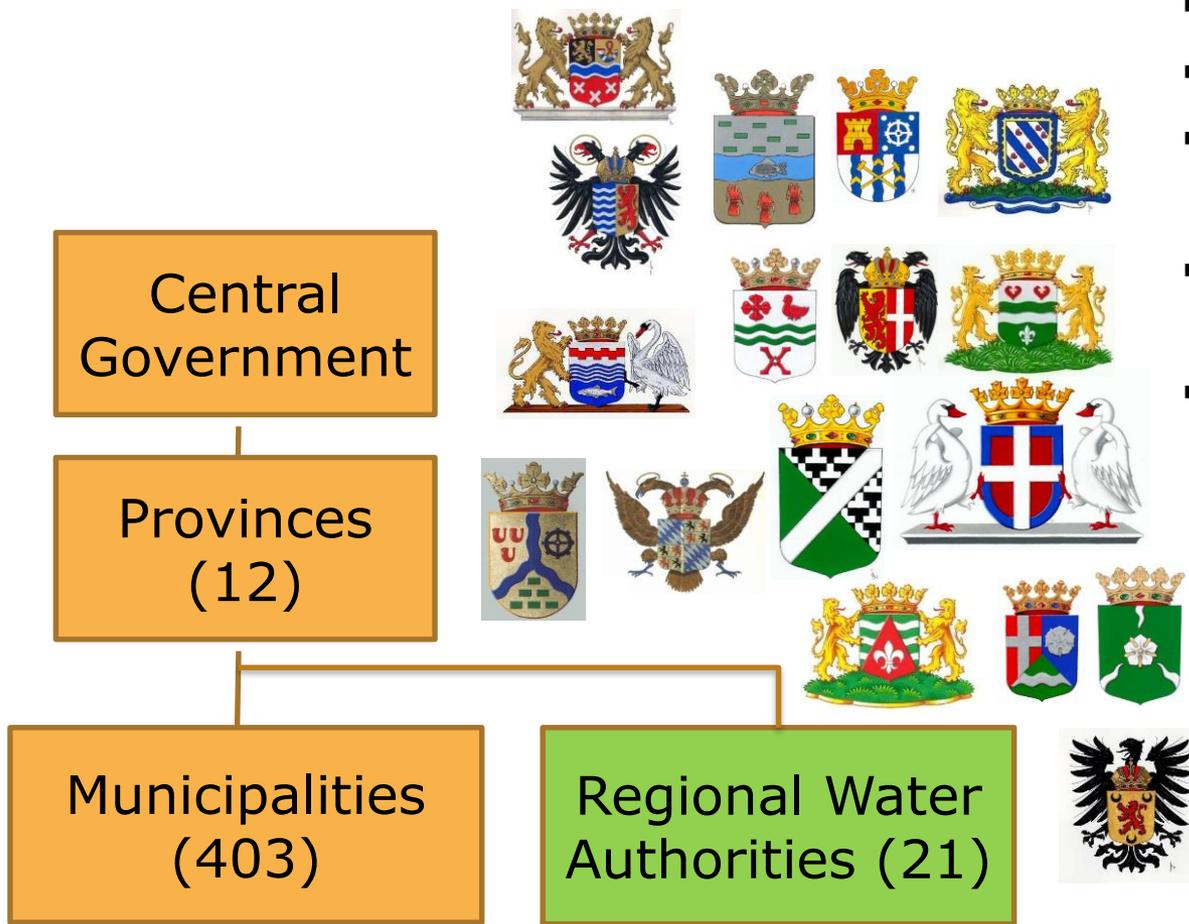


Rijkswaterstaat (Regions)



Regional Water Authorities

## Regional water authorities



- Waste water treatment
- Regional water management
- Flood protection
  
- Regional taxation based on property value
- $\pm 50\%$  of all government spending on water

## □ Rijkswaterstaat

- Executive agency of the Ministry of Infrastructure and Water Management
- Flood protection: national water management (coast, rivers) and specific flood protection structures (dams, barriers)



## Organization

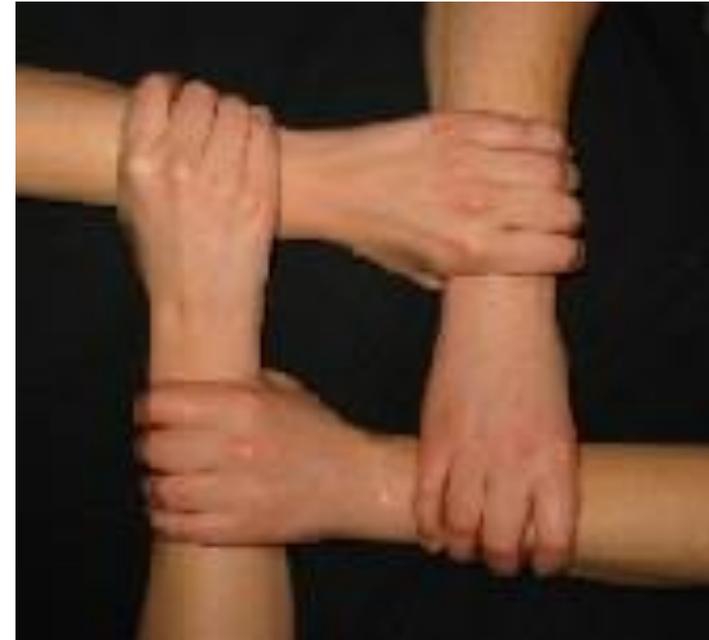


general principles for  
multi-level governance

efficiency  
transparency  
accountability

Flood protection: alliance between regional  
water authorities and Rijkswaterstaat

- Co-funding of flood protection projects
- Sharing and developing knowledge and experience



## Organisation of flood protection (from 2011)

### National level

- Policy
- Safety standards
- Tools for safety assessment
  
- Water management
- Management of infrastructure (10%)

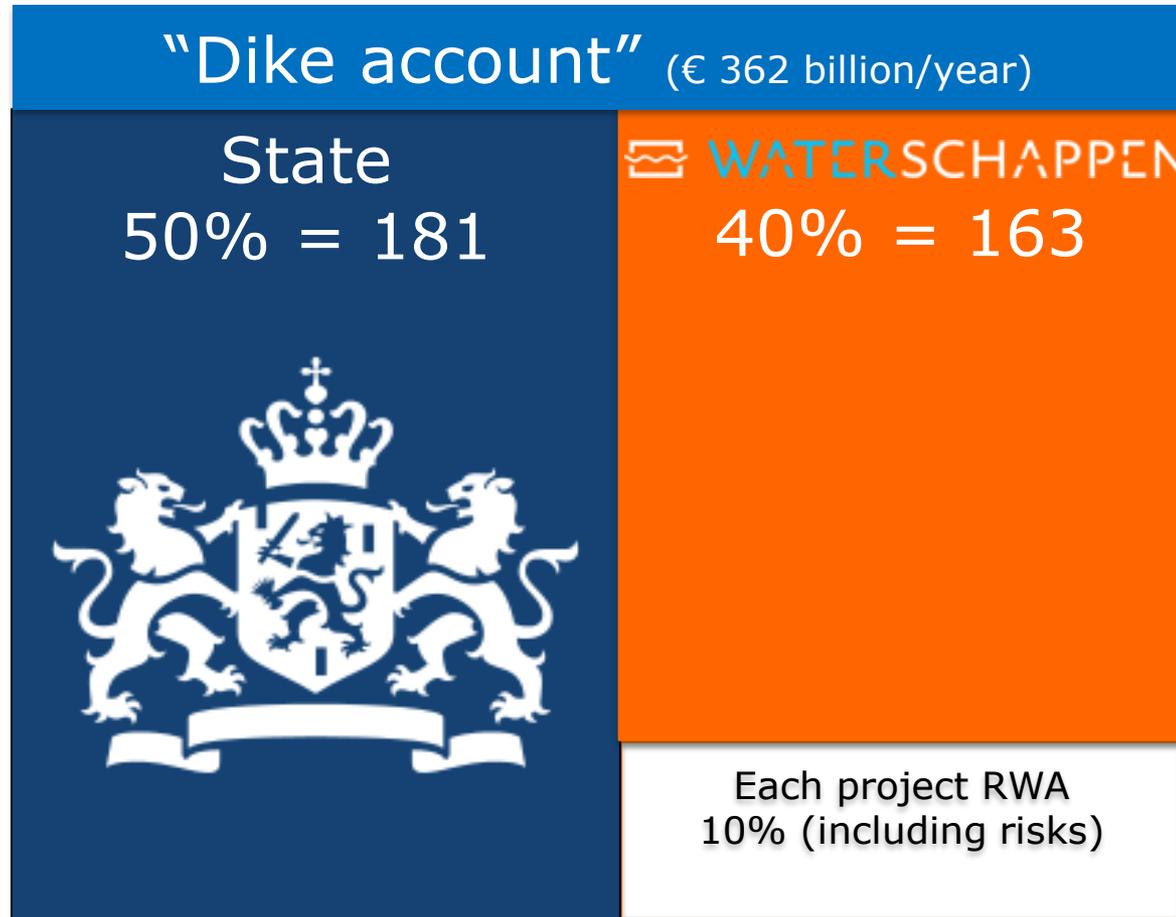
### Regional level

- Management of infrastructure (90%)

### *Dutch Flood Protection Programme*

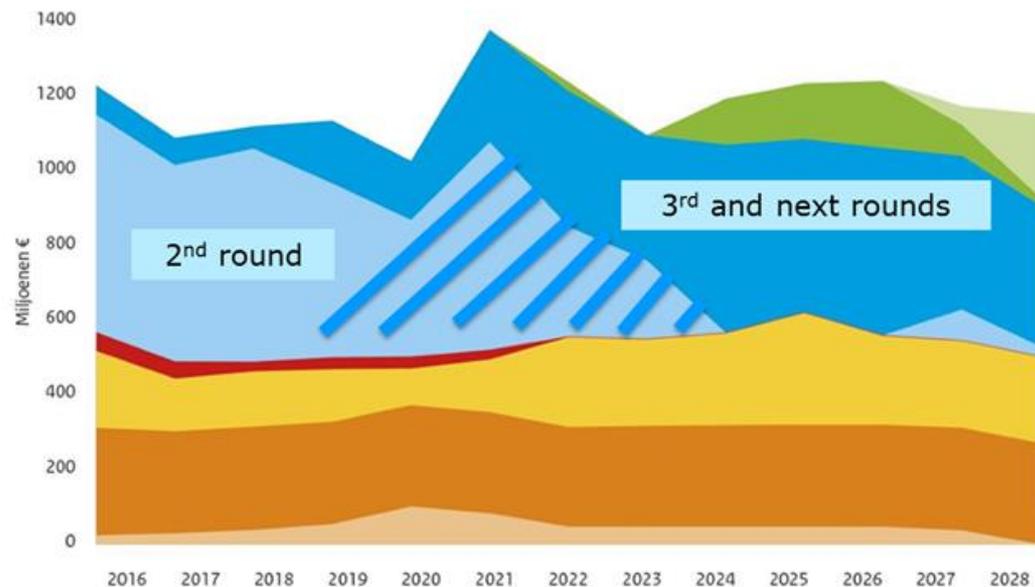
- Alliance between Ministry (Rijkswaterstaat) and regional water authorities
- Joint risk-based national programme
- Small unit as a 'shared service':
  - Programming-preparing budget
  - Financing projects
  - Facilitating projects
  - Education and Development
  - Stimulating innovation
  - Setting agenda for future issues

# Funding of flood protection budget (by law)

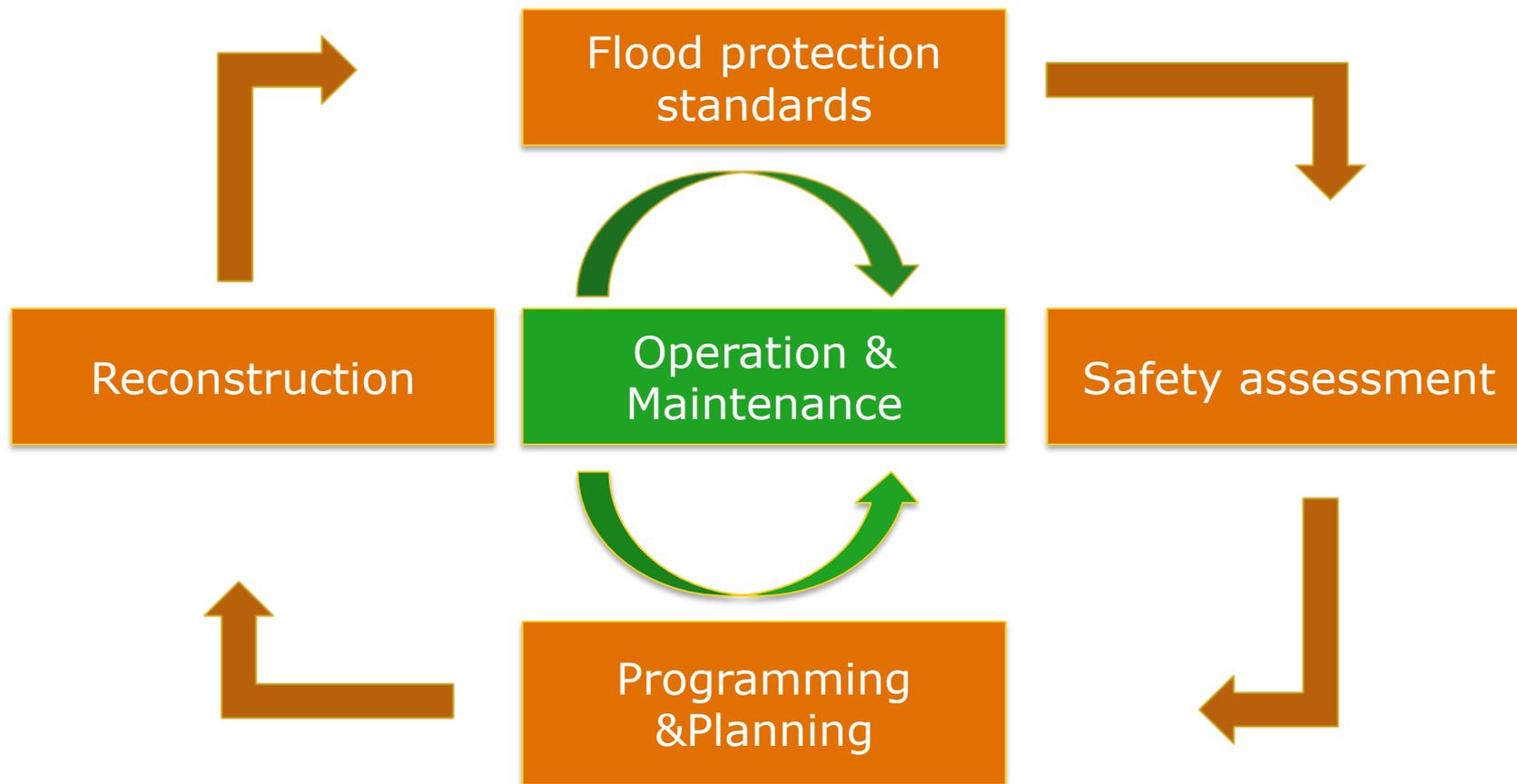


## Part of Delta fund (>2011)

- Flood protection and fresh water: total  $\approx 1,2$  billion €/year
- Operation and maintenance (40%)
- Investments (50%): DFPP 400 million €/year



## Safety assessment and asset management



## □ Primary flood defences

- Total length 3449 km (>2017, new standards)
- 90% managed by regional water authorities
- 10% managed by RWS



## Scope DFPP based on safety assessments

1996

- Statutory safety standards and start safety assessments

2001

- 1st safety assessment → DFPP1 (completed)

2006

- 2nd safety assessment (350 km) → DFPP2 (running until 2021)

2011-  
2013

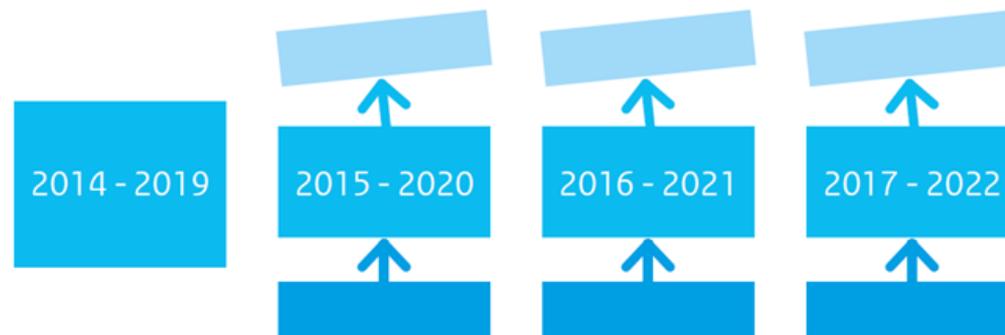
- 3rd safety assessment (748 km) and governance agreement → new DFPP (started in 2014; continuous approach)

2017 ev

- New statutory safety standards and start safety assessments (completed in 2023, now already +172 km)

## Prioritization of flood protection reconstruction

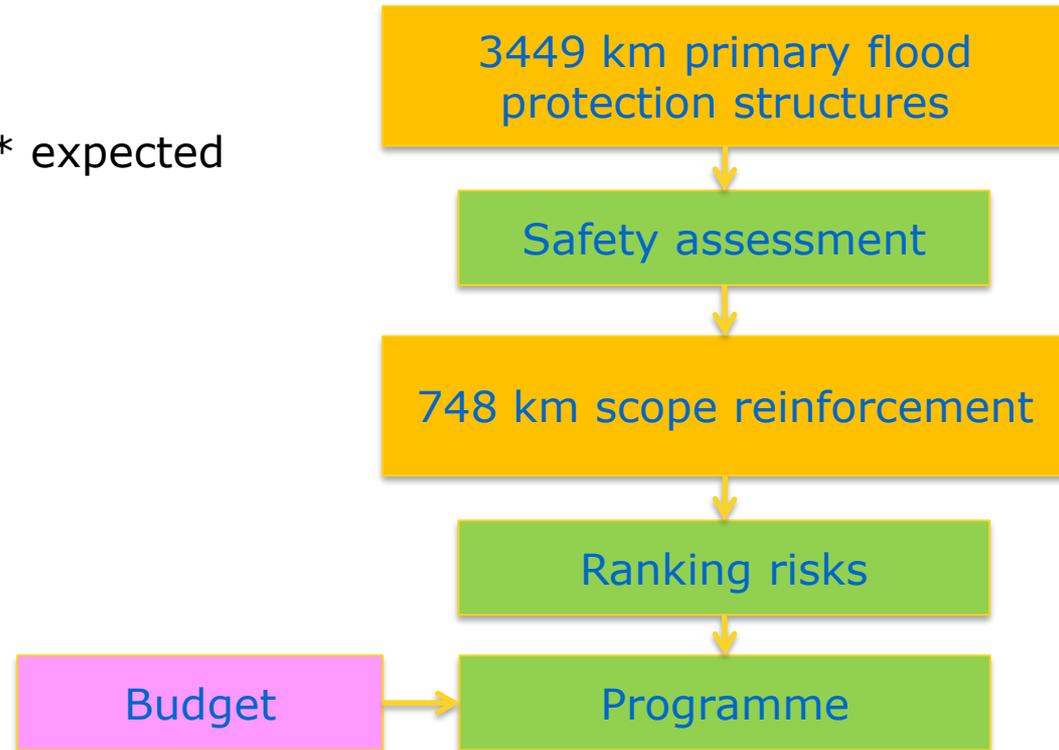
- Yearly risk based programme (6+6 years ahead; part of the Delta programme)
- Updating programme based on:
  - Running projects (changes in scope, planning, costs)
  - New projects (based on safety assessments and additional budget)
  - Budget is extended 'automatically' every year
- Draft programme is presented in every region in order to:
  - Check on project data;
  - Identify options for linking projects with other issues;
  - Prepare regional partners and improve commitment to the programme;



## ❑ Risk based programming

- Developed in 2011
- Risk = probability of failure \* expected damages (€)

|        |            | Kans   |             |              |
|--------|------------|--------|-------------|--------------|
|        |            | Urgent | Meer urgent | Meest urgent |
| Gevolg | > 10 MLD   | 24     | 5           | 7            |
|        | 1 - 10 MLD | 91     | 39          | 25           |
|        | 0 - 1 MLD  | 257    | 145         | 184          |



## □ Scope of DFPP

- Initial scope: 3<sup>rd</sup> national safety assessment (2011)
  - 748 km
  - 275 objects
- Expected new scope:
  - 4<sup>th</sup> national safety assessment
  - Expected: ± 1900 km
  - Most urgent expected projected have been added to the programme (172 km and 193 objects)
  - Goal Delta programme is to meet the new standards in 2050



## Financing projects

- Regular projects:
  - Predetermined subsidy of 90% per project phase (estimated costs)
  - Including reservation for risks (no risk reservation for the programme)
- Innovation projects:
  - Subsequently determined subsidy of 100% per project phase (actual costs)
- Advance financing
  - Allows projects to be started earlier than according to risk ranking
  - Regional authorities pay in advance (including interest costs)
  - 20% of 'new' budget in year T+6 is reserved for paying back
  - Optional: paying back earlier based on actual realisation of the programme

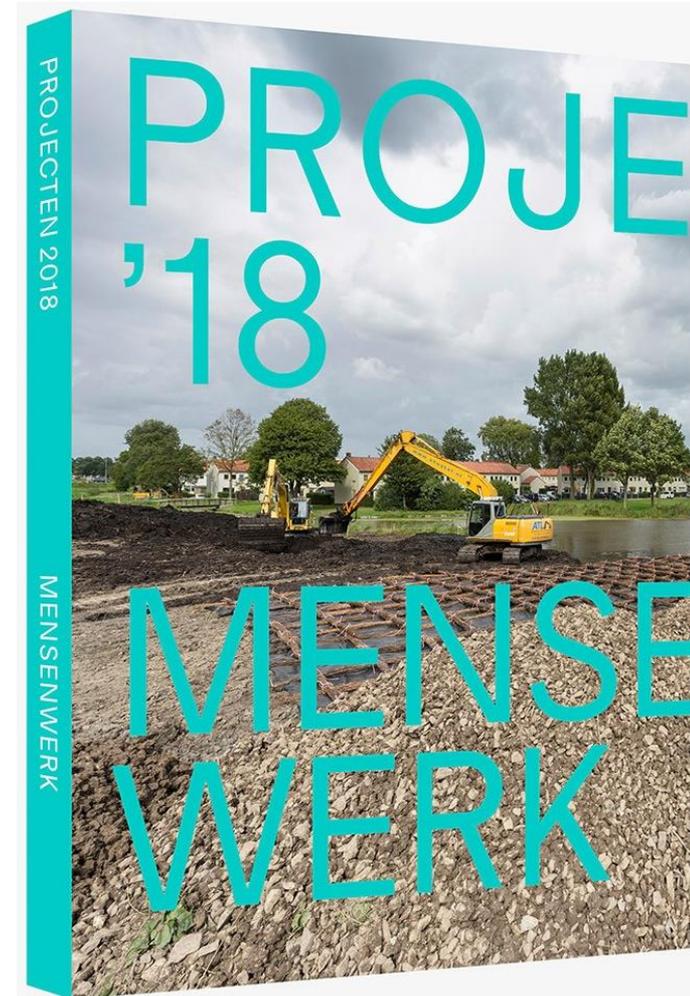
## State of the art

### ❑ Projects 2018 (2018-2023)

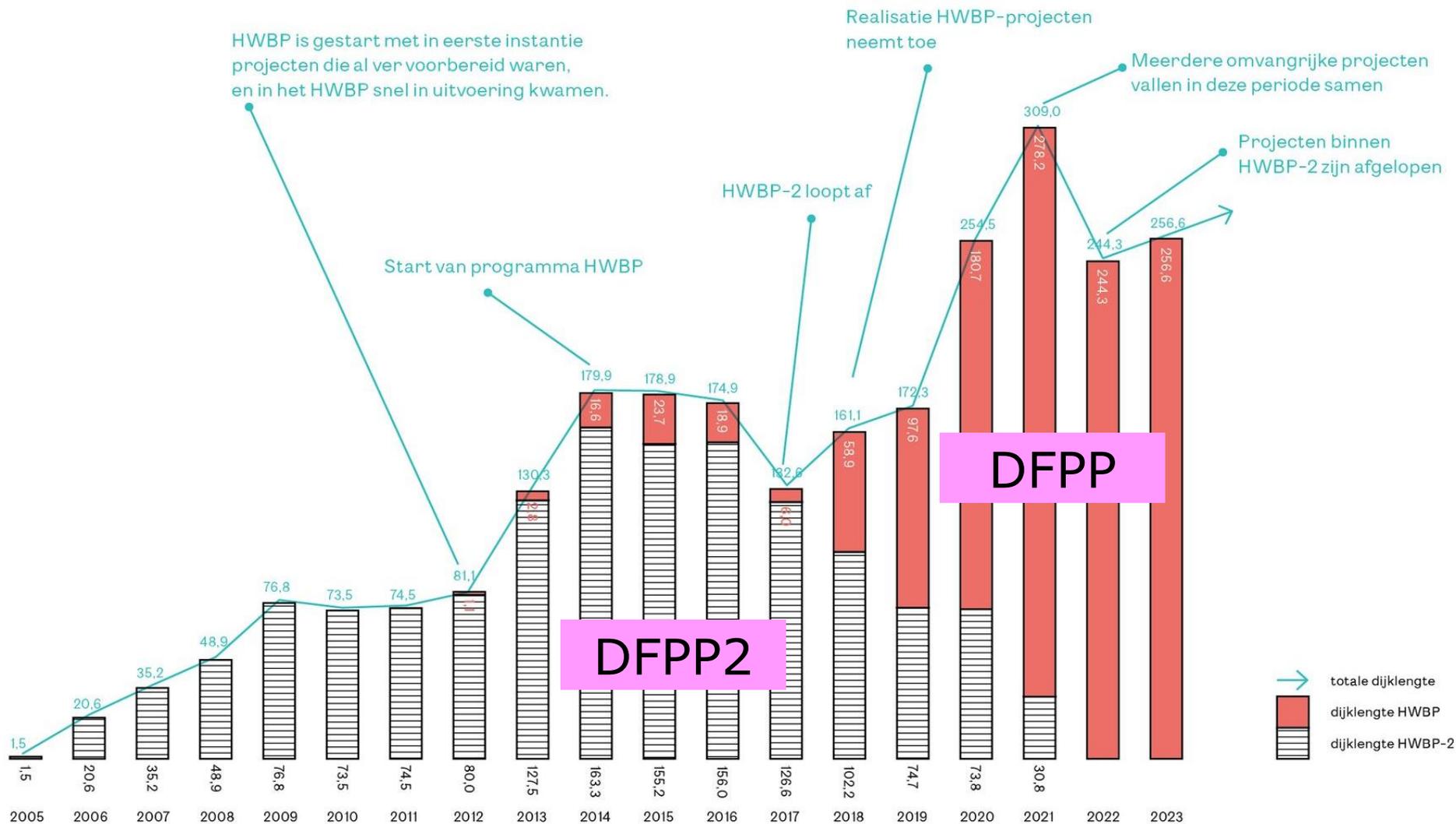
- 79 projects
- 7 transcending innovation programmes
- 922 km in scope
- 325 km completed in 2023
- 2,1 billion €

### ❑ 7 transcending innovation programmes

- Piping (technical)
- Macro-instability (technical)
- Waddenzee (Delta programme)
- Effect of foreshores (Delta programme)
- System measures Vecht (Delta programme)
- Pipes (process improvement)
- Using local soils (sustainability)



# Kilometres under construction DFPP2 and DFPP



## Programme goals DFPP

- Pace: from 25 to 50 km/year  
(quicker)
- Costs: from 9 M€/km to 6-7 M€/km  
(cheaper, smarter)
- Anticipating Delta decisions
  - New standards
  - Regional strategies

(using new tools and fitting in with strategic goals)
- Sustainable and integral projects  
(smarter with more added value and support)



## Challenges

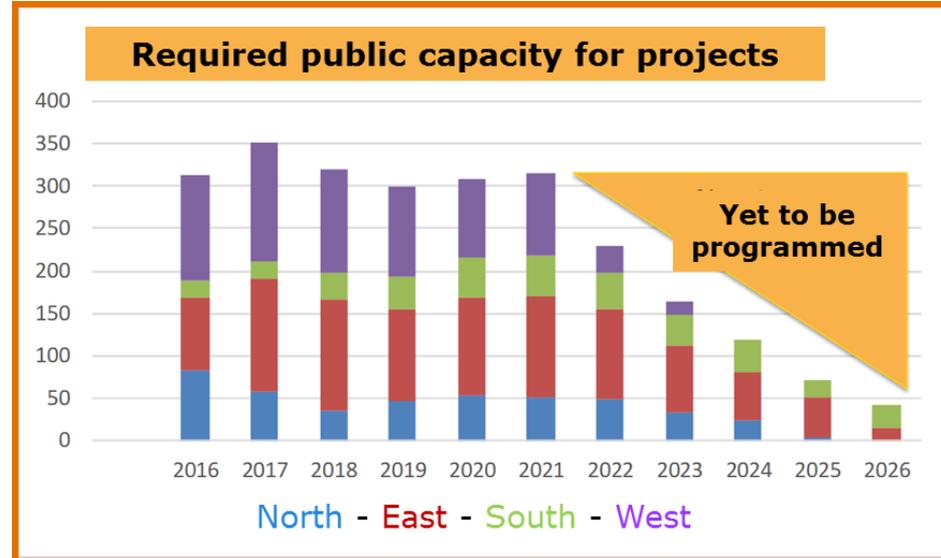
### ❑ Innovation (50 km/year and 6 M€/km)

- Focus on pilots and test-sites
- Projects in the lead
  - Not: 2% budget for innovation
  - Stimulation by DFPP:
    - 100% subsidy (instead of 90%)
    - Sharing risk within the programme
  - After 3 years: ± 80 M€ invested!!
- Taskforce Delta Technology: early involvement consultants, contractors and researchers



## ❑ Capacity building and training

- Public capacity
  - On average 300+ skilled people required for project management
  - Multiply by 3 for total capacity
  - Large differences between and within regions
  - Excluding private capacity
- Training programme within the DFPP
  - ≈ 1000 course days per year
  - Both soft and hard skills
- For the future: focus on universities (applied science)



## ❑ Sharing knowledge/expertise

- Communities around themes and/or projects run by partners within the alliance (not the central programme organization)
- Face to face
- On-line (networkapp)

### Active communities (since beginning 2017)

- Communication
- Project management
- Technical management
- New safety standards
- Stakeholder management
- Human Resources
- Control
- Directors
- Researchers (via universities)



## ❑ Communication:

- Central communication is aimed at:
  - Public awareness
  - Professional partners (contractors, consultants, researcher)
  - Communities
- Project communication is aimed at stakeholder management for the project

## ❑ Monitoring and reporting:

- Programme: programme goals only, largely based on project reports
- Project(s): integral reporting, only within the responsible authority



Hoogwaterbeschermingsprogramma



