Securing water supply for future generations

保障未来世代的供水安全

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Water Europe, President

欧洲水组织（Water Europe）主席

De Watergroep, CEO

佛兰德斯水务公司（De Watergroep）首席执行官

China-EU Water Platform, February 3, 2026

中欧水资源平台 · 2026年2月3日

Agenda
议程

1. Water Europe: vision for a water-smart society
   欧洲水组织：迈向水智慧社会的愿景
2. De Watergroep: facts and figures
   佛兰德斯水务公司：关键数据概览
3. Water security
   水安全保障
   1. Challenges
      挑战
   2. Solutions
      解决方案
      - Source diversification 水源多元化
      - Innovative storage 创新型蓄水
      - Digitalisation 数字化转型

Water Europe

Technology & Innovation

The voice and promoter of water-related innovation and RTD in Europe

欧洲水领域创新与研发的倡导者与推动者

Who are we?
我们是谁？

Recognised voice and promoter of water-related innovation, research, and technology development in Europe
欧洲水相关创新、研究与技术发展的公认代表与推动力量

Mission
使命

- Improve **coordination and collaboration** in the water ecosystem in the EU and beyond
  促进欧盟内外水生态系统的**协调与合作**
- Enhance **performance and competitiveness** of the water ecosystem
  提升水生态系统的**绩效与竞争力**
- Contribute to solving **global water challenges** through RTD&I.
  通过研发与创新助力应对**全球水挑战**

Water Europe Strategy
欧洲水组织战略

- **Multi-stakeholder association** representing the entire range of actors in the innovative water ecosystem
  代表创新水生态系统中各方参与者的**多利益相关方协会**
- **Purpose-driven association:** Water Vision
  以愿景为导向的协会：水（智慧社会）愿景

College A: Multinational corporations
学院A：跨国公司

College B: Research & Technology developers
学院B：研究与技术开发者

College C: Utilities
学院C：公用事业机构

College D: Suppliers & SMEs
学院D：供应商与中小企业

College E: Large water users
学院E：大型用水户

College F: Public Authorities
学院F：公共管理机构

College G: Civil Society Organisations
学院G：社会组织

Water Vision 2023
2023年水愿景

Water-Smart Society:
水智慧社会

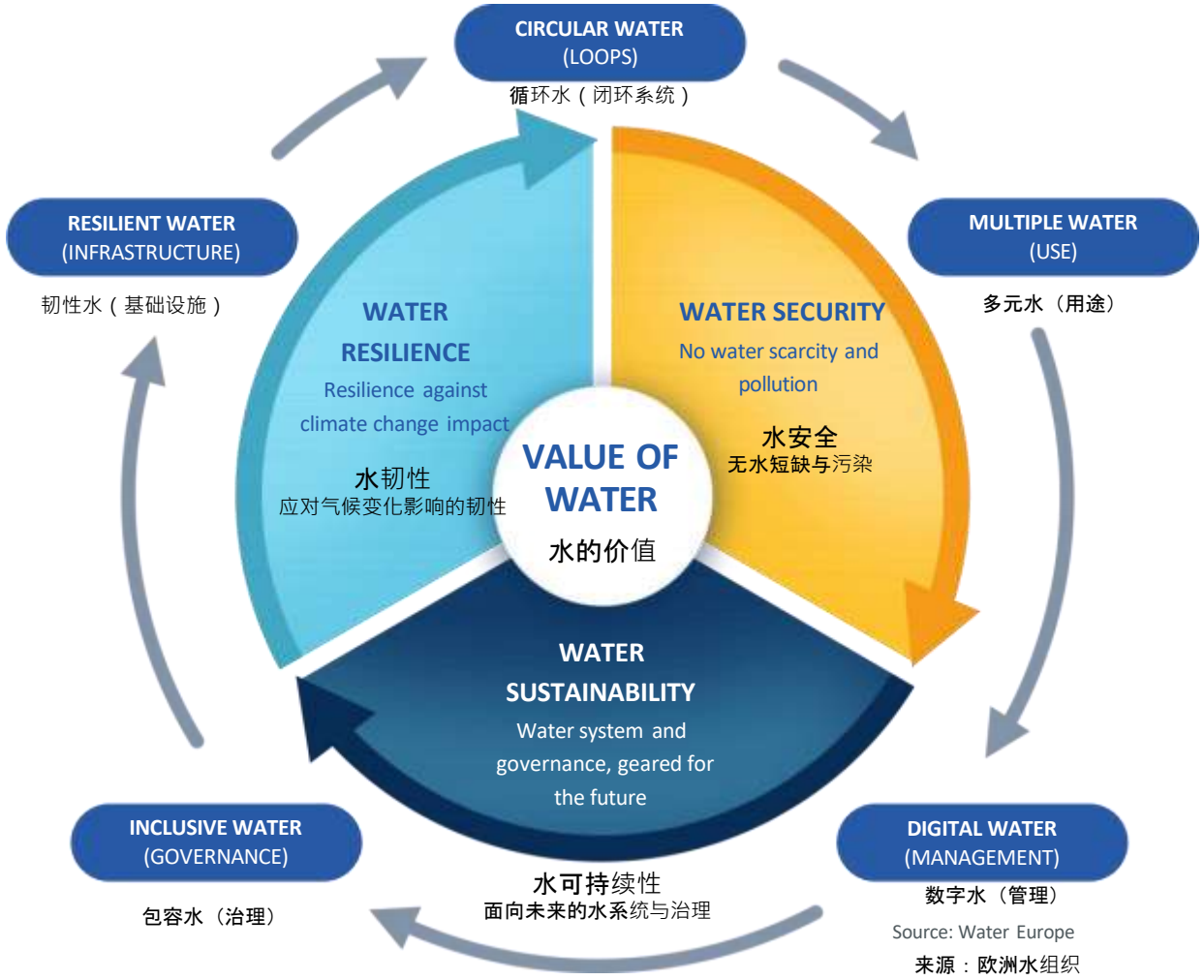
- A society in which the **value of water** is recognised and realised to ensure water security, sustainability, and resilience.
  一个认识并实现**水价值的社会，以确保水安全、可持**续性与韧性。

- all available water sources are managed so **that water scarcity and pollution** are avoided.
  所有可用水源均得到妥善管理，以避免缺水与污染。

- water and resource loops are largely closed to foster **a circular economy and optimal resource efficiency**.
  水与资源循环高度闭合，以促进**循环经济与最优资源效率**。

- the water system is resilient against the **impact of climate and demographic change**.
  水系统具备应对**气候与人口变化影响的**韧性。

- all relevant stakeholders are engaged in guaranteeing sustainable **water governance**.
  所有相关利益相关方共同参与，保障可持续的**水治理**。



Source: Water Europe
来源：欧洲水组织

Water Europe organisational matrix
欧洲水组织组织架构矩阵

Water Europe
欧洲水组织

Key Events
重要活动

Expert Groups Workshops are held back-to-back to each event
专家小组研讨会与各项活动密集衔接举办

All WE members have **free access to all events**
全体组织成员皆可免费参与所有活动

WE Water Innovation Europe

WE Advocacy Programme raises the awareness of the value of water for our society and economy, and promotes the uptake of innovative solutions through European policy-making and legislation.

Water Innovation Europe brings together all the aspects of the water sector and offers an open platform for information gathering and networking among the most influential stakeholders from within and beyond the water sector.

Opportunity to Present (Speaker):

- Your business, challenges and expectations – as a sponsor

Held in **JUNE** every year

欧洲水组织**倡**导计划旨在提升社会与经济对水价值的认**知**，**并通**过欧洲政策与立法推动创新解决方案的应用。

欧洲水创新大会汇聚水务各领域，为水务内外的关键利**益相关方提供信息交流与**协作的开放平台。

发言机会（**主**讲人）：
- **作**为赞助商，分享**您的**业务、挑战与展望

每年六月举行

WKE Water Knowledge Europe

WE Collaboration Programme allows our members to network, share knowledge and experiences, and collaborate along the whole water value chain, when addressing common challenges, developing and implementing new solutions, promoting the inclusion of water-related topics in European research and innovation funding programmes, and enabling them to shape successful project consortia.

Water Knowledge Europe features a range of EU officials and experts who present the European Funding Calls, sharing their insights with you and providing guidance.

Opportunity to Present (Speaker):

- Project Ideas

Held in **OCTOBER** every year

欧洲水组织合作计划助力会员建立网络、分享知识与经验，并围绕共同挑战在全水价值链展开协作，包括开发**与**实施新解决方案、推动水议题纳入欧洲研发与创新资**助**计划，并协助构建成功的项目联合体。

欧洲水知识大会邀请欧盟官员与专家解读欧洲资金征集计划，分享见解并提供指导。

发言机会（主讲人）：
- 项目构想

每年十月举行

WME Water Market Europe

WE Implementation Programme assists our members in the implementation of their research results and innovative solutions, as well as their further uptake in markets in Europe and beyond. A key instrument in this implementation effort are Water-Oriented Living Labs (WOLLs).

Water Market Europe is made for you to address challenges and needs for innovation by matchmaking the demand and the offer for efficient solutions.

Opportunity to Present (Speaker):

- Challenges that require technology innovative solutions
- Solutions that have terrific market opportunity

Held in **MARCH** every year

欧洲水组织实施计划协助会员推动研究成果与创新解决**方案的落地**，**并促**进其在欧洲及全球市场的进一步应用。**水**导向生活实验室（WOLLs）**是**实施该计划的关键工具。

欧洲水市场旨在通过为高效解决方案的需求方和供给方进行匹配，帮助您应对挑战与创新需求。

发言机会（主讲人）：
- **需要技**术创新解决方案的挑战
- **具有巨大市**场机遇的解决方案

每年三月举行。

WPE Water Projects Europe

Water Projects Europe (WPE) is a series of events of Water Europe made to learn from and build on the experience of innovating projects working on converging topics. The event's objectives are:

- Foster collaboration and synergies between EU-funded projects.
- Develop strategies for the market outreach of the projects' outcomes.
- Extract and valorise components useful to policy building.

Held **2-3 times** every year

欧洲水项目大会（WPE）**是一系列旨在学**习并借鉴同类**主**题创新项目经验的活动。其目标包括：

- **促**进欧盟资助项目之间的协作与协同。
- **制定**项目成果市场推广的策略。
- **提取并**转化对政策制定有价值的要素。

每年举办**2-3次**

Water Europe Key Publications
欧洲水组织的重要出版物

De Watergroep: facts and figures
佛兰德斯水务公司：关键数据概览

De Watergroep
WATER. VANDAAG EN MORGEN.

De Watergroep
佛兰德斯水务公司

Founded as
Nationale Maatschappij der Waterleiding (NMDW)
其前身为比利时国家供水公司（NMDW）

De Watergroep = largest water company in Flanders
De Watergroep = 佛兰德斯地区最大的水务公司

Autonomous public company
是一间具有自主经营权的公有企业

De Watergroep
WATER. VANDAAG EN MORGEN.

Facts and figures (1)
关键数据（1）

76
water towers
76座水塔

87
ground water abstractions
87处地下水取水点

1,5 million
connections in service
150万处供水连接点

54
reservoirs
54座水库

5
surface water abstractions
5处地表水取水点

34.839
km of pipelines
34,839公里管道

3,4 million
customers in Flanders
服务佛兰德斯地区340万客户

167
municipalities
覆盖167个市镇

Facts and figures(2)
关键数据（2）

838 million
euro revenue
8.38亿欧元营业收入

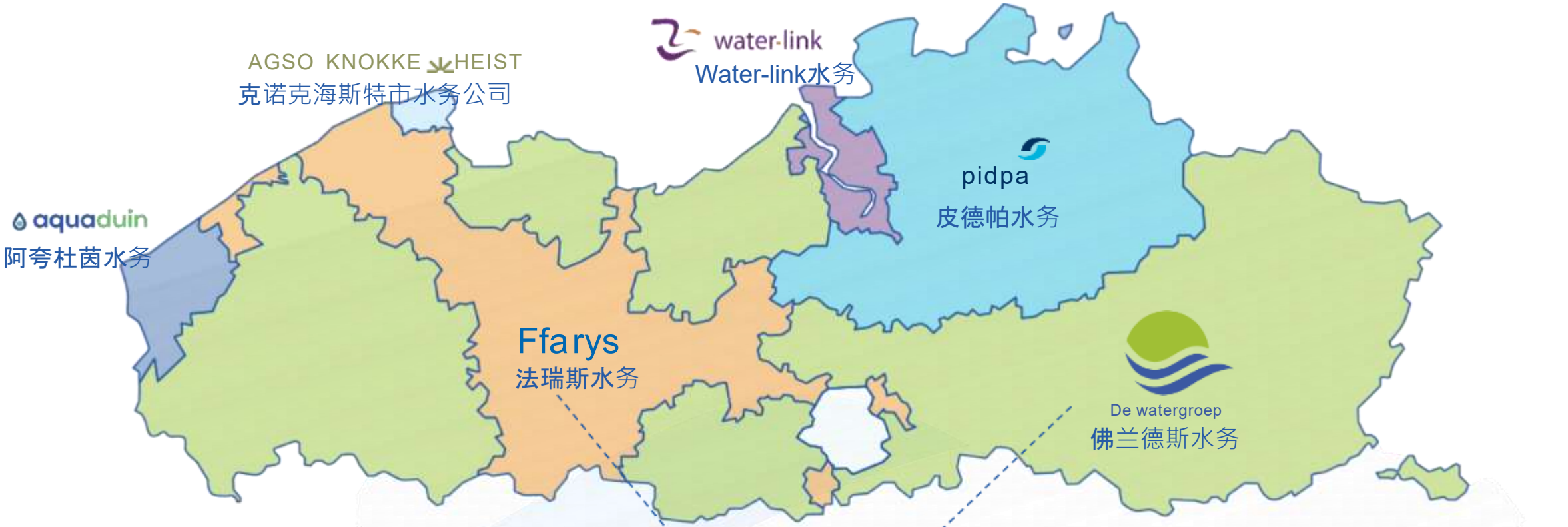
6,7 million
euro loss
670万欧元亏损

1.651
employees
1,651名员工

124 million
produced water (m³)
1.24亿立方米产水量

171 million
water available for distribution (m³)
1.71亿立方米可供配水水量

Drinking water in Flanders
佛兰德斯的饮用水供应



merger in 2027
将于2027年合并

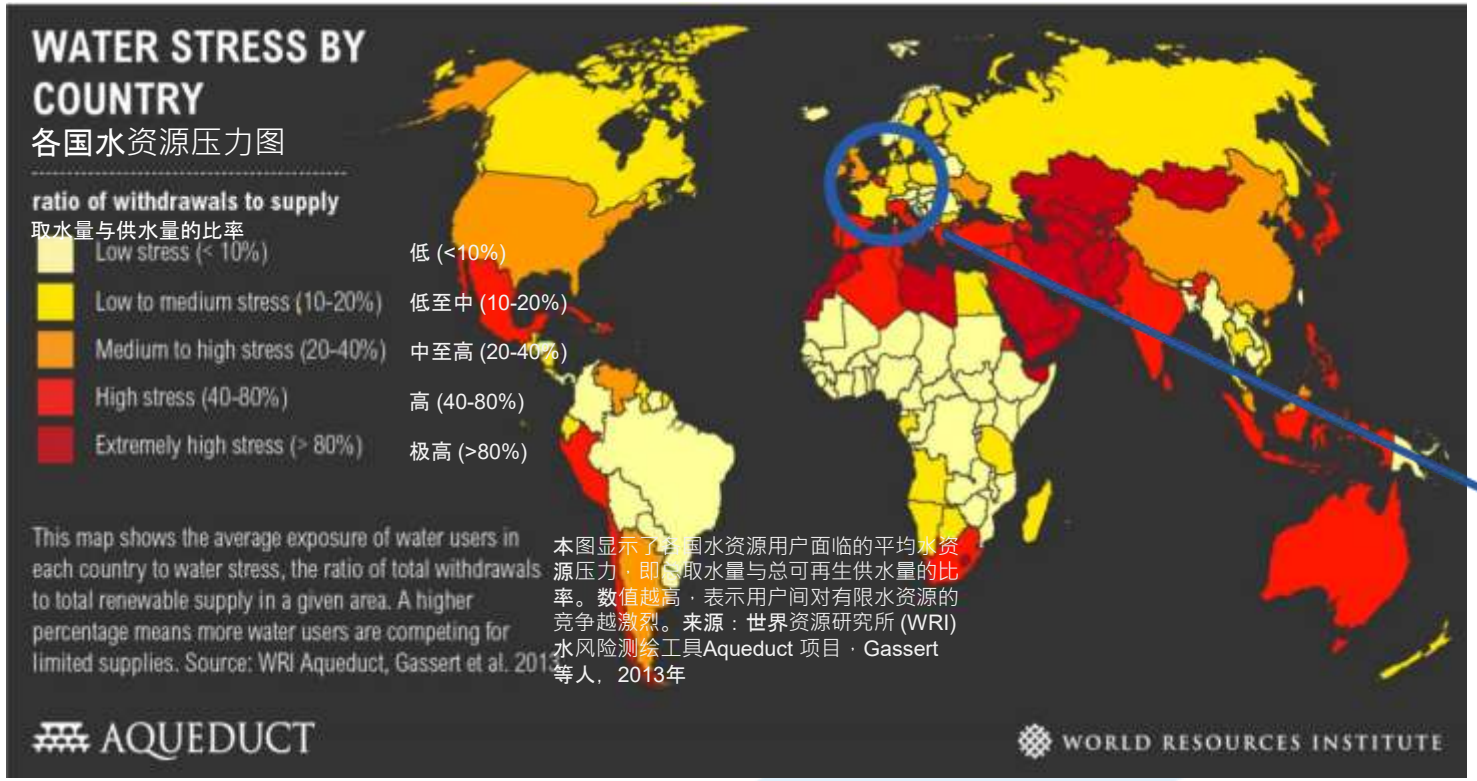
Water security
水安全

De Watergroep
WATER VANDAAG EN MORGEN.

Water security: challenges
水安全：挑战

De Watergroep
WATER. VANDAAG EN MORGEN.

Water scarcity in Belgium
比利时的水资源短缺状况

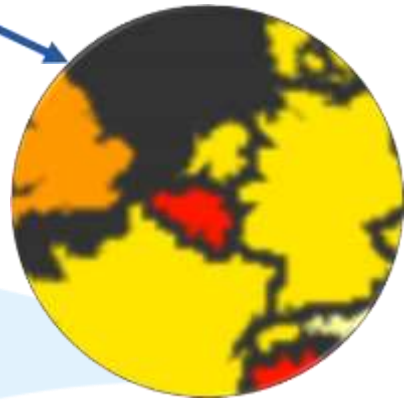


Low water availability
水资源可获得性低

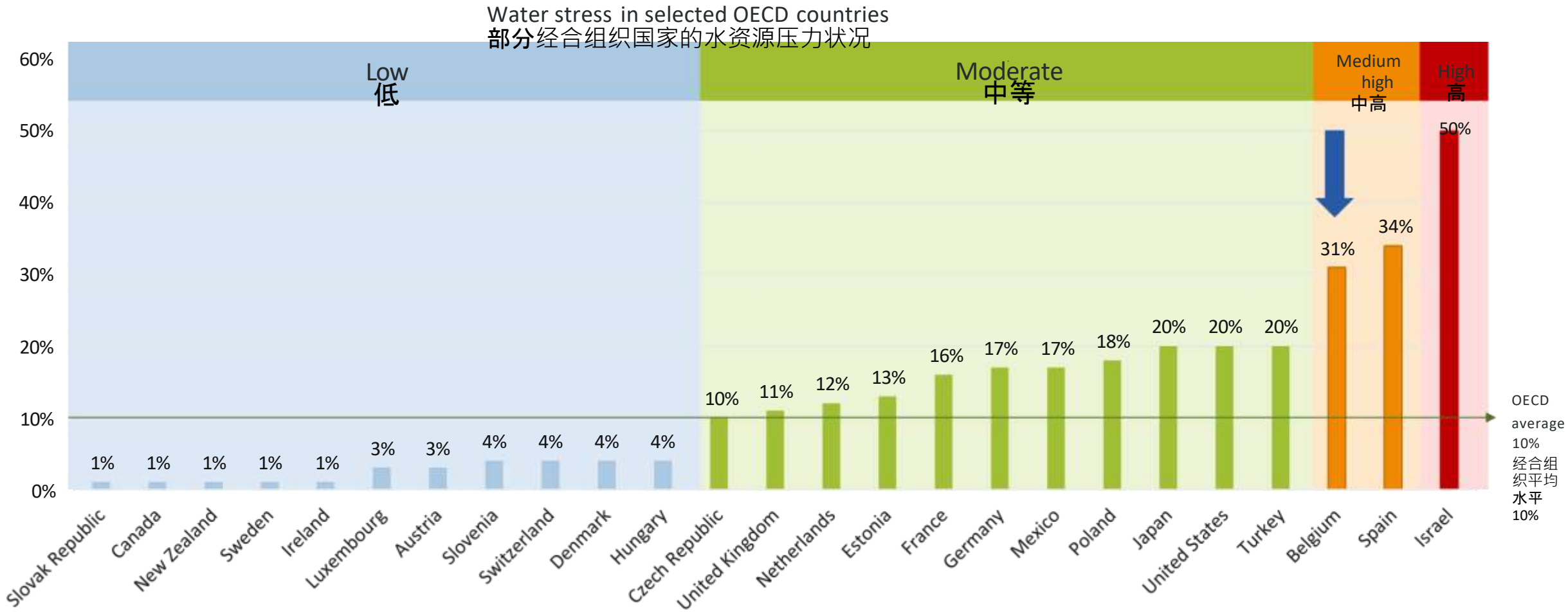
\+

High water demand
高水资源需求量

(high population density, intensive agriculture and high industrial demands)
（高人口密度、集约农业和高工业需求）



Water scarcity in Belgium
比利时的水资源短缺状况



上图从左至右：斯洛伐克共和国，加拿大，新西兰，瑞典，爱尔兰，卢森堡，奥地利，斯洛文尼亚，瑞士，丹麦，匈牙利，英国，荷兰，捷克共和国，爱沙尼亚，法国，德国，墨西哥，波兰，日本，美国，西班牙，以色列

Weather extremes: droughts and floods
极端天气：干旱与洪涝

Water quality
水质问题

Large investments required for distrubution and production assets
配水与生产设施需大量投资

- Infrastructure renovations
  基础设施更新
- Interconnectivity water network
  水网互联互通
- Leakage reduction programme
  漏损控制计划
- Legislation (water quality)
  法规（水质要求）
- Digitalisation
  数字化转型

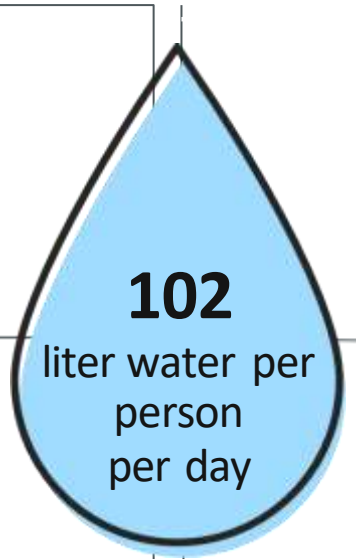
Water consumption in Flanders
佛兰德斯的用水量

Very low compared to other regions and countries
相较于其他地区与国家处于较低水平

Tap water
自来水 **87%**

Rain water
雨水 **11%**

Ground water
地下水 **2%**



1 Primary consumption – drinking quality 16%

主要消耗 – 饮用水 16%

2 Primary consumption – personal hygiene 37%

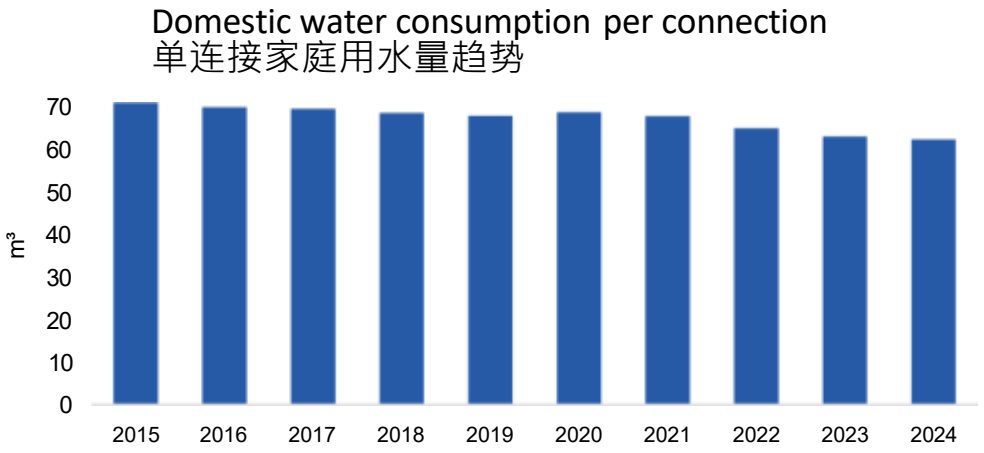
主要消耗 – 个人卫生 37%

3 Secondary consumption 47%

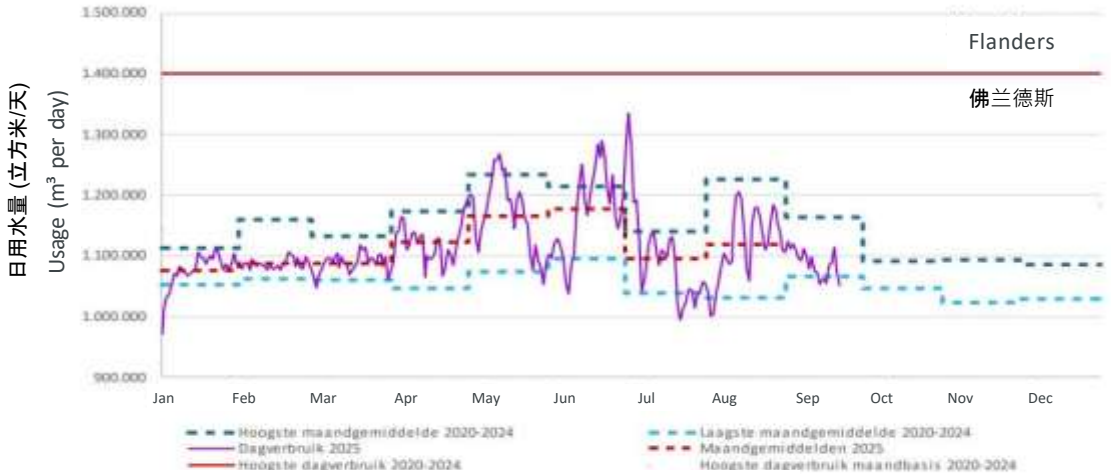
次要消耗 47%

Figures: 2022

Water consumption in Flanders
佛兰德斯的用水量



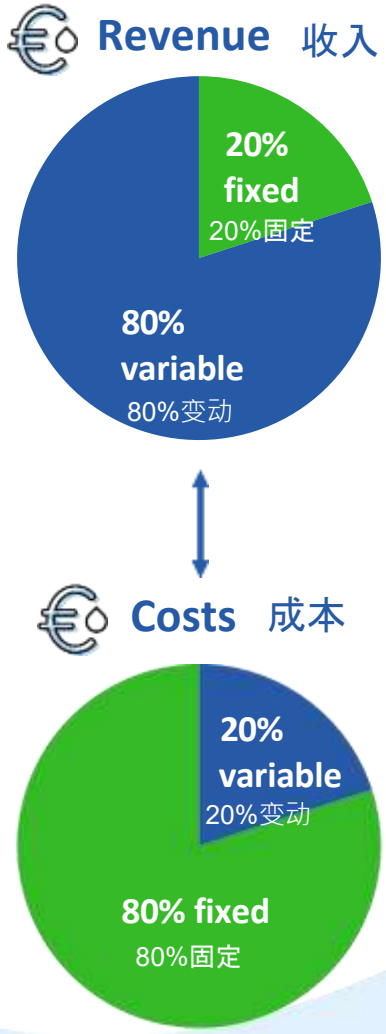
Declining average Consumption
平均用水量下降

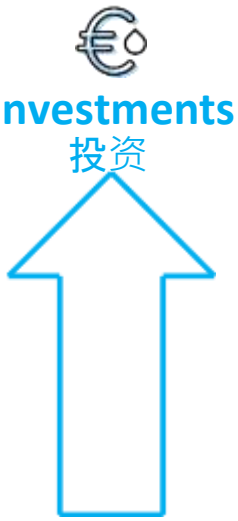


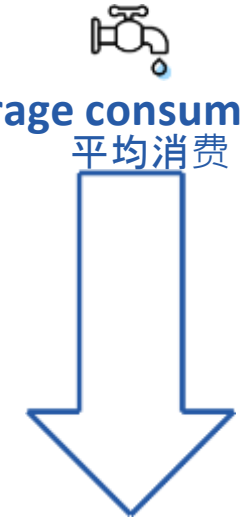
Increasing peak Consumption
峰值用水量上升

Attention: y-axis starts at 0,9 million m³ per day
注意：y轴起始值为每日**90万立方米**

Tariff structure not aligned with business
水价结构与业务需求不匹配







Water security: solutions
水安全：解决方案

De Watergroep
WATER. VANDAAG EN MORGEN.

Source Diversification
水源多样化

- Ground water
  地下水
- Surface water
  地表水
- Rainwater
  雨水
- Seawater
  海水
- Wastewater
  废水

Innovative Storage
创新型蓄水

Aquifer Storage and Recovery
含水层蓄水与恢复

Digitalisation
数字化转型

Circular systems
循环系统

- Collective rainwater collection
  集体雨水收集
- Secondary circuit systems (greywater)
  二次回路系统（灰水）

Source Protection
水源保护

Source diversification (seawater)
水源多元化（海水）

De Watergroep
WATER. VANDAAG EN MORGEN.

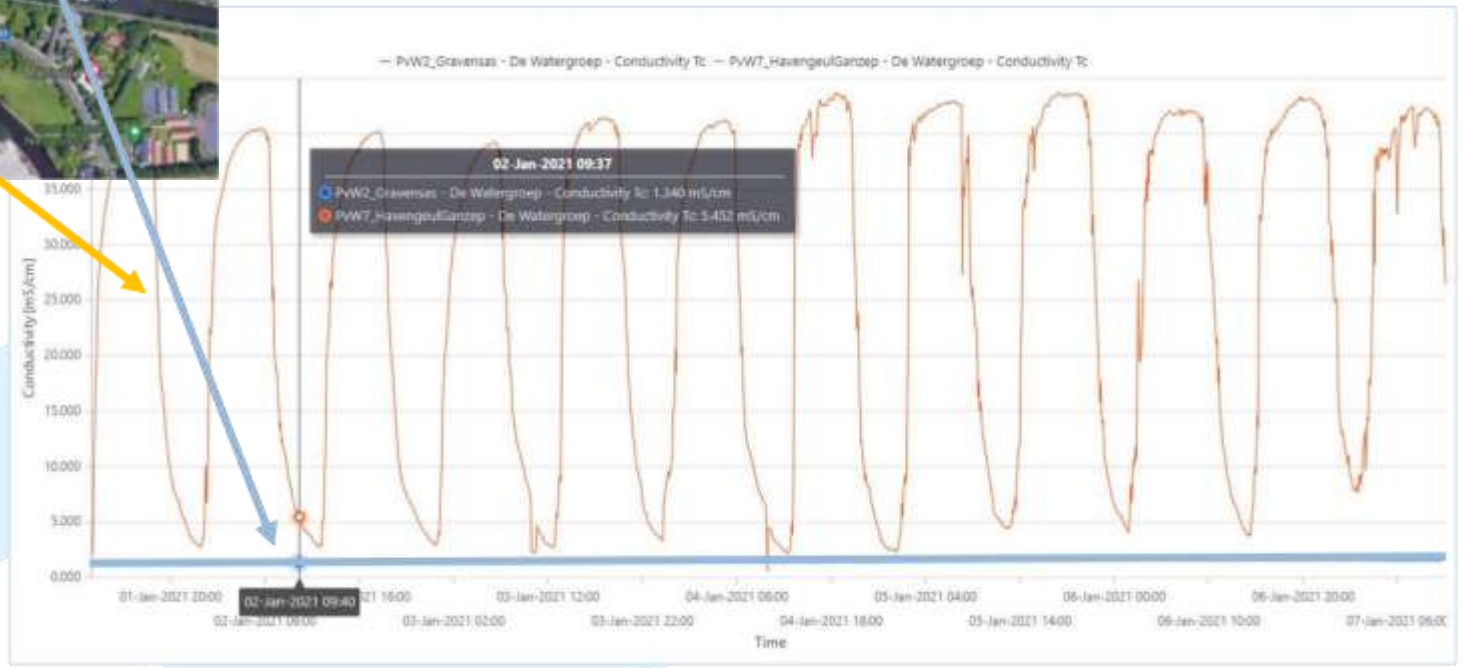
Desalination project: De Ganzepoot
海水淡化项目：De Ganzepoot

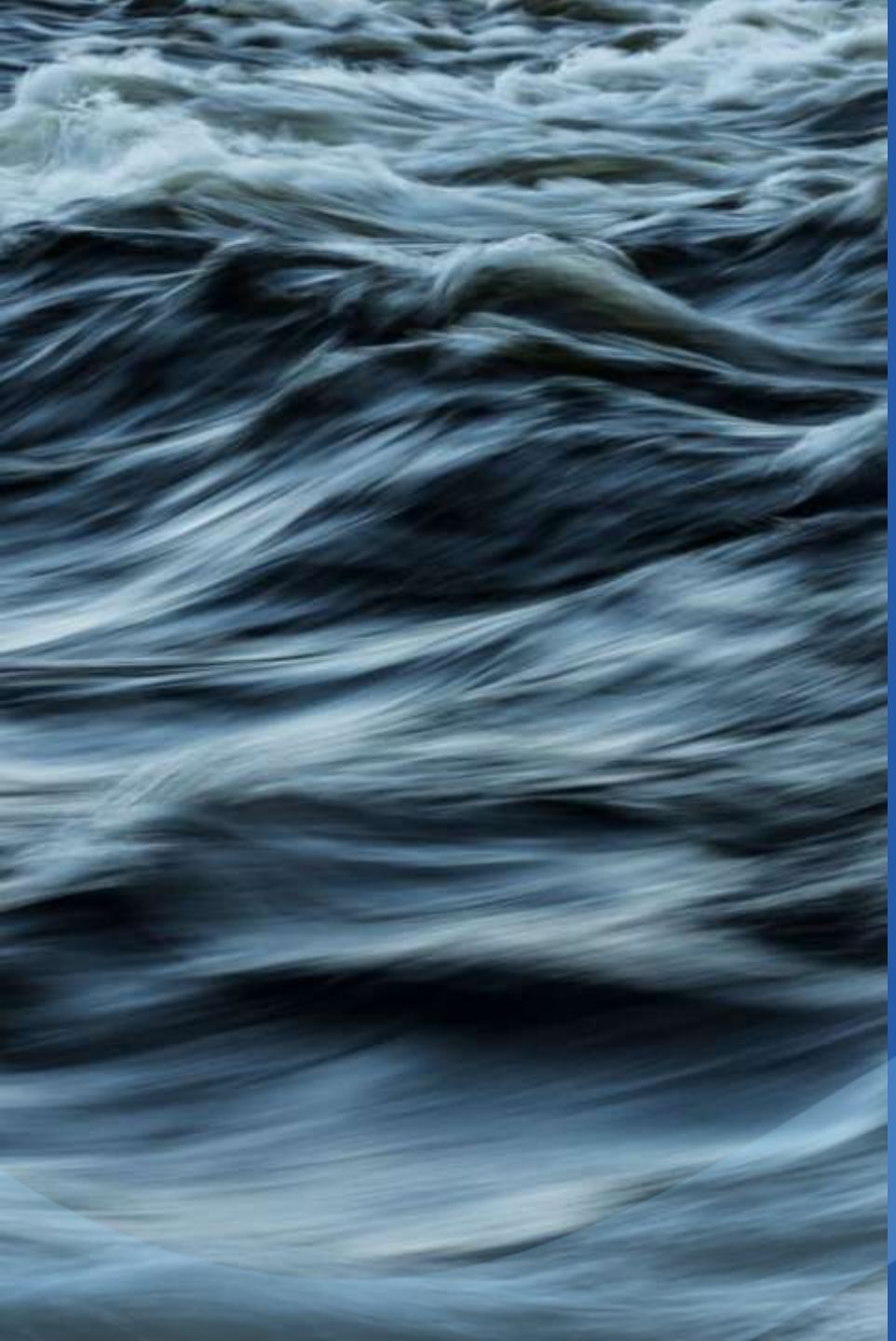
- Sluice complex
  船闸综合体
- Connection point 3 water companies
  Aquaduin, Farys en De Watergroep
  连接三家水务公司：Aquaduin、Farys、De Watergroep
- New water production centre
  新建水生产中心
- Tested technologies: balance between energy costs and infrastructure costs
  已测试技术：能源成本与基建成本的平衡
  - CCRO
    闭路式反渗透
  - SonixED
    超声波和电渗析的先进水处理技术
  - Nanofiltration
    纳滤

Variable water quality – variable source
多变的水质 · 多元的水源

Variability
变化性

- Surface water when available
  可用时取用地表水
- Tide influence: brackish water to seawater
  受潮汐影响：从微咸水至海水
- Treatment in function of source
  依水源特性进行相应处理





Source diversification (wastewater) and innovative storage

水源多元化（废水）与创新型蓄水

De Watergroep
WATER. VANDAAG EN MORGEN.

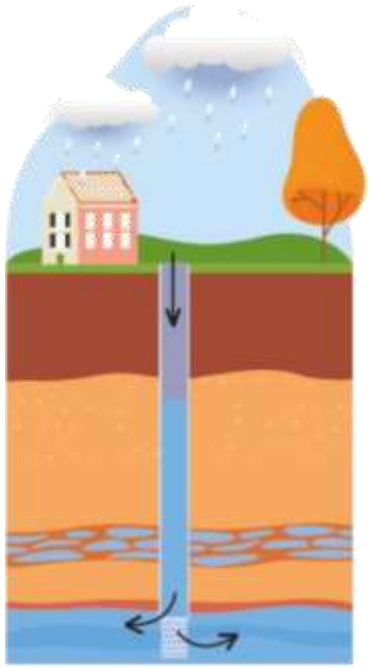
Innovative storage: Aquifer Storage and Recovery
创新型蓄水：含水层蓄水与恢复

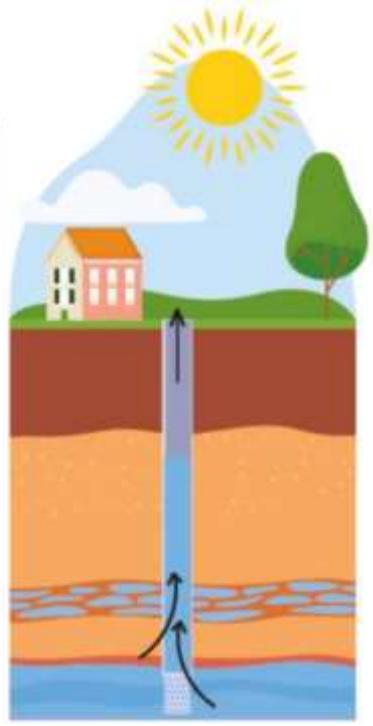
Create water 'batteries' through subterranean storage
通过地下蓄水创造水“电池”

Storage
蓄水

6 wet winter months
Inject/Store
= safeguard water
when available

湿润多雨的六个月冬季
注入/储存
= **在水源充足时保**护水资源





Recovery
恢复

6 dry summer months
Pump/Recover
= bring water to surface
when needed

干燥少雨的六个月夏季
抽取/回收
= **在需要时**将水输送至地表

Aquifer
含水层

Rock and/or sediments
that keep water in place
能将水固定储存的岩石和/**或沉**积物

Effluent reuse (wastewater)
废水回用（污水）

- 2022: call Flemish Environmental Authorities to stimulate WWTP Effluent reuse
  2022年：佛兰德斯环境部门呼吁促进污水处理厂出水回用
- Fits in broader action plan on water scarcity and drought
  纳入更广泛的缺水与干旱行动计划
  - Supported by European Recovery Plan 获欧洲复苏计划支持
  - Total budget 343 million euro 总预算3.43亿欧元
  - 323 projects 323个项目
- 5 projects funded in call effluent reuse
  5个项目获“**深度出水回用**”资助
  - deeper BLUE = Indirect Potable Reuse
    = 间接饮用回用BLUE计划
- 11 projects funded in call circular water
  11个项目获“**循**环水船”资助
- batteau = Aquifer Storage and Recovery of surface water
  = **地表水含水**层蓄水与恢复

BLUE DEAL

Vlaamse overheid

met steun van

Gefinancierd door de Europese Unie
NextGenerationEU

DE VLAAMSE VEERKRACHT

BLUE DEAL

Projects
项目

Oudenaarde
奥德纳尔德

- Drinking water injection
  饮用水回注
- Pump tests in 2022
  2022年泵试
- Injection tests in 2024
  2024年回注试验
- Capacity 40 – 50 m³/hour
  能力40–50立方米/小时)

Aalst – Hofstade
阿尔斯特–霍夫斯塔德

- Effluent injection
  污水处理厂出水回注
- Pump tests in 2023
  2023年泵试
- Injection tests in 2024
  2024年回注试验
- Capacity 20 – 30 m³/hour
  能力20–30立方米/小时)

9 Aalst – Gijzegem
阿尔斯特–吉泽海姆

- Drinking water injection
  饮用水回注
- Pump tests in 2023
  2023年泵试
- Injection tests 2025
  2025年回注试验
- Capacity of 50 m³/hour
  能力50立方米/小时)

Deep buffering for effluent reuse
出水回用的深度缓冲存储

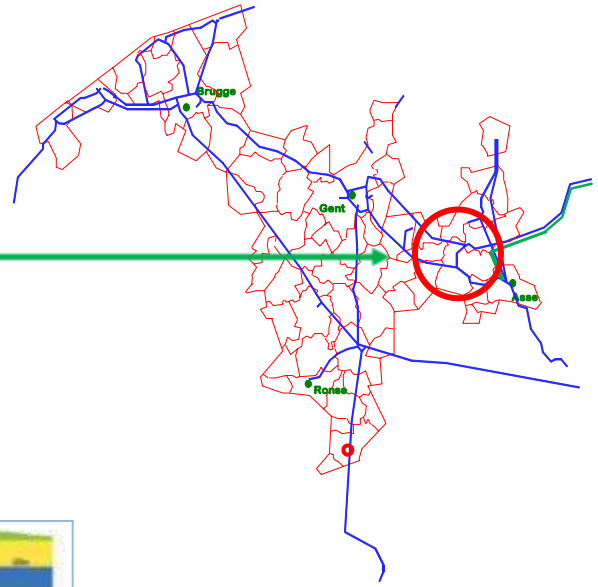
Aquafin

80 m^3/h

80立方米/小时

50 m^3/h

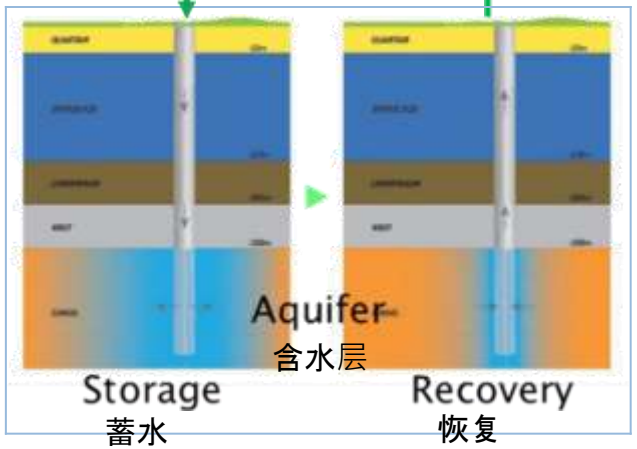
50立方米/小时



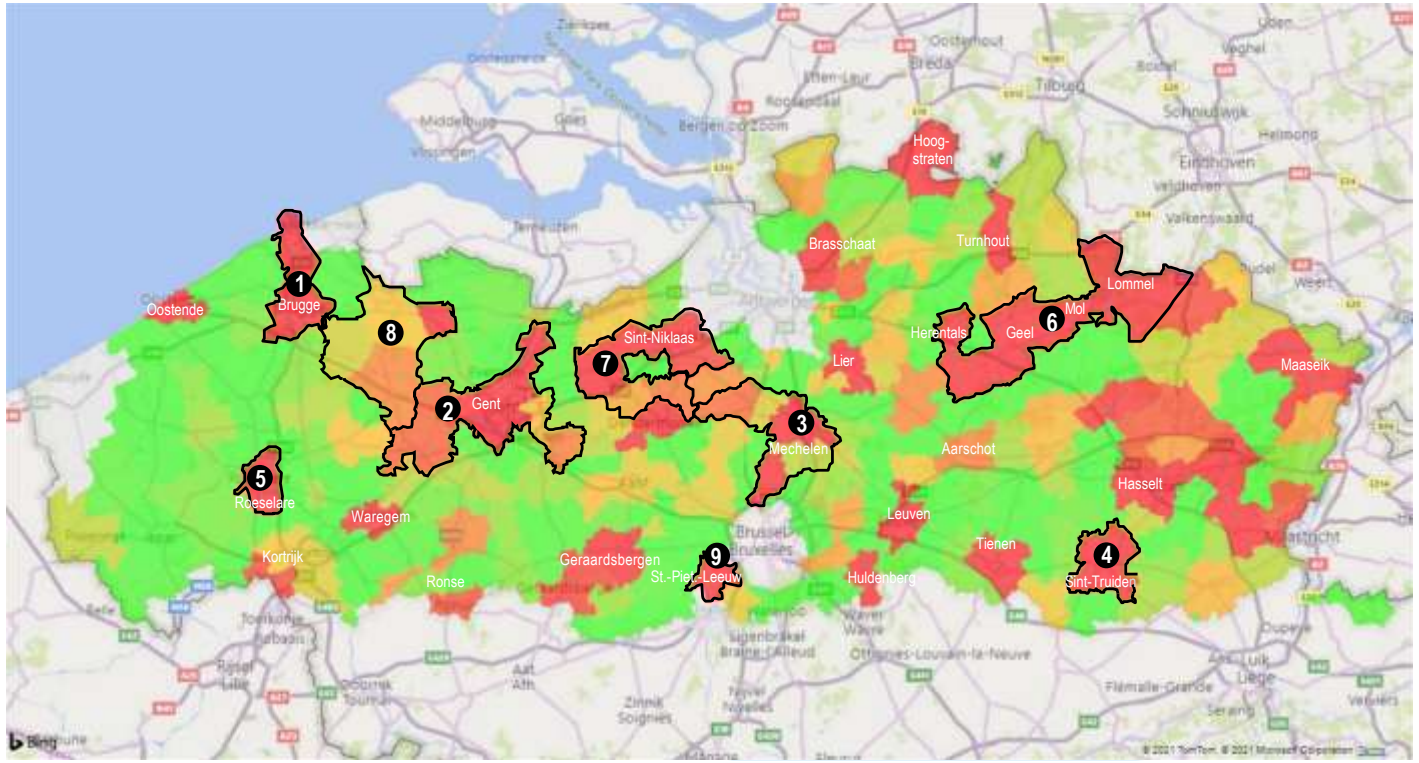
WWTP Aalst
阿尔斯特污水处理厂

90,000 inhabitants
服务 90,000 居民

>32,000 m^3/day
日处理能力 >32,000 立方米



Potential water reuse in Flanders
佛兰德斯地区的水回用潜力



8 locations with high potential for wastewater reuse in Flanders
佛兰德斯地区8个具有高废水回用潜力的地点

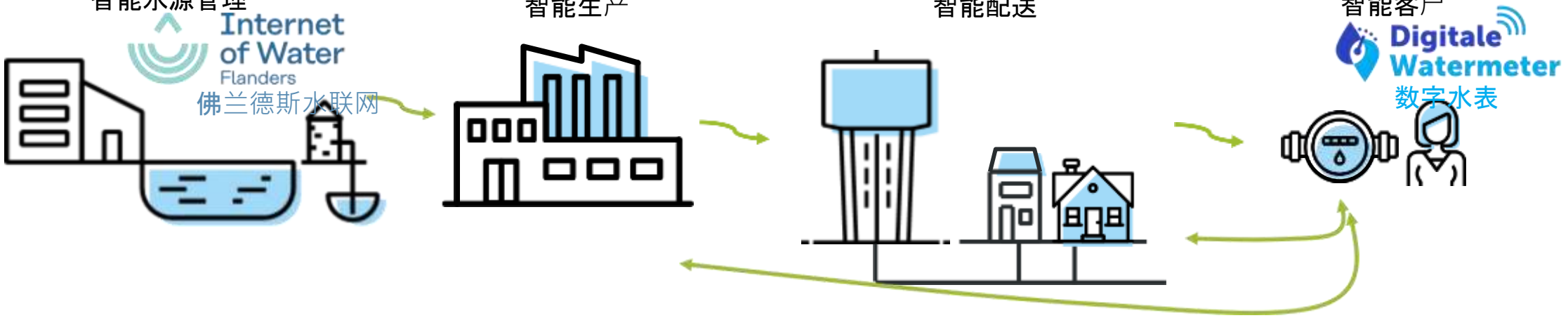
- Large WWTPs
  大型污水处理厂
- Major cities: high consumption
  主要城市：高用水需求
- Vulnerable groundwater extractions
  脆弱的地下水取水点
- Long transport pipelines
  长距离输水管道

Digitalisation
数字化转型

De Watergroep
WATER. VANDAAG EN MORGEN.

Digital water roadmap
数字水路线图

Smart source management	Smart production	Smart distribution	Smart customer
智能水源管理	智能生产	智能配送	智能客户



360°-insights

360°全景洞察

Results
实施成效

Digital water meters 智能水表

- **>200.000 installed** digital water meters (20%)
  已安装>20万块智能水表（**覆盖率**20%）
- Budget-neutral within 15 year

  15**年内**实现预算平衡
- Different societal benefits: more water awareness, less leaks, less paper and transport …
  多项社会效益：提升节水意识、减少漏损、降低纸质账单与运输成本等

Internet of Water Flanders 佛兰德斯水联网

- **50 real-time water quality sensors installed in surface water**
  在地表水布设50个实时水质传感器
- **700.000 euros annual savings** (annual cost of 150.000 euros)
  年节省70万欧元（年运营成本15**万欧元**）
- Optimalisation water in-take water reservoir De Blankaart
  优化De Blankaart**水**库取水调度

Leak reduction 漏损控制

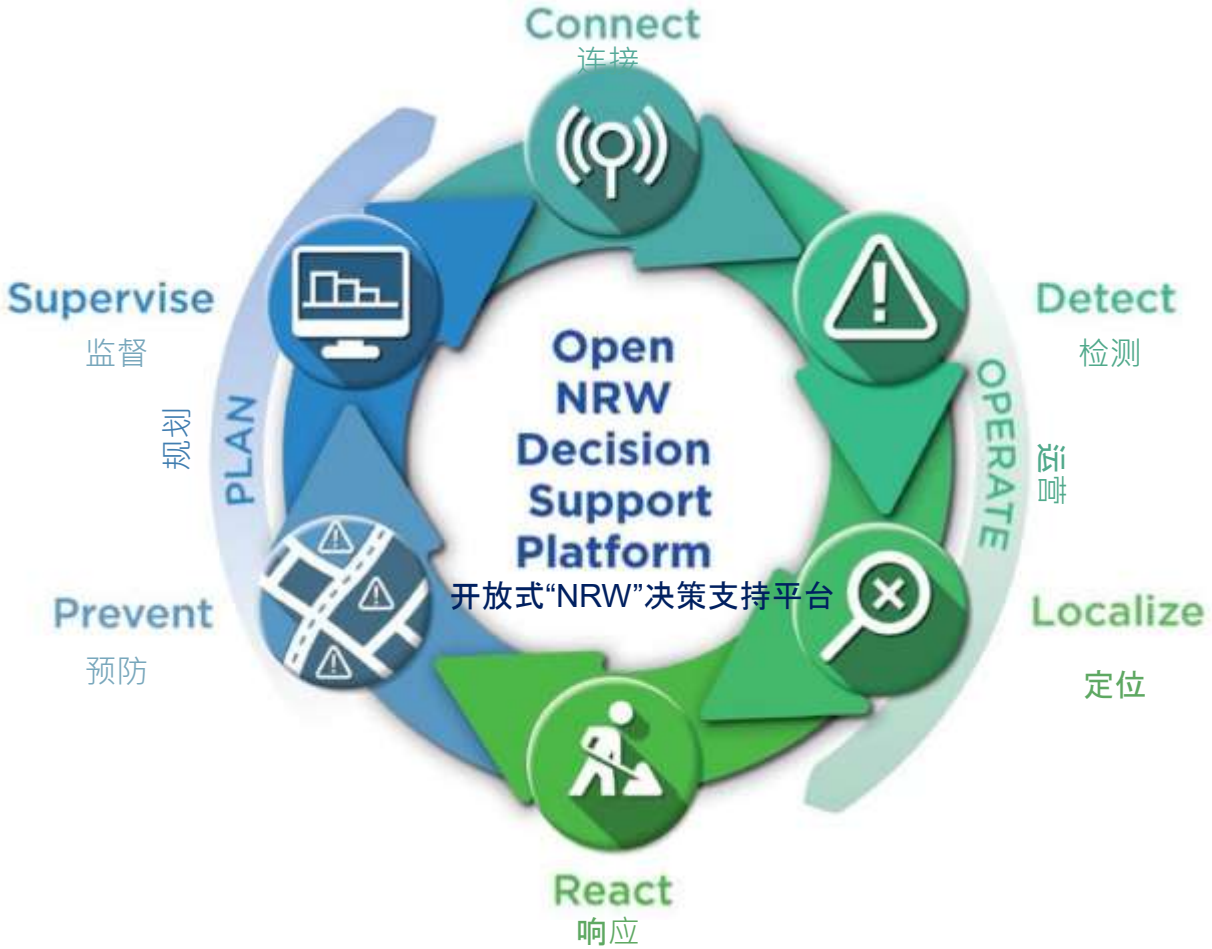
- Use data to detect leaks in distribution network
  利用数据监测配水管网漏损
- Yearly investment of 250.000 euro in proactive leakage detection technologies and techniques
  每年投入25万欧元用于主动漏损探测技术与方法
- Average leak reduction of **9 million m³ water per year** (total annual production of 170 million m³)
  年均减少漏损**900万立方米水**（年总产水量1.7亿立方米）

Asset management 资产管理

- Strategic asset management
  战略性资产管理
- Long-term climate-robust plans
  长期气候韧性规划
  - From 10% resuse rainwater and wastewater to 50% reuse by 2070
    雨水与废水回用率从10%**提升至2070年的**50%

NRWCOCKPIT
by HYDROSCAN

Open leak management platform
开放式漏水管理平台



Hydroware

Conclusion
结语

De Watergroep
WATER. VANDAAG EN MORGEN.

From the current challenges …
从当前挑战出发…

- Climate change
  气候变化
- Weather extremes
  极端天气
- Water scarcity
  水资源短缺

- Declining water consumption
  用水总量下降
- Increasing peak consumption
  用水峰值上升

- Water quality issues
  水质问题

- Investment needs
  投资需求
- Outdated tariff structure
  过时的水价结构
- Financial challenges
  财务压力

… with a holistic vision …
…以整体愿景为引领…

Source Diversification
水源多元化

Innovative Storage
创新性储存

Digitalisation
数字化转型

Circular Systems
循环系统

Source Protection
水源保护

… to a climate-resilient and climate-robust water system

…迈向气候韧性且稳健的水系统

Collaboration

on all levels (public/private)

在所有层面（公共/**私**营）上

开展协作

Innovation

创新

Increasing circularity

Bedrijven, huishoudens en landbouw

提高循环性

（**企**业、家庭和农业）

Future-proof

Climate-proof

面向未来、适应气候

Thank you
for your attention
感谢聆听
De Watergroep
WATER. VANDAAG EN MORGEN.