



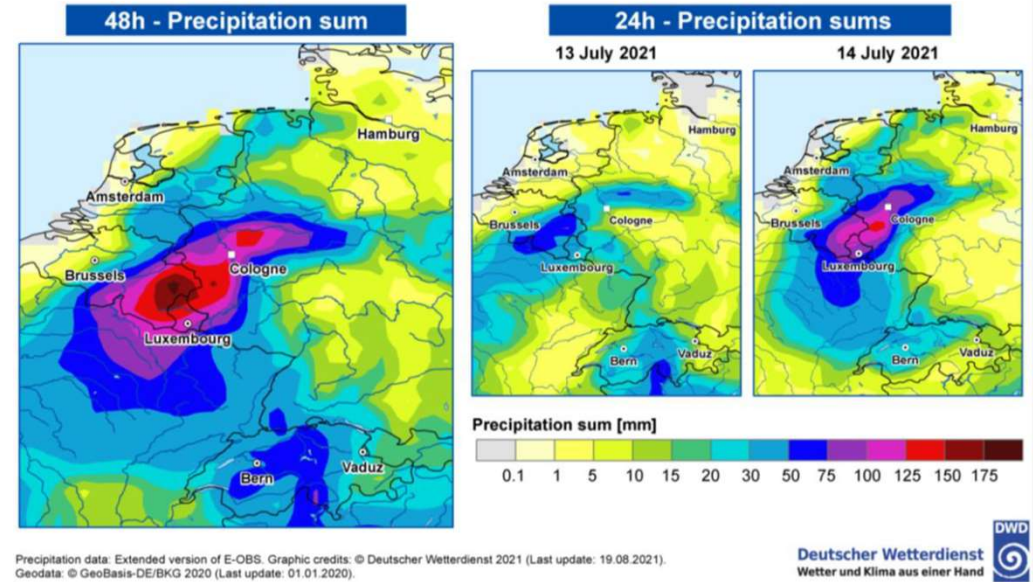
The EU adaptation strategy in the context of the Green Deal

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European Commission

The European Green Deal: how to deliver on the environment, the
society and the economy?

23 November 2022

Dredging and climate adaptation



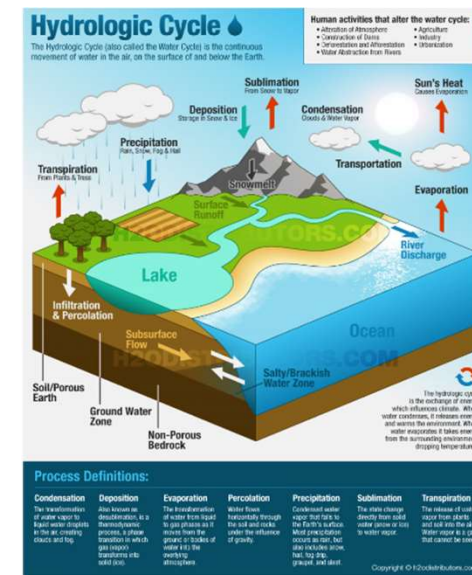
Climate change and water

Climate change → water hazards

- Intensive rainfall, cloud bursts → river and pluvial flooding ↑
- Less snow, permafrost and glaciers → river flooding, low water ↑
- More evaporation → droughts ↑
- Longer period without precipitation → coastal flooding ↑
- Sea level rise → coastal flooding ↑
- Coastal storms → coastal flooding ↑



© picture: WRI



Impacts of climate change in Europe

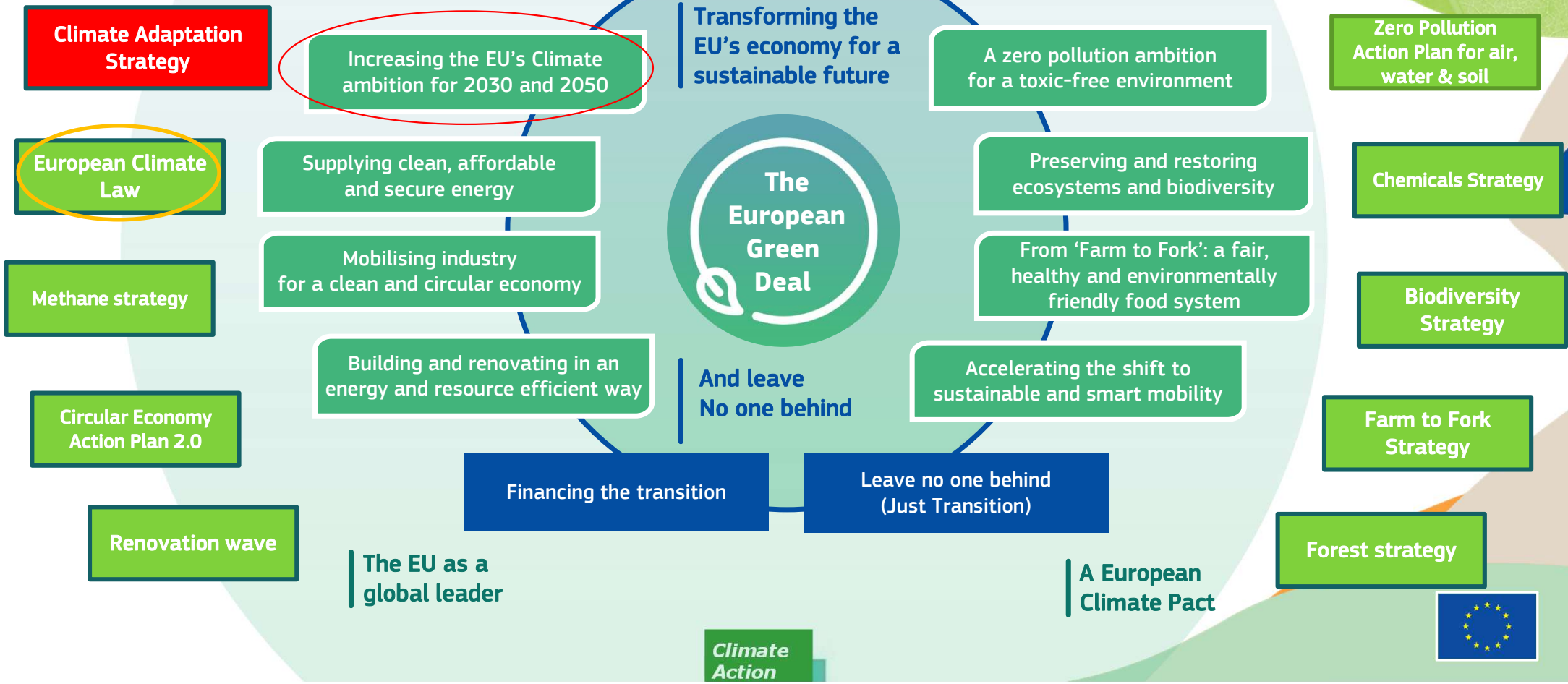
Warming of 3°C in 2100:

- River flooding:
 - 500,000 people/yr exposed 3x ↑
 - losses 50 billion €/yr 6x ↑
- Coastal flooding:
 - 2.2 million people exposed 22x ↑
 - Losses 250 billion €/yr 2x ↑
- Droughts:
 - Drought loss: 9 → 45 billion €/yr 5x ↑



EU Peseta IV report

European Green Deal





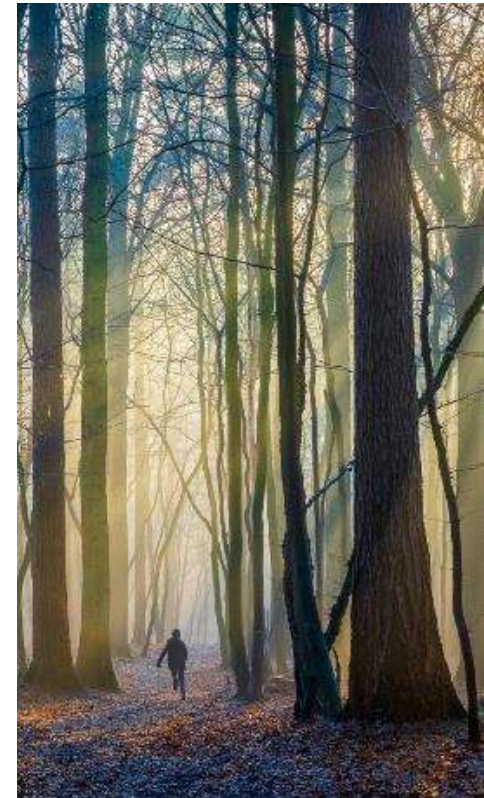
The EU Adaptation Strategy

[COM\(2021\)82 Final](#), 24 February 2021

Vision: by **2050** the EU will be a **climate-resilient society**, fully adapted to the unavoidable impacts of climate change

Objectives:

- **Smarter adaptation** – improving knowledge and managing uncertainty.
- **More systemic adaptation** – support policy development at all levels and sectors.
- **Faster adaptation** – speeding up adaptation across the board.
- **Stepping up international action** for climate resilience.



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Smarter adaptation:

Improving knowledge and managing uncertainty, by

- Pushing the frontiers of **knowledge** on adaptation;
- Horizon Europe
- More and better climate-related **risk and losses data**;
- Making **Climate-ADAPT** the authoritative European platform for adaptation knowledge.



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More systemic adaptation

Support policy development at all levels and sectors, by:

- Improving **adaptation strategies** and plans;
- Fostering local, individual, and **just resilience**;
- Integrating climate resilience in **macro-fiscal policy**;
- Promoting **nature-based solutions** for adaptation.



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→ Nature based solutions (NBS)

- Implementing NBS on a larger scale will increase resilience and contribute to multiple Green Deal objectives;
- NBS are essential for sustaining healthy water, oceans and soils;
- Europe needs to leverage more investments in NBS;

Commission will:

- Develop the financial aspects of NBS and foster financial products that cover NBS;
- continue to incentivize and assist MS to rollout NBS.



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Faster adaptation

Speeding up adaptation across the board, by:

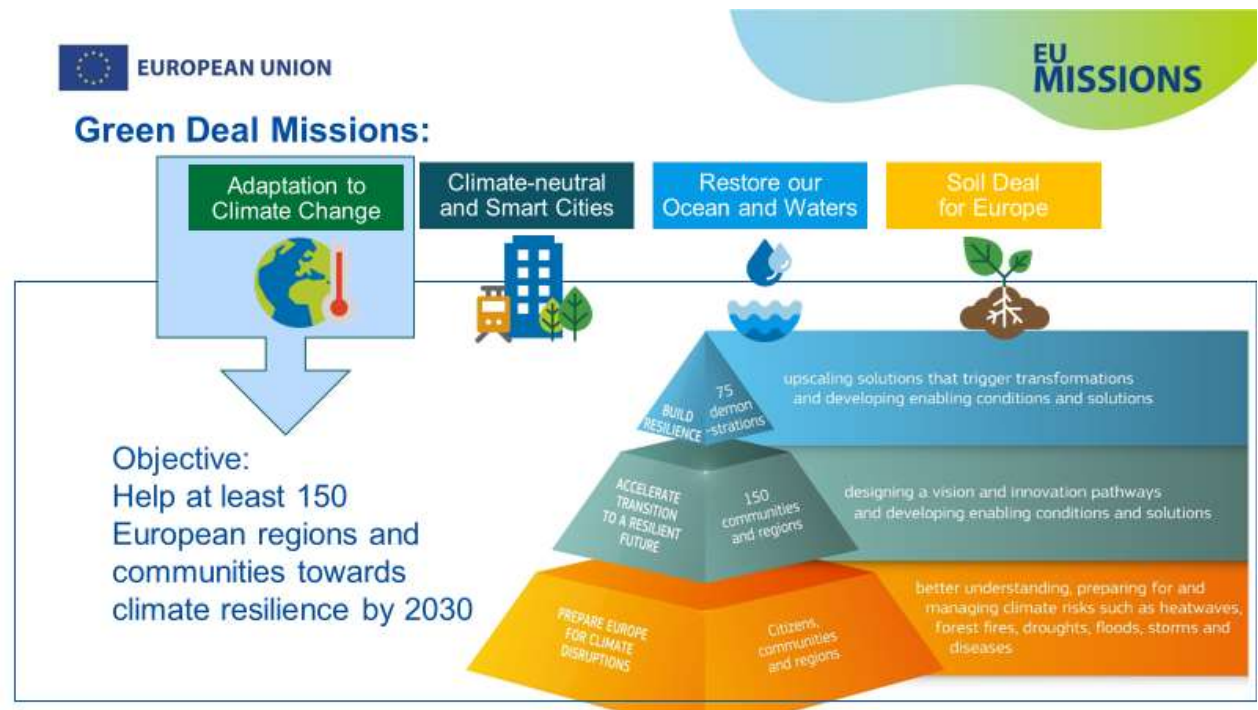
- Accelerating the rollout of **adaptation solutions**;
- Reducing **climate-related risk**;
 - Enhance climate proofing guidance
 - Develop an EU-wide climate risk assessment
- Closing the **climate protection gap**;
- Ensuring the availability and sustainability of **freshwater**.
 - Climate-resilient, sustainable use & management of water across sectors & borders;



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→ Accelerate the rollout of adaptation solutions

- Horizon Europe (HE);
- HE Missions
- Further develop the EU taxonomy for sustainable activities for adaptation.





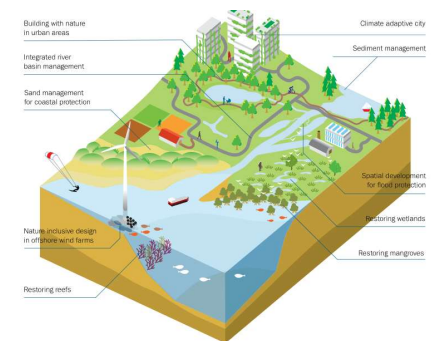
→ Common Implementation Strategy

Water Framework Directive & Flood Directive

Work Program 2022-2024

- Climate adaptation in Strategi Coordination Group & all WG's;
- New WG on droughts;
- Guidance on climate adaptation (update);
- Stimulate interregional and transboundary co-operation;
- Stimulate Nature-based solutions.

- Groundwater Directive
- Water re-use regulation
- Drinking water directive
- Urban Waste Water Treatment Directive
- Sewage Sludge Directive
- Env. Quality Standards Directive





Stepping up international action for climate resilience

by:

- Increasing support for **international climate resilience and preparedness**
- Scaling up **international finance** to build climate resilience
- Strengthen **global engagement and exchanges** on adaptation



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Technical Guidance on Climate Proofing of Infrastructure

*Climate proofing means a process to **prevent infrastructure from being vulnerable to long-term climate impacts** while ensuring the ‘energy efficiency first’ principle is respected and the level of GHG emission from the project is consistent with climate neutrality objective in 2050.*

27 September 2021

All projects financed by the EU
Climate mitigation & adaptation.

Phase 1: Screening

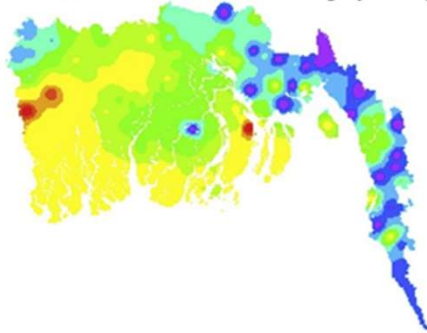
Phase 2: Detailed analysis

Do No Significant Harm



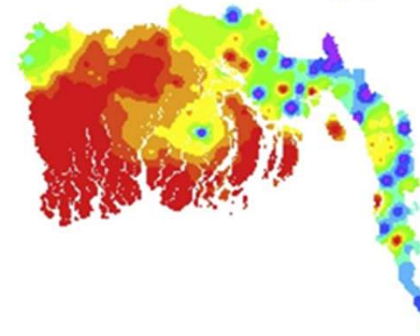
Climate vulnerability in Bangladesh

Climate vulnerability (PC6)



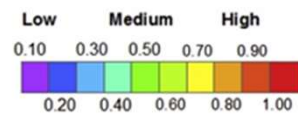
Present Scenario

Climate vulnerability (PC6)



Future Scenario
(2050)

Relative Vulnerability Scale





Sediment in delta's Dredging in the light of sea level rise

- Delta's require sufficient sediment to maintain their land area and elevation in face of sea-level rise.
- Extensive dredging for port development by deepening shipping channels will cause a sediment deficit in the future.



ARTICLE

Climate change and human influences on sediment fluxes and the sediment budget of an urban delta: the example of the lower Rhine–Meuse delta distributary network

J.R. Cox, F.E. Dunn, J.H. Nienhuis, M. van der Perk, and M.G. Kleinans

Abstract: Deltas require sufficient sediment to maintain their land area and elevation in the face of relative sea-level rise. Understanding sediment budgets can help in managing and assessing delta resilience under future conditions. Here, we make a sediment budget for the distributary channel network of the Rhine–Meuse delta (RMD), the Netherlands, home to the Port of Rotterdam. We predict the future budget and distribution of suspended sediment to indicate the possible future state of the delta in 2050 and 2085. The influence of climate and anthropogenic effects on the fluvial and coastal boundaries was calculated for climate change scenarios, and the effects of future dredging on the budget were related to port development and accommodation of larger ships in inland ports. Suspended sediment rating curves and a 1D flow model were used to estimate the distribution of suspended sediment and projected erosion and sedimentation trends for branches. We forecast a negative sediment budget (net annual loss of sediment) for the delta as a whole, varying from –8 to –16 Mt/year in 2050 and –11 to –25 Mt/year by 2085, depending on the climate scenario and accumulated error. This sediment is unfavourably distributed: most will accrete in the northern part of the system and must consequently be removed by dredging for navigation. Meanwhile, vulnerable intertidal ecosystems will receive insufficient sediment to keep up with sea-level rise, and some channels will erode, endangering bank protection. Despite increased coastal import of sediment by estuarine processes and increased river sediment supply, extensive dredging for port development will cause a sediment deficit in the future.

Key words: sediment, climate change, deltas, dredging, bed level, sediment budget.



Thank you



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