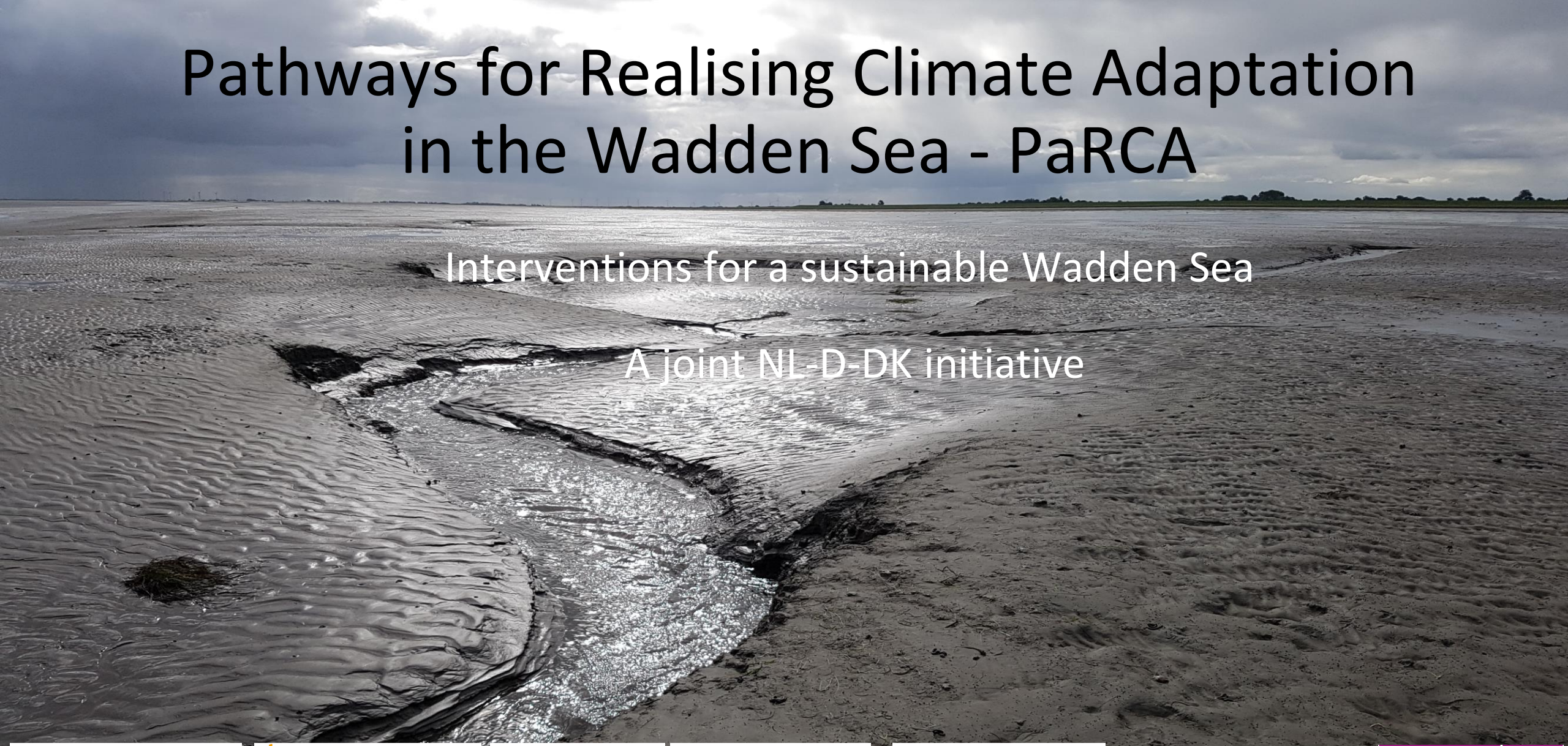
Pathways for Realising Climate Adaptation in the Wadden Sea - PaRCA

Interventions for a sustainable Wadden Sea

A joint NL-D-DK initiative



BAW Bundesanstalt für Wasserbau

Royal Netherlands Institute for Sea Research

SENCKENBERG world of biodiversity

Deltares

TU Delft Delft University of Technology

Global Climate Forum

C A U

Rijkswaterstaat, Staatsbosbeheer, Waddenvereniging, Ecoshape, NLWKN Brake-Oldenburg, NLWKN Norden, LKN.SH, WSA Weser-Jade-Nordsee, GDWS, NPV LS, WWF Wadden Sea Office, WSF, BfG (Federal Institute of Hydrology), Danish Coastal Authority, Uni Rostock

Measures / Interventions

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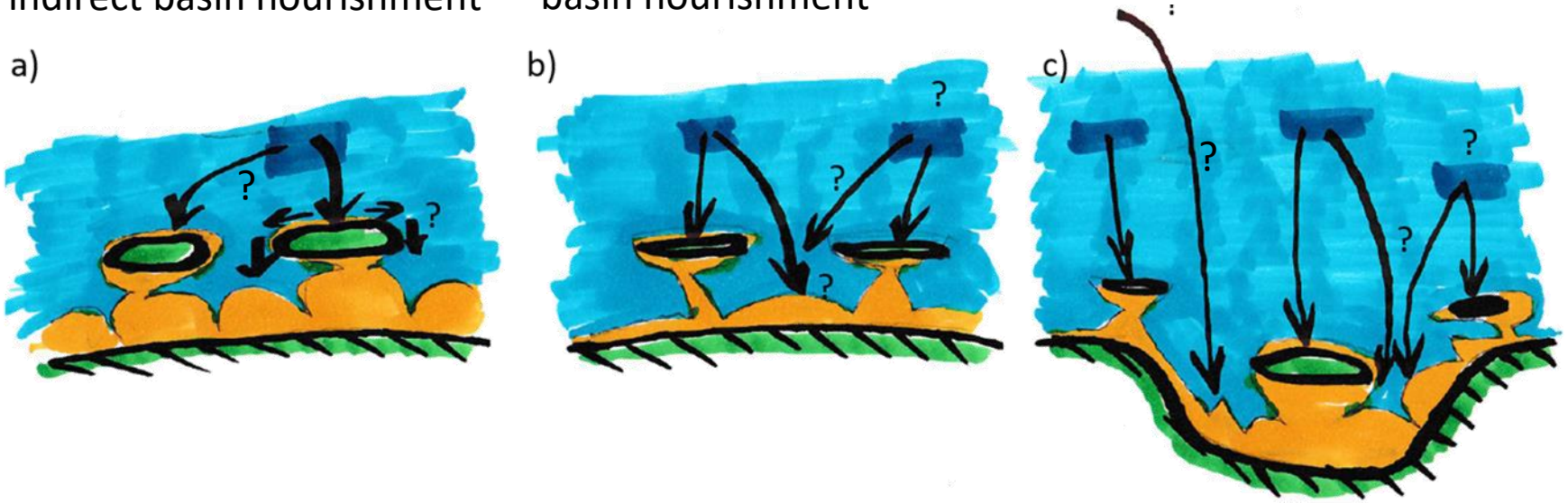
Foreshore, Beach & indirect basin nourishment

Beach & direct basin nourishment

Combined nourishments & Managed realignment



Increase in Sea Level Rise

Research

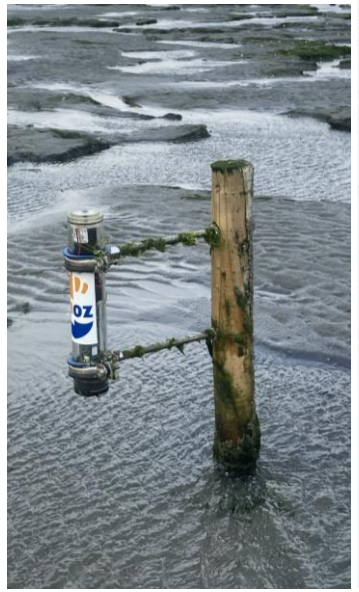
Stakeholder-driven research on interventions for realising Wadden Sea adaptation

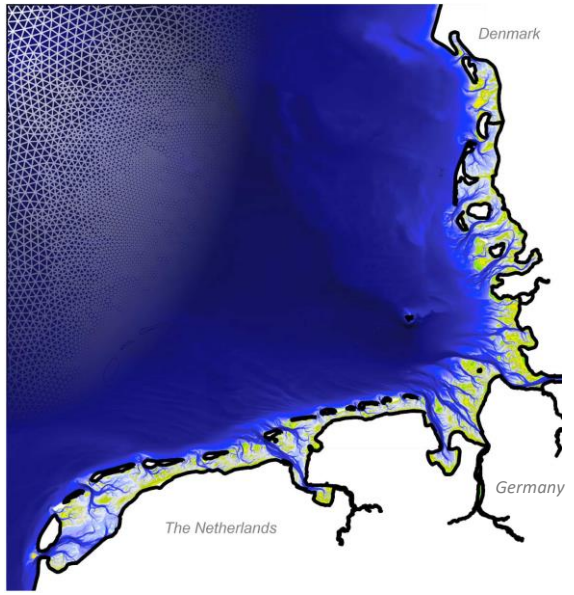
Project includes partners and organizations from the entire knowledge chain, i.e., **basic, applied, and practice-oriented research**.

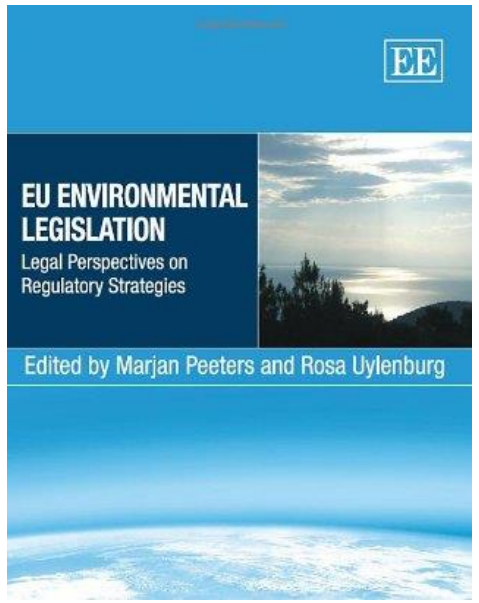
Recommendations and approaches will address **physical, biogeochemical, and ecological processes including the socioeconomic framework and impacts with regard to interventions**.

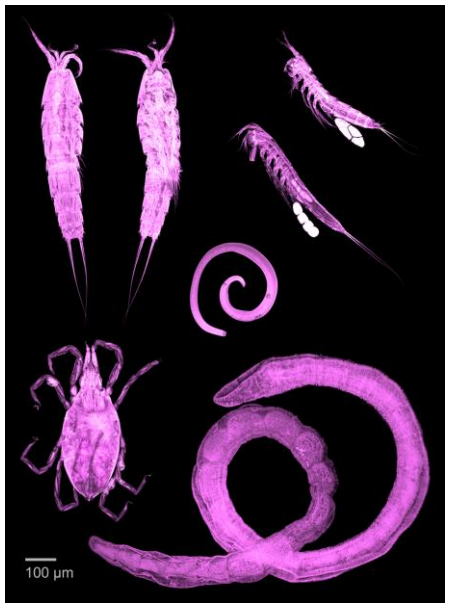
- **WP1 Law / Governance:** concepts and options for action, implement measures and policies in practice.
- **WP 2 Engineering, Geosciences:** monitoring concepts and modelling; function, effectivity, scales, feasibility basic principles of sediment based interventions
- **WP 3 Ecosystem:** Sediment-Biota interactions, monitoring, resilience

Transdisciplinary approach as effective way to support policy and develop new recommendations for action.









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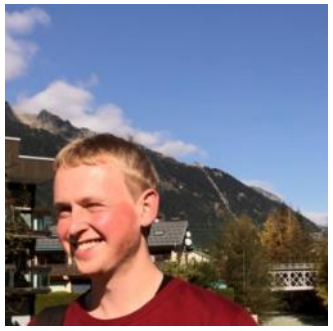
WP1 Law / Governance: concepts and options for action, implement measures and policies in practice.

Nele Matz-Lück

Eva Sinemus

- Legal implications of sediment management measures
- Recommendations for modified future legal regulations

Jochen Hinkel



Alexander Pechmann

- identifying and resolving social conflicts to create social acceptance
- Co-create policy recommendations for best sediment management option for different contexts with consortium and stakeholders

WP 2 Engineering, Geosciences: monitoring concepts; function, effectivity, scales, feasibility basic principles of sediment based interventions

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Christian Winter

Amin Rahdarian

Marthe Wassink

Zheng Bing Wang

Ymkje Huisman

Bas van Maren

Frank Kösters

Jannek Gundlach

Robert Lepper

- Analyse present dynamics of the tidal flats.
- Effects of different sediment management solutions on the morphology, sediment distribution and turbidity of the Wadden Sea.
- Effects of interventions on sediment dynamics.
- SSC in a future situation considering SLR

WP 3 Ecosystem: Sediment-Biota interactions, monitoring, resilience

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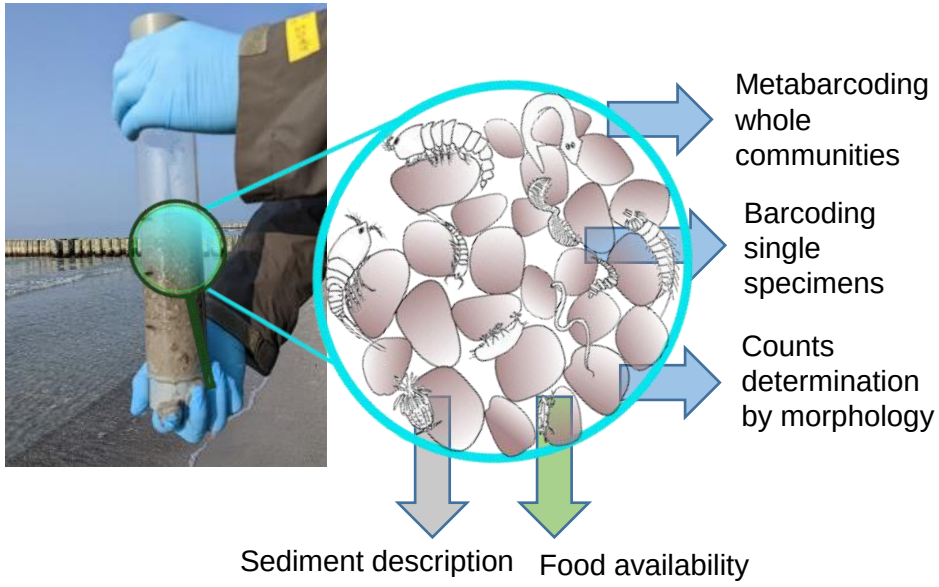
Gritta Veit-Köhler

Iryna Kapshyna

Diversity and resilience of benthic communities:

- Relate sediment composition to communities of small invertebrates
- Model community changes with changing environment



Royal Netherlands Institute for Sea Research

Tim Grandjean

Divyashri Varadharajan

Tjeerd Bouma

Johan van de Koppel

- Field observations: The difference between measures and natural dynamics on bed level changes.
- Model simulations: How ecosystems affect sediment dynamics under natural and artificial conditions.
- Communicating: Inter-tidal system response to storms and sediment nourishment disturbances.

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Co-design and legacy

***Co design* approach**

1. Co-design locations, aims, and (model and field) strategies with with partner projects and stakeholders
2. Co-design research on interventions, build ***generic model***
3. Perform experiments: E.g. ***Pilot Study Sylt***
4. Co-development - sustainable / legacy
5. Regular co-evaluation and adaptive approach to project aims

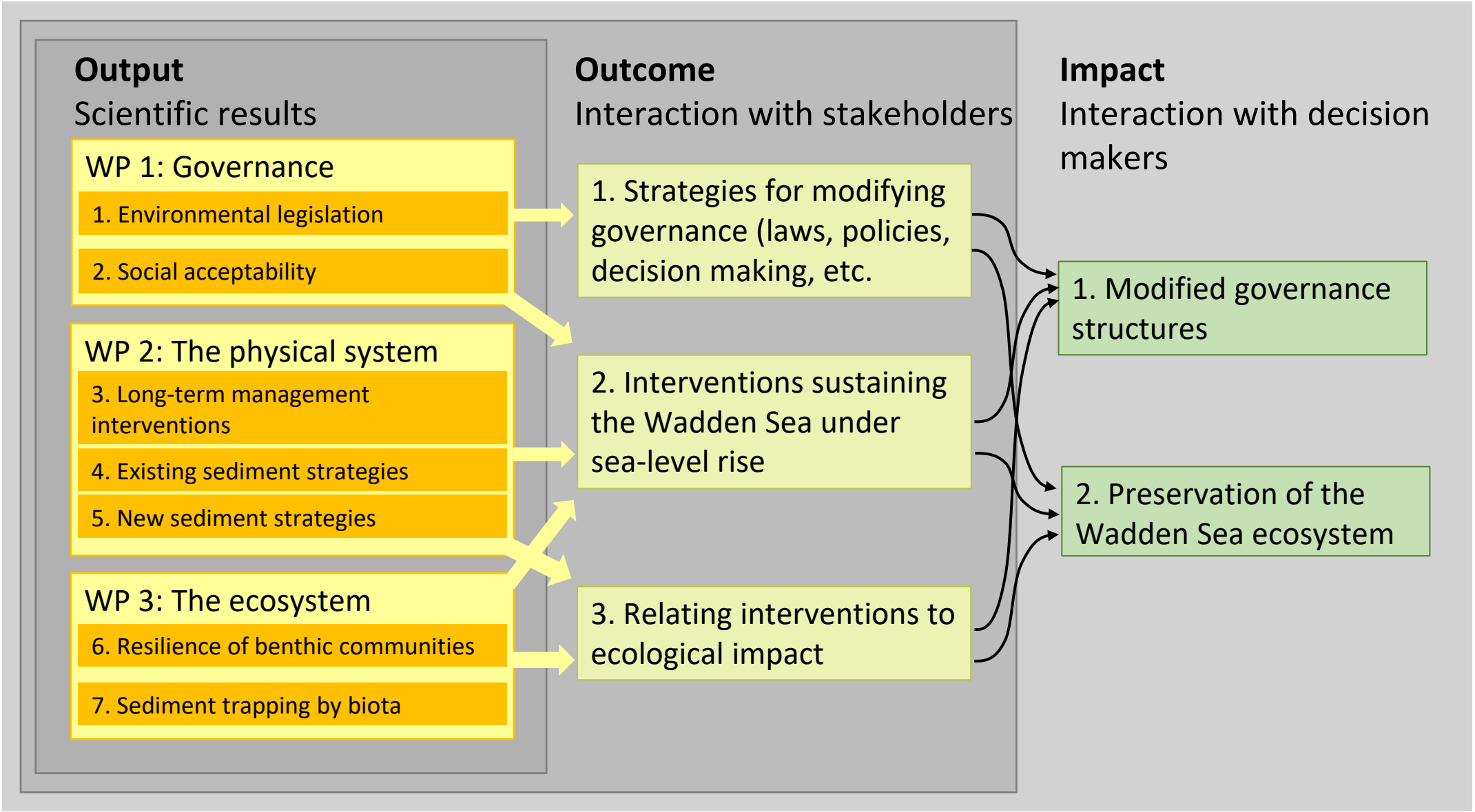
Communication

Workshops, bilateral visits, joint supervision of PhD students, online jour fixe, joint session at conference, online documentation

Legacy

Different levels: data, models, concepts, strategies, living lab structure, implementation pathways

How we create impacts



Example

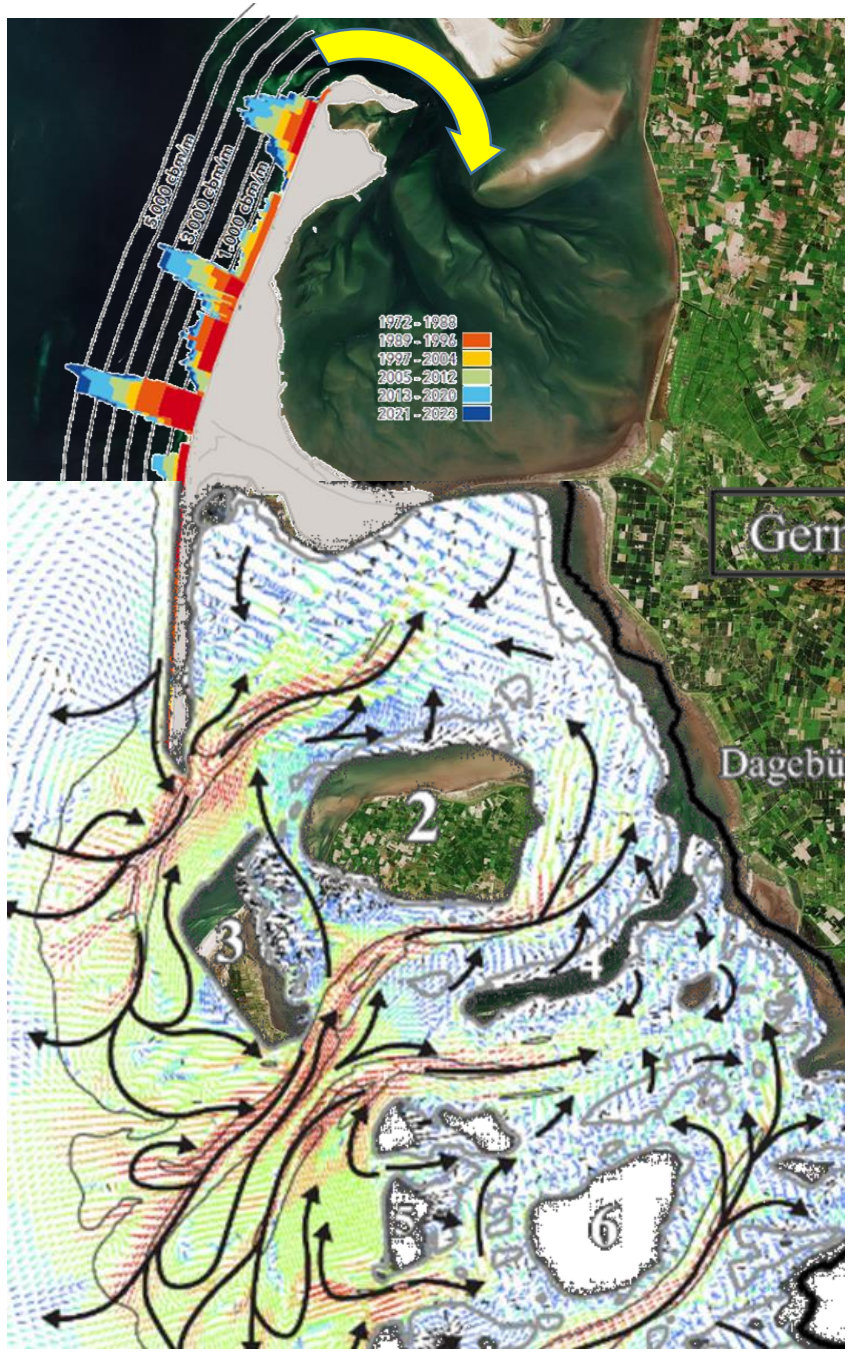
Problem: Fate of Tidal flats, interventions

Sylt narrative: Shorface and beach nourishments indirectly support tidal flat growth when sediments are transported to backbarrier tidal flats

LKN interested in fate / deposits.

NPV interested in siltation habitats, mussel farms .

- WP2 does model on fractionated sediment transport
- WP3 looks at meiofauna communities in nourishment schemes
- WP1 explores the legal aspects and governance of other options, other sources, e.g. direct nourishments



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