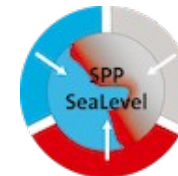# Thematic Introduction:
Adaptation, Decision Analysis and Governance.

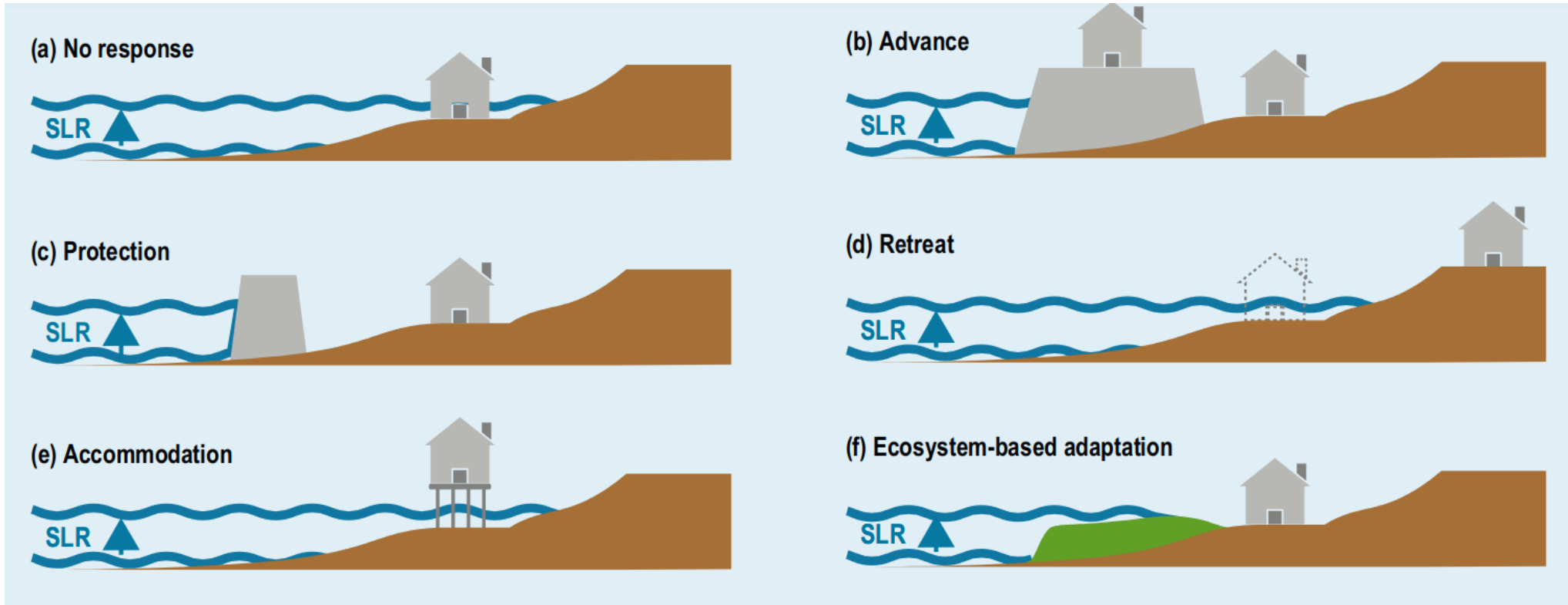## Jochen Hinkel, Boris Braun and Nassos Vafeidis

Global Climate Forum (GCF), Berlin
Resource Economics Group, Humboldt-University, Berlin
Berlin Workshop in Institutional Analysis of Social-Ecological Systems (WINS),

**Sea Level Conference
Hamburg 5 June 2023**

SPP 1889
REGIONAL SEA LEVEL CHANGE AND SOCIETY

Coastal adaptation

(a) No response

SLR

(b) Advance

SLR

(c) Protection

SLR

(d) Retreat

SLR

(e) Accommodation

SLR

(f) Ecosystem-based adaptation

SLR

IPCC SROCC: Oppenheimer et al. (2019)

Two complementary
scientific perspectives on adaptation

Prescriptive Perspective:	Descriptive Perspective:
Decision analysis	**Governance research**
How to "best" make decisions?	How are decisions/policies actually made?

Two complementary
scientific perspectives on adaptation

Prescriptive Perspective:

Decision analysis

How to "best" make decisions?

Descriptive Perspective:

Governance research

How are decisions/policies actually made?

Coastal decision context

Decision context

- Long time horizons

- Large uncertainty

- Significant learning

- Risk aversion

- Regret aversion

- Expensive measures
  => public accountability

- Multiple objectives

Coastal decision context

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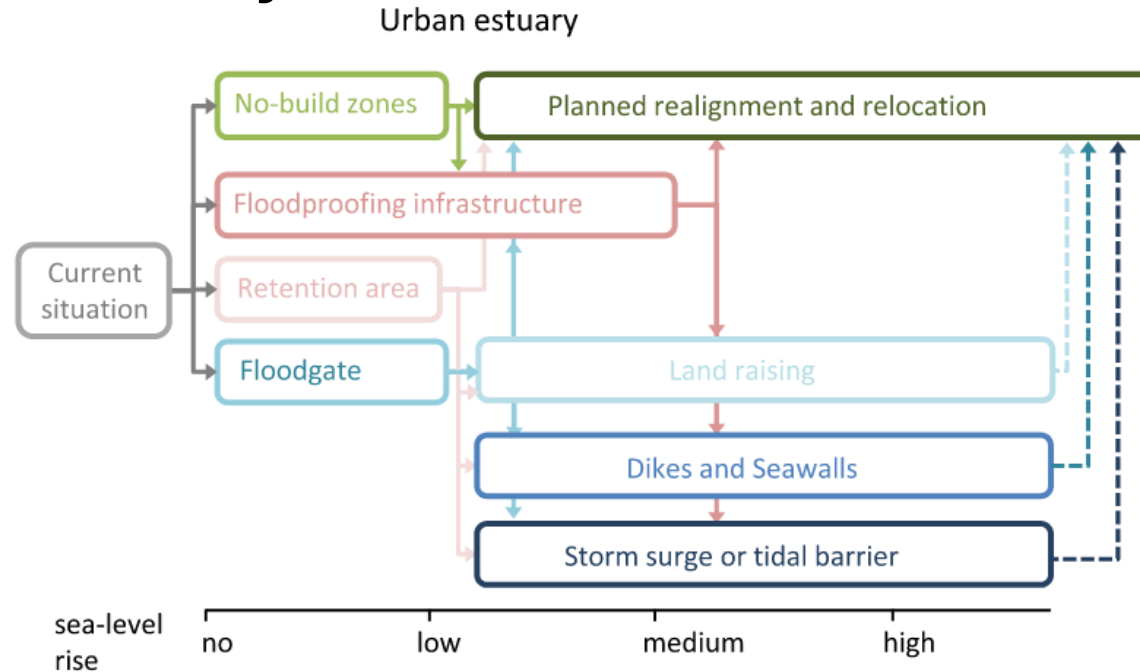 => public accountability

- Multiple objectives

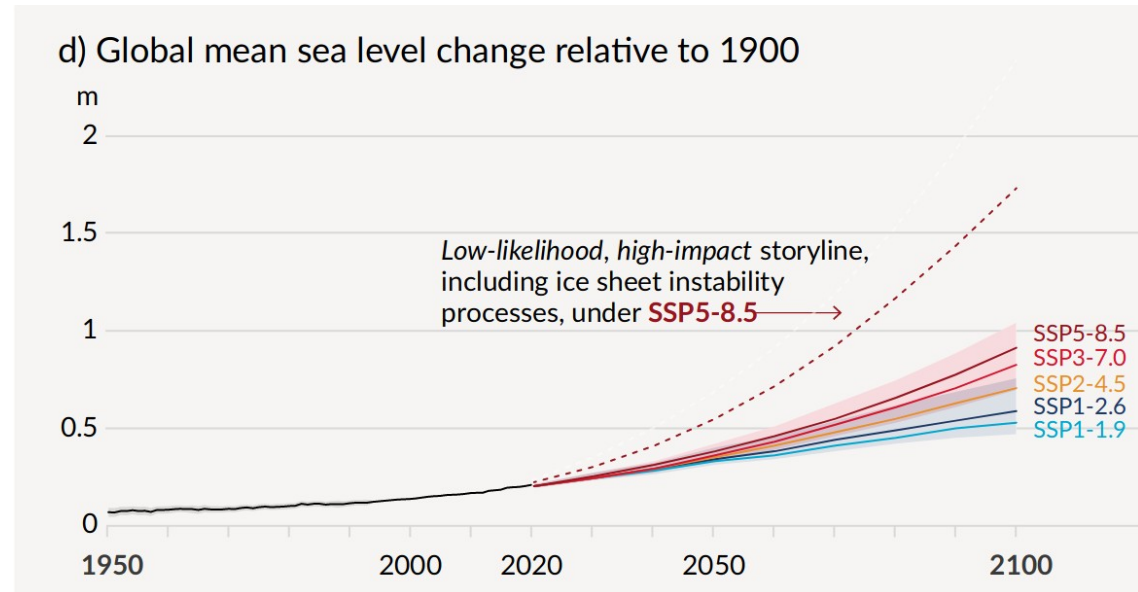**Methods: Adaptation pathway analysis**

Urban estuary

Haasnoot et al 2019 Environ. Res. Commun.

Coastal decision context

Decision context

- Long time horizons
- Large uncertainty
- Significant learning
- Risk aversion
- Regret aversion
- Expensive measures
  => public accountability
- Multiple objectives

Methods: Robust decision making considering high-end sea-level rise


d) Global mean sea level change relative to 1900

Low-likelihood, high-impact storyline, including ice sheet instability processes, under **SSP5-8.5** →

SSP5-8.5
SSP3-7.0
SSP2-4.5
SSP1-2.6
SSP1-1.9

IPCC (2021)

Coastal decision context

Decision context

- Long time horizons
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Methods: Real-options analysis

Völz and Hinkel (2023)
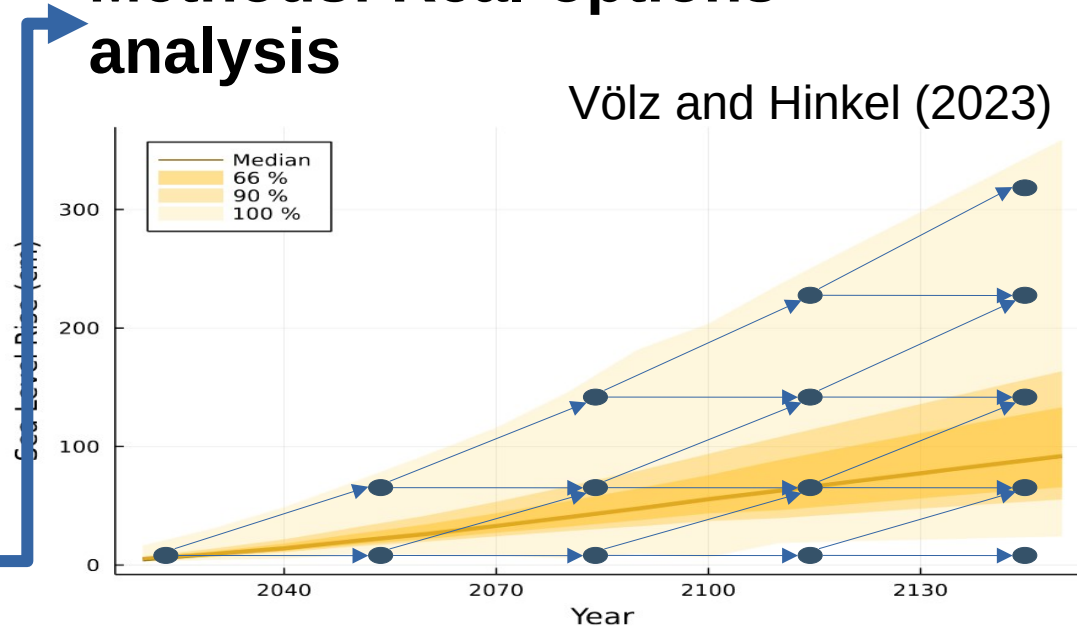
SPP Project SEASCAPE II: Adaptation of the Baltic Sea coast cities of Lübeck and Rostock to sea-level rise and storm surges

Coastal decision context

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- Long time horizons

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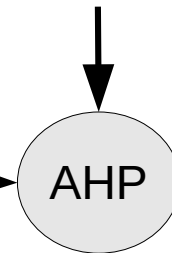**Methods: multi-criteria analysis**

© Geronimo Gussmann

© Andy Roberts, C

Stakeholders' preferences

Erosion risk
Population
Infrastructure
Economic activity
Income

AHP

Island 1: 10
Island 2: 7
Island 3: 4
…

Hinkel et al. (forthcoming)

Take home message
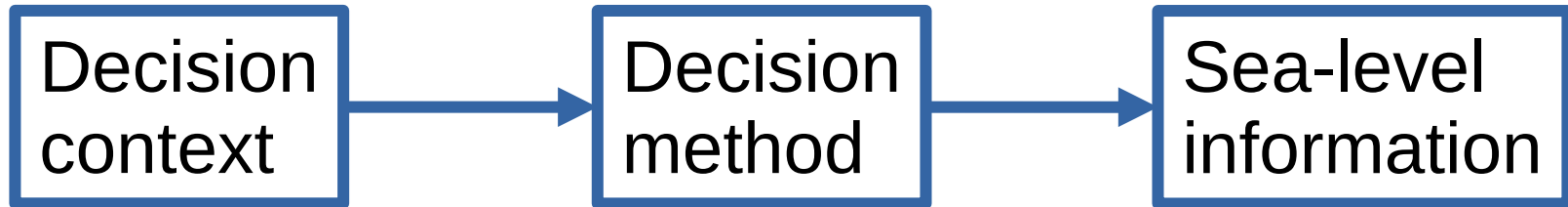
Decision context → Decision method → Sea-level information

Two complementary
scientific perspectives on adaptation

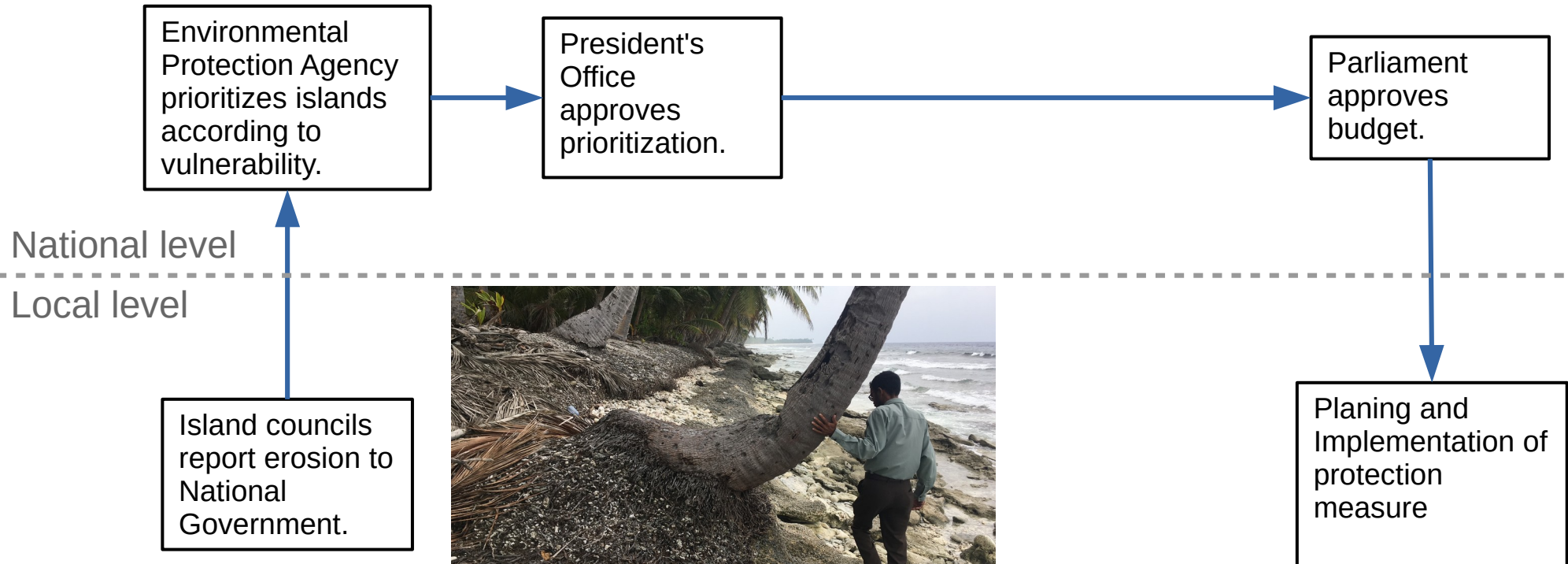| Prescriptive Perspective:	Descriptive Perspective:
Decision analysis	**Governance research**
How to "best" make decisions?	How are decisions/policies actually made?

Why do actual decisions differ from results of prescriptive decision analysis?
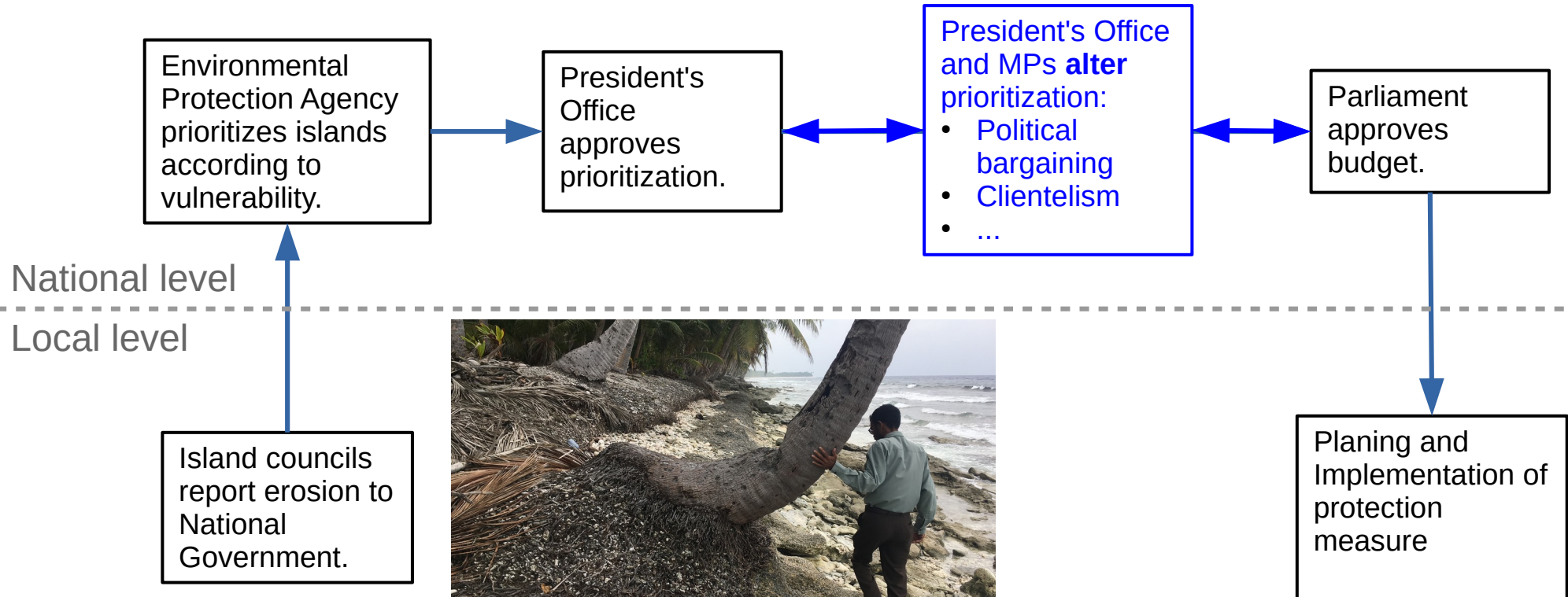
- Lack of capacity/resources
  - **SPP Project TRANSOCAP II**: Building adaptive capacity through social capital in coastal communities and households in Indonesian second-tier cities.
- Cognitive biases
  - **SPP Project SEATRAC**: Sea level change and the tragedy of cognition. A comparative study of the role of cognitive biases in understanding sea-level rise.
- Visions & aspirations
  - **SPP Project BlueUrban** analyses opportunity-driven paradigms and solutions for sea level change adaptation in the coastal spaces of Jakarta, Metro Manila, and Singapore.
- Conflicting interest of stakeholders and power
- Institutional inertia and complexity
  - Institutions change slowly
  - Administrative traditions dealing with sea-level rise (Biesbroek et al. 2018)

Example: Erosion prioritization in the Maldives

Environmental Protection Agency prioritizes islands according to vulnerability. → President's Office approves prioritization. → Parliament approves budget.

National level

Local level

Island councils report erosion to National Government.

Planing and Implementation of protection measure

Gussmann and Hinkel (forthcoming)

Example: Erosion prioritization in the Maldives

Environmental Protection Agency prioritizes islands according to vulnerability.

President's Office approves prioritization.

President's Office and MPs **alter** prioritization:
- Political bargaining
- Clientelism
- ...

Parliament approves budget.

National level

Local level

Island councils report erosion to National Government.

Planing and Implementation of protection measure

Gussmann and Hinkel (forthcoming)

Conclusions

Decision analysis helps us:

- to make better decisions, i.e to attain what we want given our preferences

- to better direct SLR science towards producing the right information: e.g. Learning Scenarios

Decision context → Decision method → Sea-level information

Governance research helps us

- to appreciate the complexity of real-world decision/policy making

- to understand why real-world decisions deviate from what prescriptive methods suggest

- to improve prescriptive methods