

Envisioning robust climate change adaptation futures for coastal regions



Water management in transition in times of climate change

Vulnerability of delta & coastal regions to climate change (Adger et al., 2005)

Uncertainty about future developments of climate change impacts on water systems

Development of long-term & robust water management strategies under uncertainty

- Mainstream (scenario & foresight) approaches have limitations
- Potential of backcasting as climate change adaptation planning tool

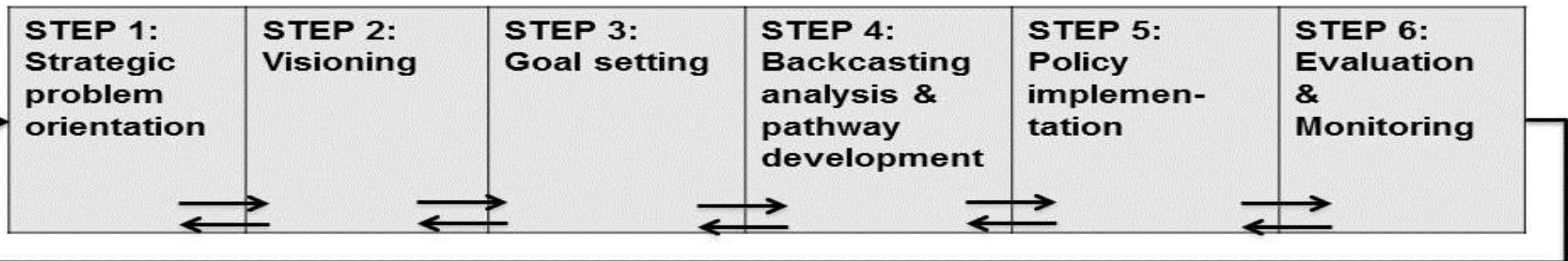
The BackCasting Adaptive Management (BCAM) methodology

Types of demands

- Normative demands
- Process demands
- Knowledge demands

Various goals

- Future vision
- Stakeholder engagement & influence
- Knowledge acquisition & validation
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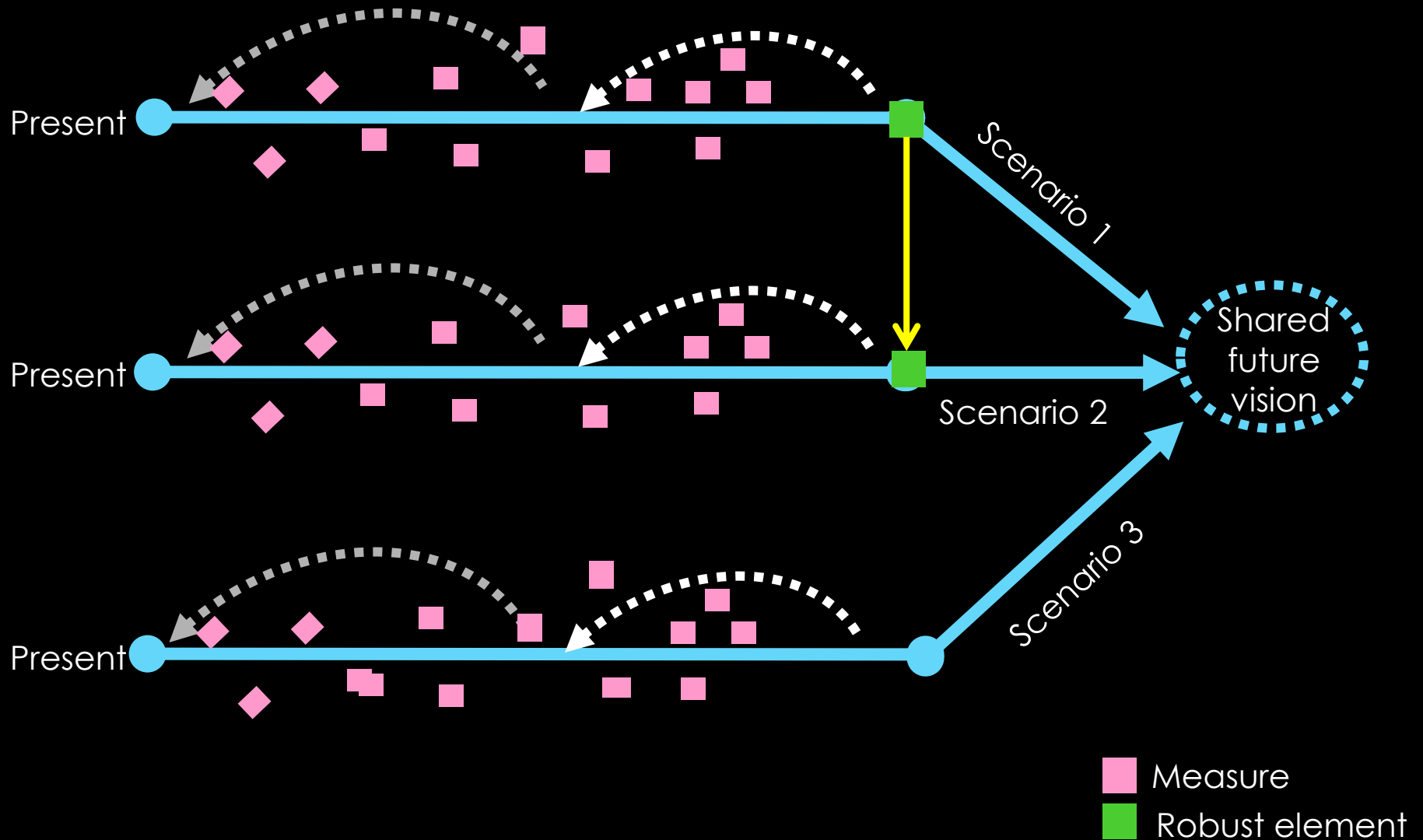


Types of tools and methods

- Participatory tools
- Design tools
- Analytical tools
- Organisational tools

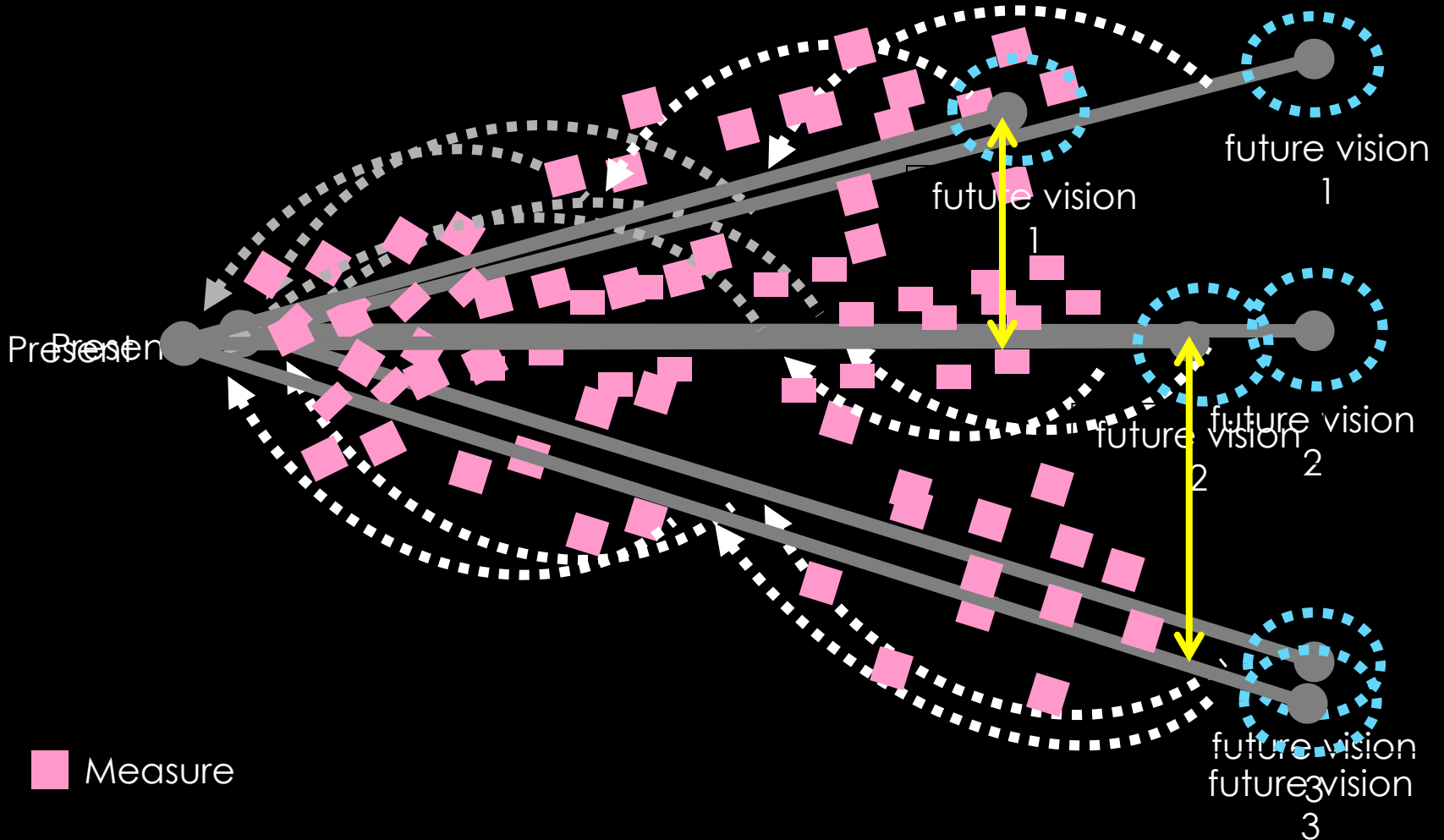
Voorn, van der, T., Quist, J., Pahl-Wostl, C., Haasnoot, M., 2015)

The BCAM methodology: from pathways to an envisioned future



The BCAM methodology: from pathways to envisioned futures

Validated time frames



Multi-case study research: research design

Three cases on vision and pathway development for adaptive water management:

- The South African Breede–Overberg Catchment
- The Mississippi Estuary-New Orleans region
- The Dutch Rhine-Meuse Estuary

Common characteristics:

- Historically vulnerable deltaic or coastal regions
- Major cities and a high level of economic activity
- Long tradition of technocratic management paradigm in water resources management

Multi-case study research: case characteristics

Case study	The SA case	The US case	The Dutch case
Governance context	Top-down governance by government	Market-oriented	Polycentric & network-oriented
Type of participatory process	Government-initiated & empowerment-oriented	Bottom-up initiated	Government-initiated & polycentric
Initiator	Breede-Overberg Catchment management agency	New Orleans Horizon Initiative Water Committee	Delta Commissioner / Delta Programme
Strategy development process	Breede-Overberg Catchment Management Strategy	Water Management Strategy	Adaptive Delta Management Strategy

Multi-case study research: research design

Case study	The SA case	The US case	The Dutch case
Case study approach	Qualitative ex-post case study evaluation	Participatory action-based research	Expert & stakeholder evaluation of existing visions & pathways
Research methods	Desk study, qualitative data analysis and informal interviews	Desk study, qualitative data analysis, informal interviews, stakeholder workshops, participant observations and online standardised survey	Desk study, qualitative data analysis, informal interviews, stakeholder expert workshops, participant observations & brainstorm sessions with experts
Types of data collected	Meeting & project reports, project meeting and expert judgments	Meeting & project reports and expert judgments	Meeting & project reports, expert judgments and stakeholder opinions

Multi-case study research: case evaluation & comparison

Dimension	Evaluation criterion	Description
Inputs & resources	Presence of financial & human resources Presence of knowledge & expertise available	Did the project initiator have financial and human resources for the case? Did the project initiator have knowledge and expertise for the case?
Future vision	Presence of transformative Elements Presence of goals and guiding targets	Did the vision include transformative elements? Did the vision provide goals and guiding targets?
Stakeholder engagement and process	Presence of stakeholder diversity Presence of stakeholder Influence Presence of stakeholder commitment for results	How many types of stakeholders are involved in the process (out of four types distinguished)? Were stakeholders involved able to provide inputs for the process? Did the stakeholders involved show commitment to the results?

Multi-case study research: case evaluation & comparison

Dimension	Evaluation criterion	Description
Methodological aspects	Inclusion of BCAM methodology elements Inclusion of various types tools and methods	Which BCAM methodology elements were included by the methodology applied? How many types of tools and methods were applied (out of four types distinguished)?
Pathways	Inclusion of agency and measures Inclusion of various types of uncertainties Inclusion of robust elements	Were agency and measures present in the pathways developed? How many types of uncertainties were included (out of three types distinguished)? Were robust elements present for uncertainty management and pathway switching?
Impact	Inclusion by formal decision making Examples of follow-up activities for implementation	Were results included by formal decision making? Did the project lead to follow-up activities for implementation?

Multi-case study research: proposition testing

- P1: A single, shared **future vision** is needed for **pathway** development & implementation
- P2: Broad **stakeholder involvement** enriches **vision & pathway** development and is needed for endorsement of outcomes
- P3: Multiple **pathways** & robust elements strengthen the guiding and transformative potential of **visions**
- P4: More **institutional embeddedness** & inclusion by formal decision-making processes are needed for the implementation of the results of participatory **vision** and strategy development processes

Multi-case study research: case evaluation & comparison

Evaluation criterion	The SA case	The US case	The Dutch case
Dimension: inputs & resources			
Presence of financial & human resources	Yes	No	Yes
Presence of knowledge & expertise available	Yes	Yes	Yes
Dimension: future vision			
Presence of transformative elements	Yes (single, shared vision)	Yes (no shared vision)	Yes (multiple visions)
Presence of goals & guiding targets	Goals and short-term guiding targets	Only goals	Goals and guiding targets (Rotterdam Climate Proof & Port Vision 2030)

Multi-case study research: case evaluation & comparison

Evaluation criterion	The SA case	The US case	The Dutch case
Dimension: Stakeholder engagement & processes			
Presence of stakeholder diversity	business, research, government and civil society	business, research, government and civil society, except marginal groups & citizens	business, research, government and civil society, except marginal groups & citizens
Presence of stakeholder Influence	Yes	Yes	Yes
Presence of stakeholder commitment for results	Yes	Yes	Yes

Multi-case study research: case evaluation & comparison

Evaluation criterion	The SA case	The US case	The Dutch case
Dimension: methodological aspects			
Inclusion of BCAM method. elements	Visioning, goal setting, backcasting analysis, pathway development, uncertainty awareness & identification	Visioning, goal setting & uncertainty awareness & Identification	Visioning, goal setting, backcasting analysis, pathway development, uncertainty awareness & identification
Inclusion of various types tools & methods	Yes (participatory, design, analytical & organisational tools and methods)	Yes (participatory & organisational tools and methods)	Yes (participatory, design, analytical & organisational tools and methods)

Multi-case study research: case evaluation & comparison

Evaluation criterion	The SA case	The US case	The Dutch case
Inclusion of agency & measures	in short-term implementation paths	No	Rotterdam Climate Proof & Port Vision 2030
Inclusion of various types of uncertainties	data, complexity & management	data, complexity & management	data, complexity & management
Inclusion of robust elements	No	No	Yes (uncertainty management & pathway switching)
Inclusion by formal decision making	Yes	No	Yes
Examples of follow-up activities	Yes	Yes	Yes
Examples of broader spin-off	Yes	Yes	Yes

Multi-case study research: critical reflections

Proposition testing

- P1: A single, shared **future vision** is needed for **pathway** development and implementation (**only confirmed by SA case**)
- P2: Broad **stakeholder involvement** enriches **vision** and **pathway** development and is needed for endorsement of outcomes (**only confirmed by Dutch case**)
- P3: Multiple **pathways & robust elements** strengthen the guiding and transformative potential of **visions** (**rejected**)
- P4: More **institutional embeddedness** and inclusion by formal decision-making processes are needed for the implementation of the results of participatory vision and strategy development processes (**confirmed**)

Multi-case study research: critical reflections

- Diversity both an emergent outcome and a design principle of the study
- The nature & design of vision development characteristic for governance context
- A single, shared future vision is not a prerequisite for vision and pathway development and endorsement
- Broad stakeholder engagement is essential for enriching vision and pathway development
- Good connection to formal decision-making process follow-up and implementation

Multi-case study research: conclusions

- Participatory vision development for climate change adaptation planning in different governance contexts and shows considerable diversity in its application in these contexts.
- A single, shared future vision is not a prerequisite for vision & pathway development and endorsement.
- Broad stakeholder engagement supports strategy development, but the involvement of marginal groups is complicated and requires substantial efforts
- Multiple pathways & robust elements are helpful but require more expertise
- More institutional embeddedness of participatory processes through connecting to formal decision-making processes leads to better implementation of the outcomes of these processes

Multi-case study research: recommendations for global climate change adaptation

- Include broad stakeholder engagement for vision & pathway development
- Develop multiple, long-term pathways with robust elements & test pathways against different context scenarios
- Build capacities and expertise on the application of robust elements & pathways and establish the transfer of best practices
- Develop a global agenda and framework for disseminating knowledge & experience to transfer global, national and regional climate change adaptation efforts, cases and knowledge e.g. on robust elements and multiple-pathway development

Multi-case study research: recommendations for methodology development

- Enhance the involvement of marginal groups and citizens
- Articulate the benefits of institutional embedding of participatory processes, as it enables implementation and provides methods for this
- Extend with tools and methods that grasp, employ and reconcile existing visions and pathways
- Further methodological development is needed on multiple pathways, robust elements & testing against different global context scenarios
- Long-term pathways were not present in all the cases, but their presence is important and should be enhanced in the BCAM methodology

Thank you for your attention!

More information see: Voorn, van der, T., Quist, J., Pahl-Wostl, C., Haasnoot, M., (2015). Envisioning robust climate change adaptation futures for coastal regions: a comparative evaluation of cases in three continents

