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Enabling Delta Life

Financing green adaptation strategies to CC: the potential of PPP

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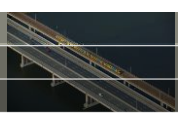
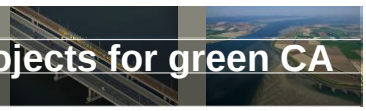
The challenge



- Adaptation costs developing countries: USD 70 to 100 billion from 2010 -2050 (World Bank 2010)
- A “gap” of finance (USD 8 billion p.a.) and estimated (USD 90 to 210 billion) for mitigation and adaptation (Global Canopy Foundation, 2009).
- Approx. 85% percent of the capital needed must come from private finance (WB EASIN 2012)
- Intrinsic characteristics of green climate projects → less financially attractive versus traditional
- Green investments present unique risks because of their cash profiles

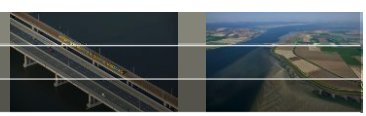
The challenge of bankable projects for green CA



- Characteristics of climate adaptation projects
  - Capital-intensive;
  - Unique;
  - Delayed & Dispersed benefits;
  - Non-guaranteed and non-financial benefits;
  - Limited autonomous earning power;
  - High risk profile

  (Gleijm & Gerdes,2012)
- Intrinsic characteristics of green infrastructure projects that makes them less financial attractive than grey infrastructure (WB EASIN 2012)
  - Elevated perceived risks
  - Capital market and information gaps - “newness” of technology & perception of excessive risk
  - Risk-reward profile of green infrastructure not financially attractive (absolute or in comparison)

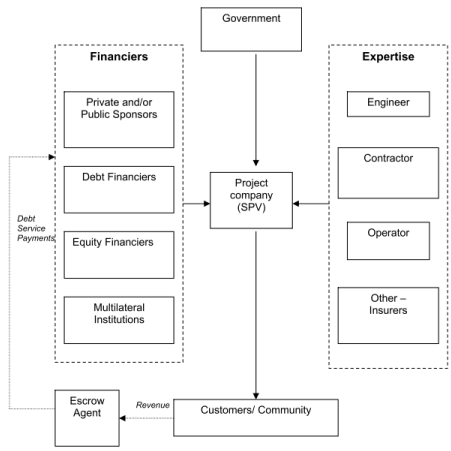
The Research Approach



- *Focus on project delivery*
- *How to increase the implementation pace of green adaptation measures within the current funding constraints of public bodies?*
  - Key criteria relevant stakeholders in their choice for green versus traditional methods?
  - How to increase Project IRR , e.g. by internalizing the effects on ES, besides the flood protection related ones
- Two different approaches:
  - Project delivery & project finance
  - Collaborative modeling – System Dynamics (3 sessions)

Public Private Partnerships as vehicle for Private Financing

- "Cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards". (Canadian Council for PPP)
- Concessive and non-concessive



Source: (2010). Public Private Partnerships. A Financier's Perspective, United Nations.

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Definitions

PPP:

- *Cooperative venture between public and private sectors, built on the **expertise** of each partner, that best meets clearly defined public needs through the appropriate **allocation of resources, risks and rewards**".* (Canadian Council for PPP)
- Project finance
- Project Company (SPV)
- Cash flows as collateral
- Concessive & non-concessive

Green adaptation:

- *using the natural strengths of ecosystems in adaptive management to mitigate threats caused by drivers such as climate change.*

  (Wageningen UR)

- Ecosystem-based coastal defence
- Eco-engineering
- Flood protection
- Mangrove restoration

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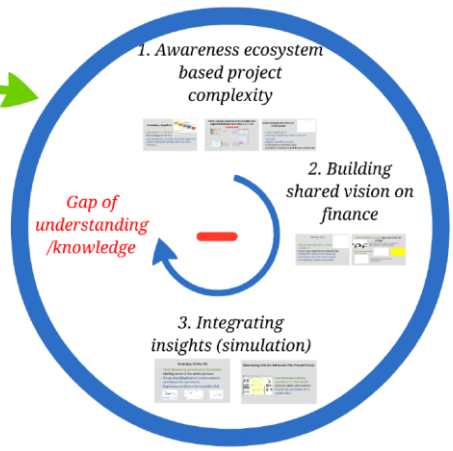
The steps in the process / Experts

Academic level		Institution
MSc	Biology and Environmental Resource Management	Deltares
MSc	Natural Resources Management	Deltares
MSc	Business Administration	Rabobank
MSc	Anthropology	FMO
Ph.D.	Policy Science	ASC
Ph.D.	Policy analysis and system engineering	Deltares
MSc	Physical Geography	RWS
BSc	Civil Engineering	Deltares
MSc	Marine Biology	ARCADIS
MSc	Hydrodynamics	UNESCO-IHE
Ph.D.	Wetland Ecology	Deltares
PhD	Limnology	Deltares
MSc	Human Nutrition	ASC
Ph.D.	Tropical Hydrology	BUZA
MSc	Psychology	Erasmus University
Ph.D.	Civil Engineering	Deltares
Ph.D.	Biology	Deltares



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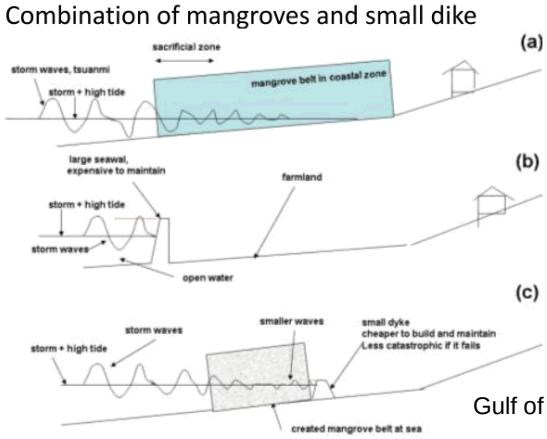
Eco-engineering and mangrove restoration

Benefits: protection through wave attenuation, storm protection & shoreline stabilization

Combination of mangroves and small dike



Gulf of Tonkin, Vietnam

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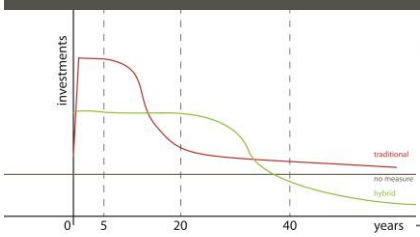
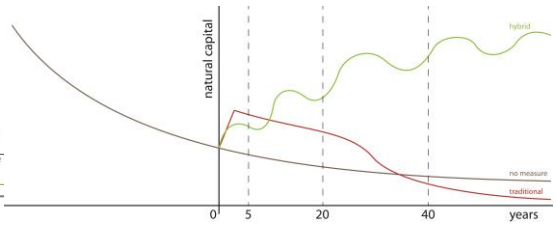
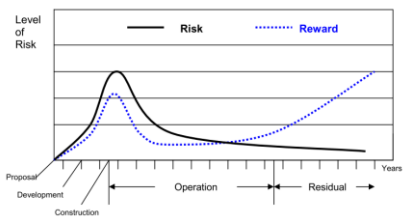
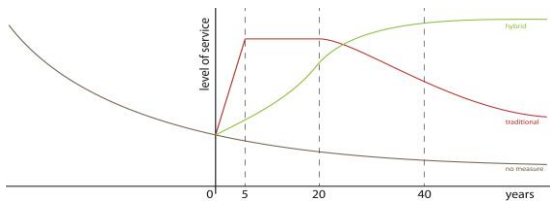
First workshop: green versus traditional









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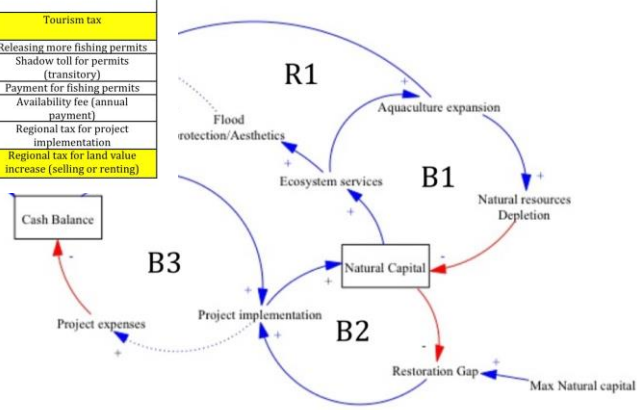
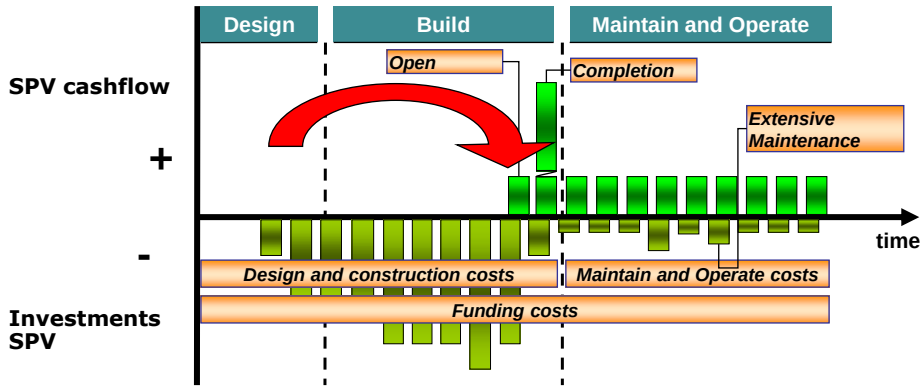
Second workshop: natural capital to PIRR

1. Compliance with service level (availability fee)
2. How to translate ecosystem services in cash in?
3. Project expenses and their predictability

Ecosystem-service	Concessive PPP (User paid)	No concessive PPP (Taxpayer paid)
Water quality	Water rights from farmers	
	Water rights from industry	
Aesthetics	Contribution from existing tourist organization	Tourism tax
Nursery function		Releasing more fishing permits
		Shadow toll for permits (transitory)
		Payment for fishing permits
Flood protection	Industry/aquaculture owners pay for increased flood protection	Availability fee (annual payment)
		Regional tax for project implementation
Increasing value of coastal land		Regional tax for land value increase (selling or renting)



Cashflows in a DBFM contract



Source: PPS Support

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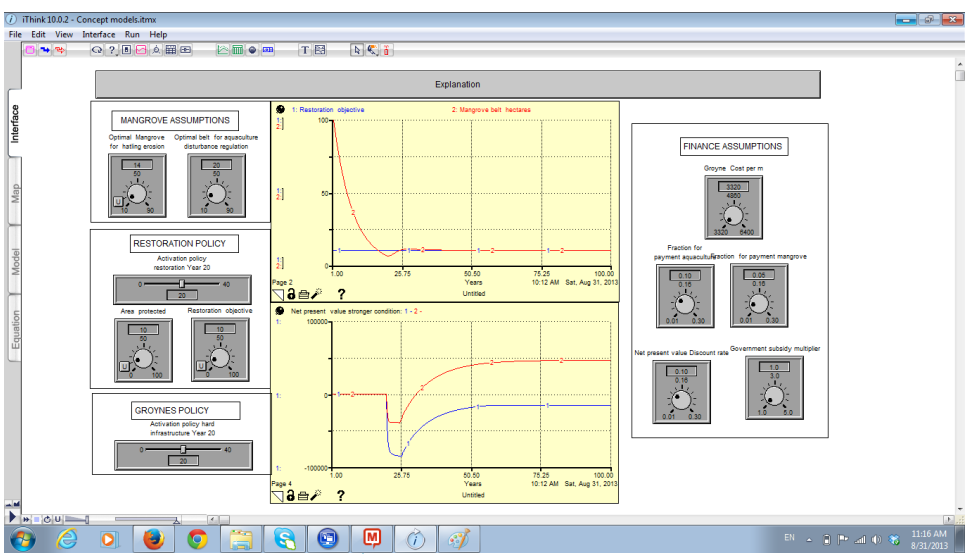
Third workshop: discussing simulation model

- Leverage points and conditions for bankable projects



Conclusions and recommendations

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Implementing through Public-Private Partnerships:

The construction time and the cyclical performance of eco-engineering concepts require a different financing model than traditional grey infrastructure.

When opting for PPP as project delivery method is of even greater importance to:

- Define the right performance indicators and allow for more flexibility on level of services for the main service being provided by the project, in this case flood protection.
- Adapt payment mechanisms so as to make possible a positive project IRR for these projects that take much longer construction periods and have a cyclical fluctuation in performance since they follow the dynamics of natural processes.
- Implement risk sharing facilities.

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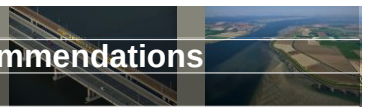
Research findings and policy recommendations



Research methodologies

- No concessive PPP in flood protection, on DBFM in UK
- Promising venues: Value Capturing strategies (transportation), Blue Carbon and PES schemes
- Collaborative modeling effective in decreasing informational gap and ability of participants to define project IRR

Project deliverable as PPP?

- Fundamental questions:
  - What is the problem? Erosion or flood protection?
  - how to define “functionality” and required level of service
- Quantifying benefits (local and global externalities) of green flood protection projects and generating willingness to pay :
  - WB Green Infrastructure Framework mitigation investments
  - Advances in setting up PES
- Advantages of project finance

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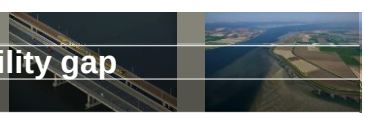
Closing together the financial viability gap



Research Institutes: Ecosystem knowledge/ eco-engineering

- Develop methodologies to quantify local and global externalities
- compare green versus gray
- Risk mitigation measures to reduce relative variance of a project return

NGO’s: stakeholder management and micro-finance

- Participative methods to generate willingness to pay
- Unique institutional arrangements tailored to local governance to increase collection rate

Multilaterals/ International Community

- Concessional loans (e.g. CTF)
- Financial instruments that effectively shoulder “technology” risks in a cost effective manner (e.g. loan guarantees and contingent finance)
- Promote cross-sectoral infrastructure delivery
- Synergies with Financing pillar of DRR

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Making CA a Financially viable concept for developing countries

By creatively:

- Bringing different worlds of expertise together – project finance & IWRM
- Blending differences sources of capital:
  - Development cooperation, multilaterals, ECA's, institutional investors and banks
  - Climate Finance, Carbon Finance & DRR Financing pillar
- Developing innovative cross-sectoral PPP contracts/ models

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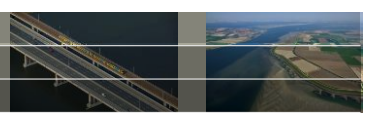
Sources:



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