System of Environmental Economic Accounting

NCAVES - Global initiative and national pilots

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Nanning, May 2018

United Nations

Agenda

1. Introduction
2. Example from TEEB (The Economics of Ecosystems and Biodiversity)

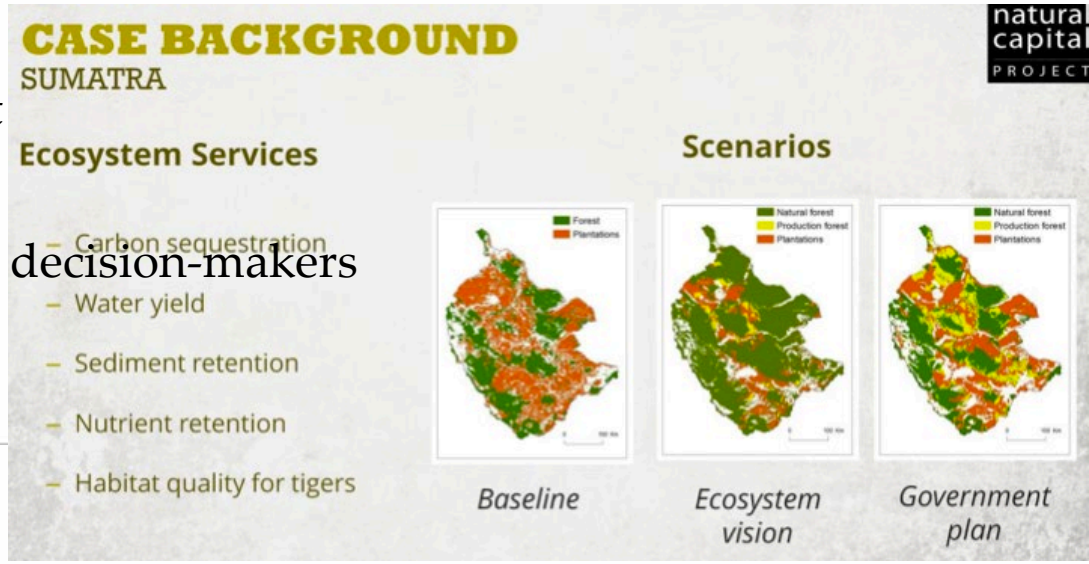
Objectives and deliverables

1. Piloting ecosystem accounts (in each of the 5 partner countries) for selected areas (national and/or regional)
   - National Plan
   - Compilation of accounts – physical and monetary
   - Policy application
   - Indicators
2. Developing standards and practical guidelines - 2020, contribute to research agenda (spatial, condition, services, valuation)
3. Develop and indicator set (national and global) – SDG, Aichi targets, IPBES etc.
4. Alignment with Business accounting (sustainability reporting) – GRI, IIRC
5. Communication and outreach – national and global platforms
6. Training and capacity development – modules, regional and national workshops, and in country support

Cross cutting - stakeholder engagement

Introduction – Scenario analysis

- Looking at future trajectories
- In the context of SEEA EEA
  - > Proof of concept
  - > Extent, condition can provide a rich information base to support
    - Support Spatial planning, Land use trade-offs (eco-compensation; sponge cities)
    - Choosing between alternative management/ investment options
- Must be plausible and relevant
  - > Link to policy
  - > Broad Stakeholder base of decision-makers
- Clear assumptions



SEEA

TEEB Country Studies (coordinated by UN Environment) 2013 - 2017

- Bhutan, Philippines, Tanzania, Liberia, and Ecuador
- To inform national policies
- Scenarios/ trade – offs decided through workshops (iterative)
- Watershed level analyses
- Provisioning, Regulating and Cultural services

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What is the issue (and its policy context)?

Bhutan - Inform hydropower development, ESIA, remediation plans etc.

- Benefit-sharing mechanism for communities/ PES
- Investment options for 'better' outcomes
  - How does hydropower depend on upstream land management?
- Scenarios
  - Business as Usual (BAU)
  - Hydropower construction
  - Hydropower construction with conservation/ investment in the watershed

Country example - Bhutan

- Biophysical modeling (InVEST)

- Systems model (GEM)

Habitat Quality	Carbon	Annual Water Yield (Hydropower)	Nutrient Retention (Water Purification)	Sediment Retention (Erosion Control)	InVEST (v3.3.0) Data Inventory	
Models					Data requirements	Type
X	X	X	X	X	Land use/land cover (LULC)	map
			X	X	DEM (topography)	map
X					Threat impact distance	table
X					Threat impact weights	table
X					Form of decay function	table
X					Threat maps	map
X					Habitat sensitivity to threats	table
X					Half saturation constant	table
	X				Carbon in aboveground biomass	table
	X				Carbon in belowground biomass	table
	X				Carbon in dead organic matter	table
	X				Carbon in soil	table
		X	X	X	Annual average precipitation	map
		X	X		Annual average reference evapotranspiration	map
		X	X		Plant available water content	map
		X	X		Etk/Crop Coefficient (by LULC)	table
		X	X		Root depth (by LULC)	table
		X	X		Effective soil depth	map

Agriculture	**Agriculture Production (total)**		Ranking based on crop national production, not at the Dzongkhag level	
	Paddy	Million ton/year	Sum of crop production across relevant Dzongkhag affected by plant	Cultivated Area, Production and Yield of Major Crops by Dzongkhag, Bhutan
	Maize	Million ton/year	Sum of crop production across relevant Dzongkhag affected by plant	Cultivated Area, Production and Yield of Major Crops by Dzongkhag, Bhutan
	Wheat	Million ton/year	Sum of crop production across relevant Dzongkhag affected by plant	Cultivated Area, Production and Yield of Major Crops by Dzongkhag, Bhutan
	share of paddy		Estimated	
	share of maize		Estimated	
	share of wheat		Estimated	
	Agricultural Yield	ton/ha	Agricultural yield of the three main crops of agricultural production	
	Paddy	ton/ha	Sum of crop yield across relevant Dzongkhag affected by plant	Cultivated Area, Production and Yield of Major Crops by Dzongkhag, Bhutan
	Maize	ton/ha	Sum of crop yield across relevant Dzongkhag affected by plant	Cultivated Area, Production and Yield of Major Crops by Dzongkhag, Bhutan
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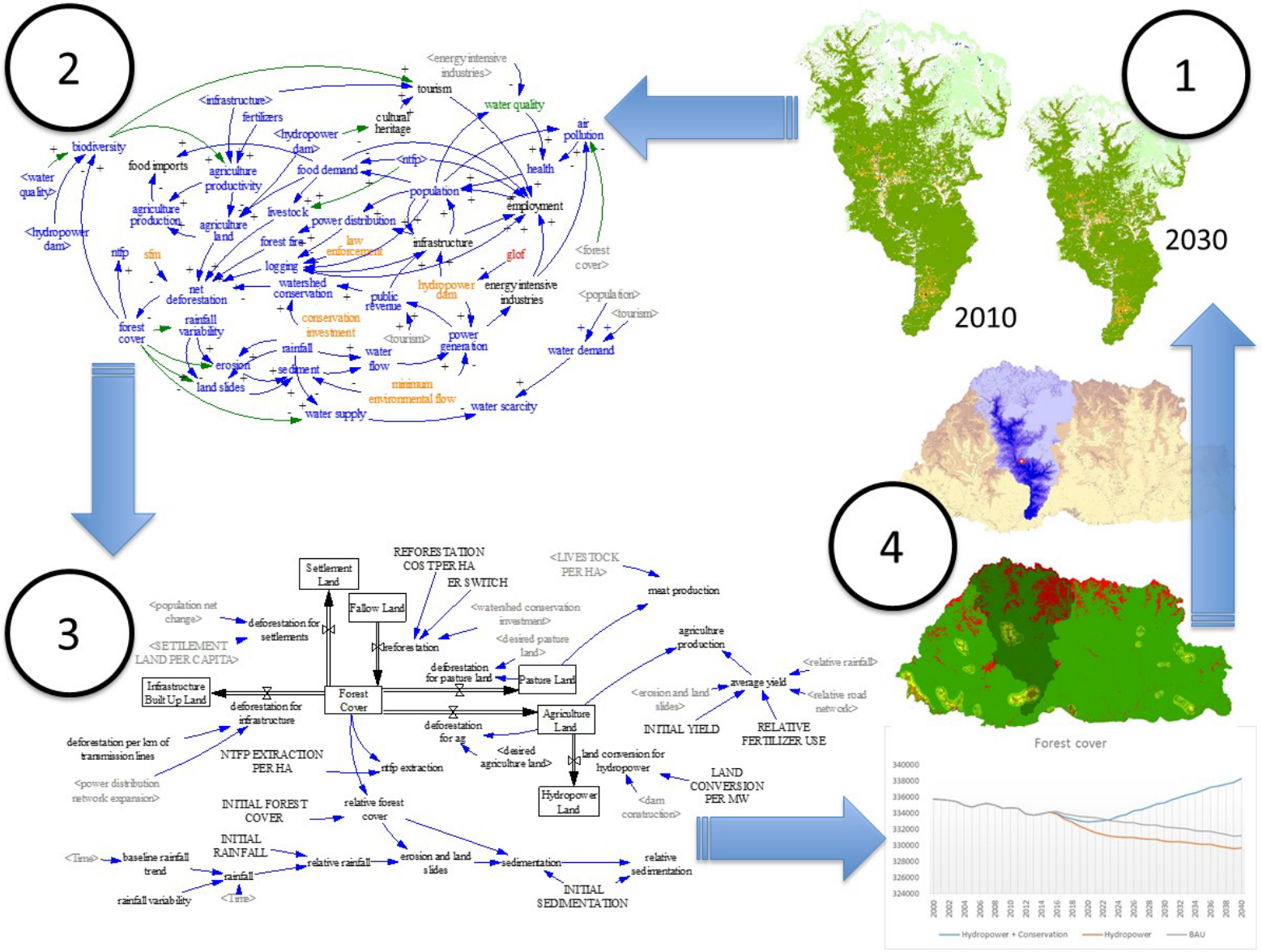
Country example - Bhutan



Scenario results

ES	Estimation			Biophysical change (2010-2030): BAU	Hydro vs BAU	ES vs BAU	Economic value per unit	Economic valuation (year 2030)		Comments
	InVEST	SD	Benefit transfer					Hydro vs BAU	ES vs BAU	
Provision of food		X		9,581 ton	-752	-768	542.81 US$/ton	-$407,898	-$416,954	Systemic approach, with endogenous changes to population and land use
					3,215	3,142		$2,259,158	$2,207,937	Sectoral approach with no change to land use, only yield
Sedimentation	X			0.21 mm3/km2	188.5%	-2.9%	12,484 $/hour of hydropower dam operation	-$18,211,679	$281,590	Only considers impact on sedimentation from land use
Provision of freshwater (quality) - nitrogen		X		0.0008 mg/l	-3.27%	-3.16%	-	Below health threshold	Below health threshold	Assumes that all the land-related N loadings take place in 20% of the area (concerning the estimation of concentration)
Provision of freshwater (quality) - phosphorus		X		0.0008 mg/l	-2.97%	-2.86%	-	Below health threshold	Below health threshold	Assumes that all the land-related N loadings take place in 20% of the area (concerning the estimation of concentration)
Habitat for species			X	2,348 ha	-1,537	1,413	5,192 US$/Ha	-$7,981,483	$7,334,511	Economic value per unit obtained from Kubiszewski et al. (2010)
		X		2,780 persons	-156	-153	17,732 US$/person	-$2,760,841	-$2,719,680	Assumes that a reduction in habitat quality has a proportional impact on tourism visits (it could also be assumed that expenditure per visit might change)
Regulation of carbon sequestration and storage	X	X		-81,954 ton	-71,216	65,435	43 US$/ton	-$3,062,288	$2,813,705	Upper values of carbon coefficients from IPCC Report 2006
	X	X		-4,933 ton	-15,767	14,489	43 US$/ton	-$677,981	$623,027	Lower values of carbon coefficients from IPCC Report 2006

National Water Seminar 2017

- Prime Minister, Minister Economic Affairs, Secretary - National Environmental Commission
- Policy Instrument under discussion

What are some of the challenges?

- Standardization of methods (for modeling, valuation etc.)
- “Found it relatively straightforward to synthesize data and information in biophysical and economic interim reports, but carrying out scenario analysis was considered much more challenging.”
- Translation of policies into spatial information
- Spend more time to develop the research question and scenarios
- (Balancing process and content) - Focus a lot more on process

THANK YOU

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