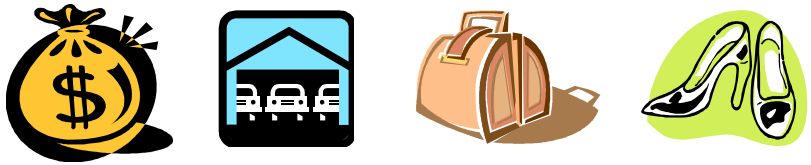
Views expressed in this presentation are those of the presenter and do not necessarily represent those of any organization.

TABLE OF CONTENTS

1. Introduction of TEEB
2. Major Findings
3. Methodologies
4. TEEB In-Country Study & TEEB for Business Coalition
5. Conclusion

1. INTRODUCTION

Economic Invisibility of Nature

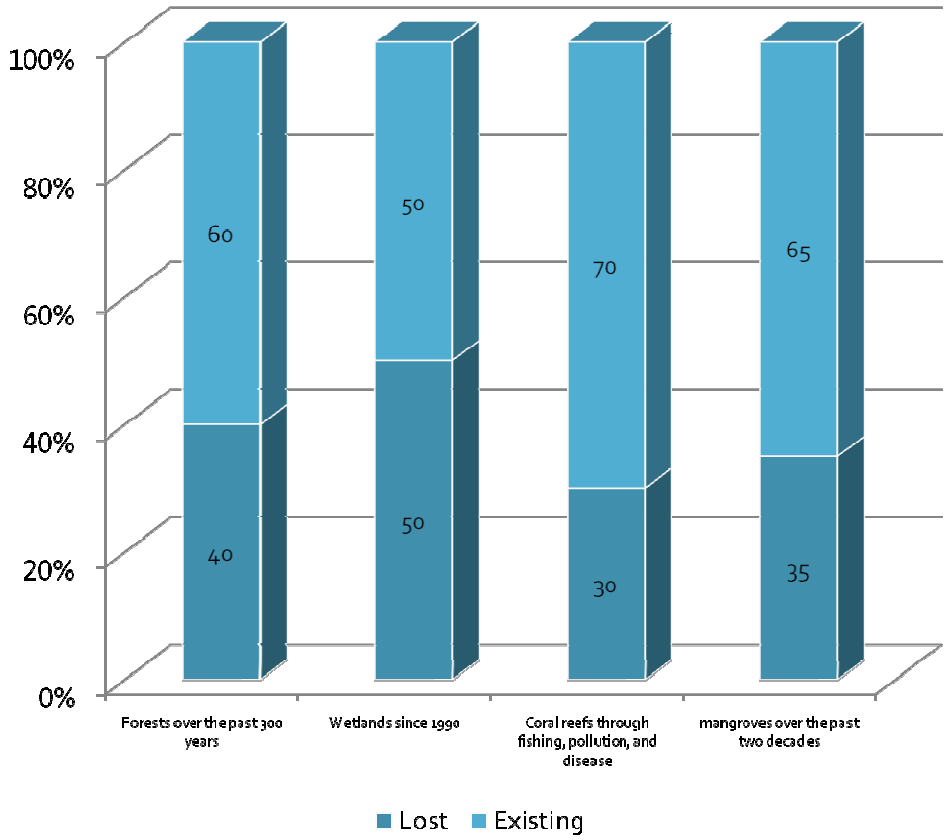


Visible private goods

Invisible public goods

“You cannot manage what you don’t measure.”

Lost Capital



- In the last 300 years, the global forest area has shrunk by approximately **40%**
- Since 1900, the world has lost about **50%** of its wetlands
- Some **30%** of the world's coral reefs have been destroyed
- In the past two decades, **35%** of mangroves have disappeared

History of TEEB

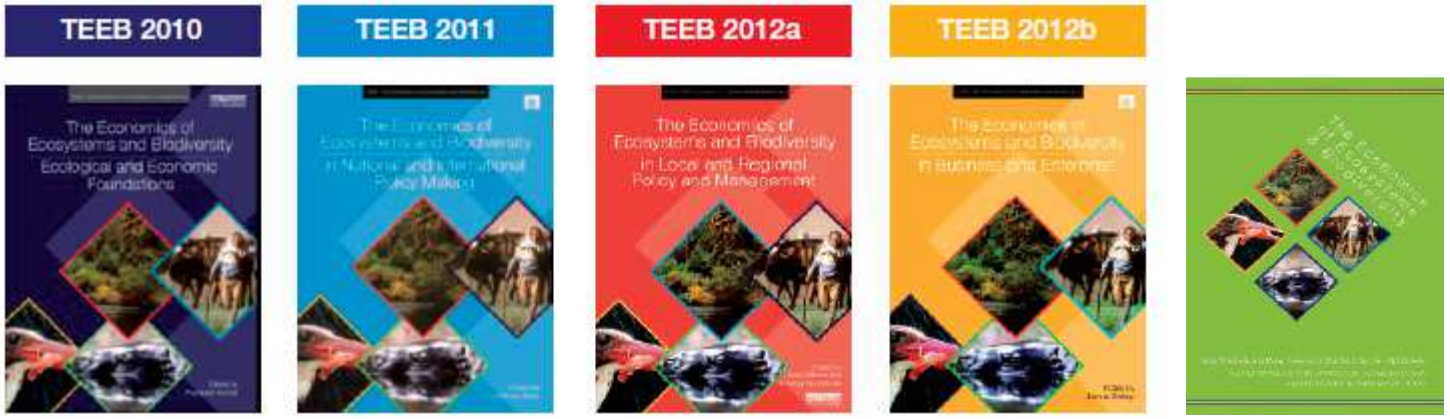
- Leaders Statement of G20 Summit in Seoul
- CBD COP-10/ Decision X/2 on the Strategic Plan for Biodiversity 2011 20; Decision X/21 on Business Engagement; Decision X/44 on Incentive Measures
- Ramsar Resolution X.12 on “Principles for partnerships between the Ramsar Convention and the business sector”

What is TEEB?

- Global initiative focused on drawing attention to the economic benefits of ecosystems and biodiversity.
- Highlights the growing cost of biodiversity loss and ecosystem degradation and supports the mainstreaming of biodiversity into decision-making.
- **Main Target**: Policymakers, Local Policymakers, and Businesses
- **Key Message**: 1) Nature has socio-economic importance, most of which not reflected by the current economic systems and 2) Economic valuation can support more holistic decision-making and boost conservation of nature.

TEEB Major Publications

- TEEB Ecological Foundations (2010)
- TEEB for International & National Policymakers (2011)
- TEEB for Regional and Local Policy-makers (2012)
- TEEB for Business (2012)
- TEEB Synthesis Report (2010)



Foundations

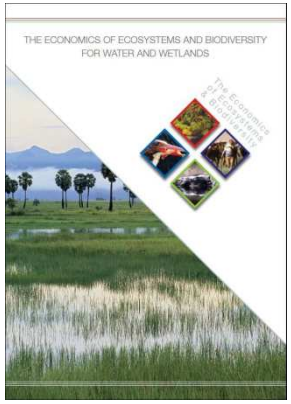
International & national policy-makers

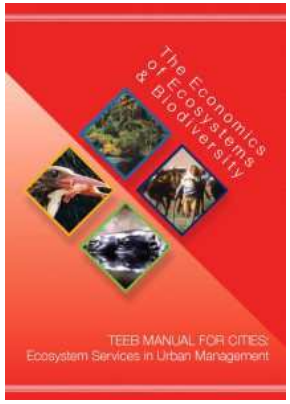
Regional and local policy-makers

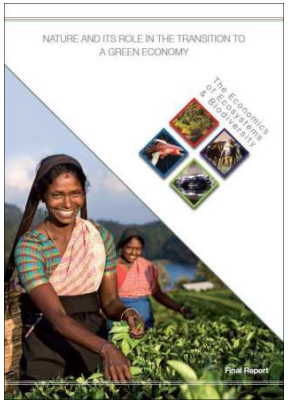
Business

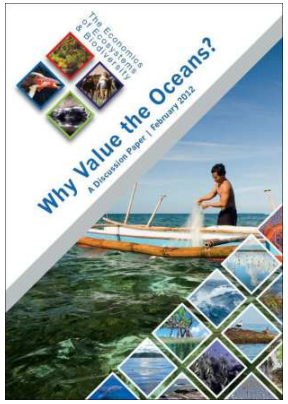
TEEB Sectoral Publications

- TEEB for Water and Wetlands (2013)
- Nature and its role in a Green Economy (2012)
- Why Value the Oceans – A discussion paper (2012)
- TEEB Manual for Cities: Ecosystem Services in Urban Management (2011)



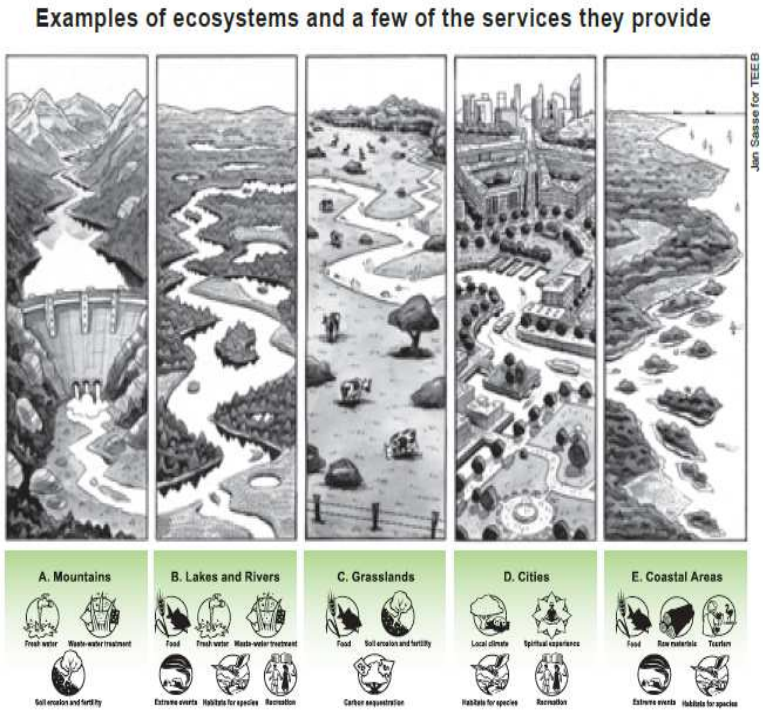






2. MAJOR FINDINGS

Major Ecosystem Services



- **Supporting services**: soil formation, nutrient cycling, primary production
- **Provisioning services**: food security, water, fuelwood, fibre, genetic resources
- **Regulating services**: climate, water flow and quality, control of disease vectors, disaster mitigation, pollination
- **Cultural services**: spiritual, recreational and tourism, aesthetic, cultural heritage, sense of place

Source: The Millennium Ecosystem Assessment (MEA, 2003)

Examples of Ecosystem Service Trade-offs

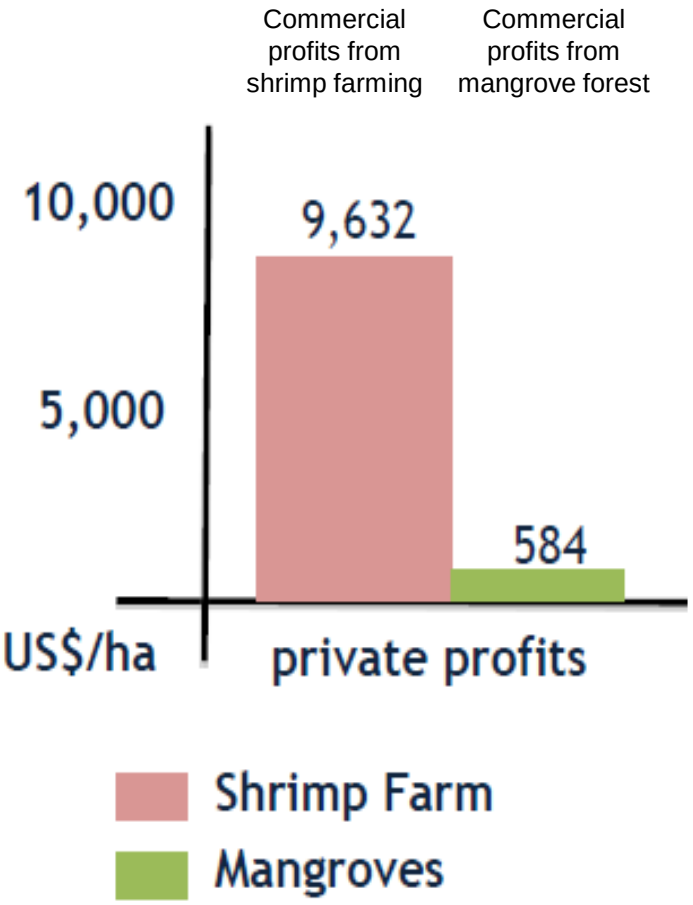
	Decision	Goal	Example winners	Ecosystem services decreased	Example losers
Increasing one service at the expense of other services	Draining wetlands for farming	Increase crops, livestock	Farmers, consumers	Natural hazard regulation, water filtration and treatment	Local communities including farmers and some downstream users of freshwater
	Converting forest to agriculture	Increase crops, livestock and biofuels	Farmers, consumers	Climate and water regulation, erosion control, timber, cultural services	Local communities, global community (from climate change), local cultures
Converting ecosystems and their services into built assets	Coastal development	Increase capital assets, create jobs	Local economy, government, developers	Natural hazard regulation, fisheries (as a result of removal of mangrove forests or wetlands)	Coastal communities, fisheries industry (local and foreign), increased risks to coastal businesses
	Residential development replacing forests, agriculture or wetlands	Increase capital assets, create jobs	Local economy, government, developers, home buyers	Ecosystem services associated with removed ecosystems	Local communities, original property owners and downstream communities
Competition among different users for limited services	Increased production of biofuel	Reduce dependency on foreign energy	Energy consumers, farmers, government	Use of crops for biofuels instead of food	Consumers (rising food prices), livestock industry
	Increased water use in upstream communities	Develop upstream areas	Upstream communities, industries	Water downstream	Downstream communities, industries

Source: TEEB: Implementation Guide for Aichi Target 2 (2012)

TEEB Approach

1. **Recognizing value**: a feature of all human societies and communities (takes steps to involve the full range of stakeholders)
2. **Demonstrating value**: in economic terms (qualitative/ quantitative/ monetary) to support decision making
3. **Capturing value**: introduce mechanisms that incorporate the values of ecosystems into decision making (change of subsidies, fiscal incentives, charging for access and use, etc.)

Private Profit, Public Loss



Data from Barbier (2007)

Tool for Identify Harmful Subsidies

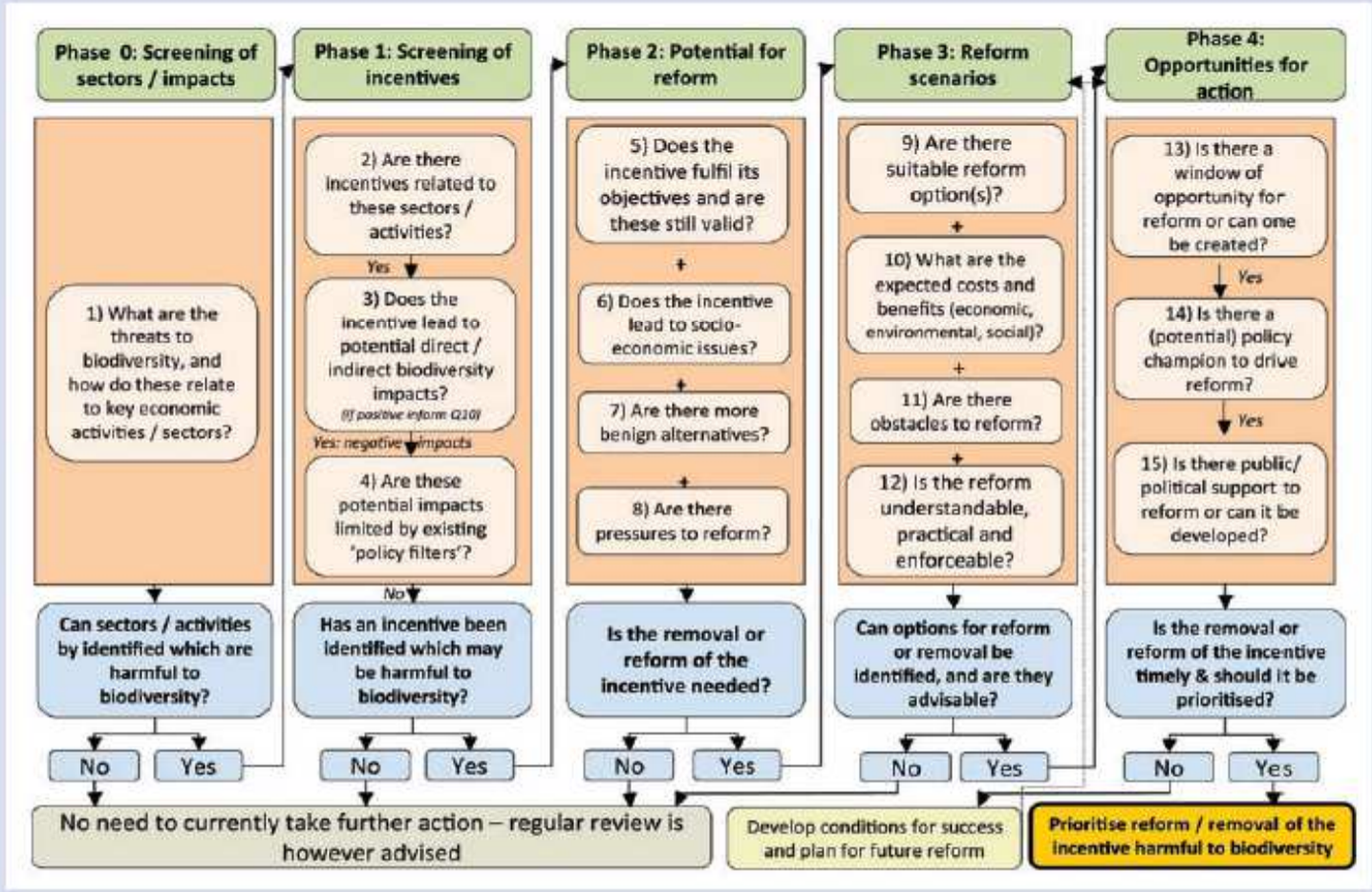


Figure 5.1: Flowchart – the subsidy reform tool

Source: ten Brink et al. (2012), building on Valsecchi et al. (2009) and Lehmann et al. (2011)

Natural Solutions of Water and Wetlands

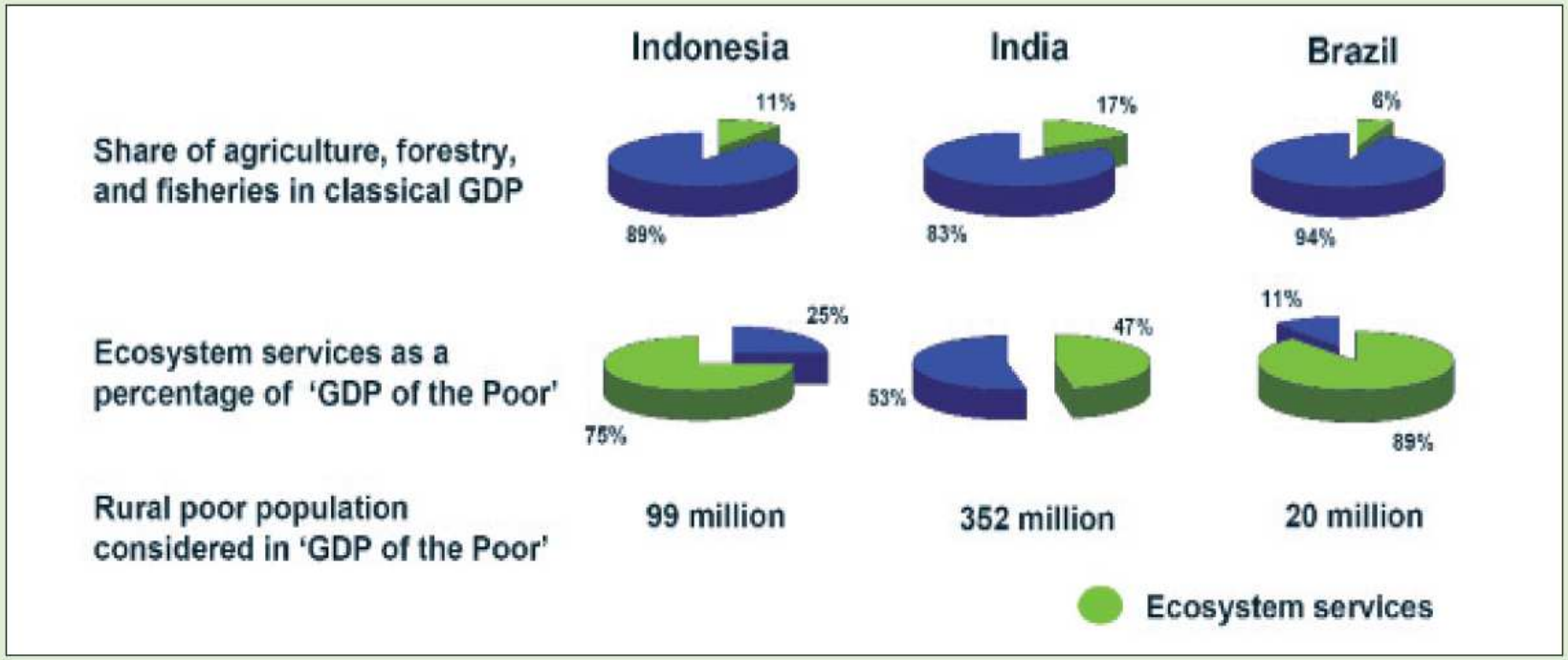
- **In India**, **the East Kolkata wetlands facilitate bio-chemical processes** for the natural treatment of an important share of the city's waste water – after this treatment process, the remaining nutrients in the water are an important input for local fish farms and vegetable cultivation (Raychaudhuri et al. 2008).
- **In Lao PDR**, **the value of conserving wetlands for flood protection** in the city of Vientiane has been estimated at just under US$ 5 million, based on the value of flood damages avoided (TEEBcase: Wetlands reduce damages to infrastructure, LAO PDR).
- **In Bangladesh**, **wetland protection** in Hail Haor, contributed to an **increase in fish catch** of over 80% (TEEBcase: Wetland protection and restoration increase yields, Bangladesh).

Natural Solutions of Forests

- **In China**, following severe Yangtze River flooding in 1999, the government committed to invest over US40$ billion in the Sloping Land Conversion Programme by offering farmers along the river cash incentives to cede their land for forest conversion to decrease erosion and mitigate flood impacts(Bennett&Xu,2007; Talis et al,2008)
- **In Cambodia**, the Ream National Park provides fish breeding grounds and other subsistence goods from mangroves worth an estimated USD 600,000 per year and an additional USD 300,000 in services such as storm protection and erosion (Emerton et al, 2002)
- **Ecosystem-based climate mitigation and adaptation – In Germany,** in Mecklenburg- Vorpommern, Germany, 30,000 hectares of peatland were restored over the period 2000 to 2008, leading to emission savings of up to 300,000t CO2-equivalent at an avoidance cost of CO2 ~ 8 to 12 €/t CO2. (Forster, 2010).

Poor people is more vulnerable to ecosystems degradation than others

Figure 2: 'GDP of the poor': estimates for ecosystem service dependence



Source: TEEB for National Policy, Chapter 3 [N3]

"We may dismiss ecosystem services as only "10-20% of GDP", but they are actually **"50-90%" of the GDP of the poor**" – Pavan Sukhdev

Business has a huge impact on nature

Estimate by TRUCOST for UN-PRI

Business Externalities

- The primary production (agriculture, forestry, fisheries, mining, oil and gas exploration, utilities) and primary processing (cement, steel, pulp and paper, petrochemicals) sectors analyzed are estimated to have externality costs totaling **US$7.3 trillion**, which equates to 13% of global economic output in 2009.
- Greenhouse gas emissions (38%) followed by water use (25%); land use (24%); air pollution (7%),land and water pollution (5%) and waste (1%)

3. METHODOLOGY

Natural Capital accounts – Global Map

- Distorted picture only by GDP; e.g. Stiglitz Commission
- System of Environmental and Economic Accounting (SEEA)

  e.g. SEEA Central Framework revision in progress (material and non-material benefits obtained from ecosystems)
- World bank's Global Partnerships for Ecosystem Valuation and Wealth Accounting (WAVES) - calls for countries to implement the SEEA
- Gaborone Declaration 2012 by 10 African Nations
- **The need for coordinated action to**

  1) develop **institutional arrangements** to strengthen the implementation of natural capital accounting;

  2) develop **science-based methodologies** for natural capital accounting as a complement to GDP and corporate performance measurements

How to Value Nature

- Qualitative analysis
  e.g. landscape beauty, cultural & spiritual values
- Quantitative data
  e.g. annual carbon sequestration in peatlands in tonnes /hectare /year
- Geospatial mapping
  e.g. community benefits from clean water provision from a given wetland
- Monetary valuation – methodologies?
  e.g. carbon storage in wetlands

Methodologies (Monetary Valuation)

- **Revealed Preference methods** use data from *actual (past)* behaviour to derive values, while relying on the link between a market good and the ecosystem service and the fact that demand for market good is influenced by the quality of the ecosystem services.
- **Stated Preference methods** are based on the demand for a given ecosystem service (or a change in its provision) measured by means of a *hypothetical* market simulated through the use of surveys. These methods require people to rate or rank trade-offs.

Revealed Preference method

- Priced-based approach (e.g. market value of forest products, but?)
- Averting behaviour (e.g. water filtration used as a proxy of water pollution damages)
- Production function approach
- Travel cost method (e.g. recreational values)
- Hedonic pricing approach (e.g. property price - proximity to nature)

Stated Preference method

- Contingent valuation method (survey method)
- Choice modelling

Measuring Business Externalities

PUMA's Environmental Profit and Loss Account (EP&L)

PPR HOME

PUMA

PRESS KIT

PUMA E P&L Table & Visual Break-Down

	Water use	GHGs	Land use	Air pollution	Waste	TOTAL	
	€ million	€ million	€ million	€ million	€ million	€ million	% of total
	33%	32%	26%	7%	2%	100%	
TOTAL	47	47	37	11	3	**145**	100%
PUMA operations	<1	7	<1	1	<1	**8**	6%
Tier 1	1	9	<1	1	2	**13**	9%
Tier 2	4	7	<1	2	1	**14**	10%
Tier 3	17	7	<1	3	<1	**27**	19%
Tier 4	25	17	37	4	<1	**83**	57%
EMEA	4	8	1	1	<1	**14**	10%
Americas	2	10	20	3	<1	**35**	24%
Asia/Pacific	41	29	16	7	3	**96**	66%
Footwear	25	28	34	7	2	**96**	66%
Apparel	18	14	3	3	1	**39**	27%
Accessories	4	5	<1	1	<1	**10**	7%

Measuring Business Externalities

What needs to be done……

- Need to include social impacts in sustainability
- ‘Cradle to gate’ (from the raw materials to finished product), not ‘cradle to grave’ (right through to the product’s disposal)
- Extracting similar information from small players further down its supply chain involves some calculated guesswork.

TEEB for Business Coalition

- It assessed more than 100 environmental impacts using the Trucost environmental model which condenses them into six Environmental Key Performance Indicators (eKPIs) to cover the categories : water use, greenhouse gas (GHG) emissions, waste, air pollution, water and land pollution, and land use.

4. TEEB IN-COUNTRY STUDY & TEEB FOR BUSINESS COALITION

Core Activities of TEEB: Phase III

- **Developing** guidance material on how to mainstream the value of ecosystems and biodiversity into decision-making at the country level
- **Organizing** workshops to build the capacity of national, regional and local stakeholders to produce tailored economic assessments of ecosystems and biodiversity
- **Facilitating** national studies

TEEB In-Country Studies

- Armenia
- ASEAN
- Belgium
- Brazil
- Czech Republic
- Germany
- Heart of Borneo
- India
- Japan
- Netherlands
- Nordic Countries
- Poland
- Portugal
- Republic of Korea
- Slovakia
- South Africa
- United Kingdom

Guidance Manual for Country Studies

- To provide user-friendly, easily accessible and coherent information on “how to TEEB” and directs implementers to relevant references
- A first draft to be made available in late May 2013
- Upcoming Trondheim Conferences on Biodiversity, Trondheim Norway, May 27-31, 2013

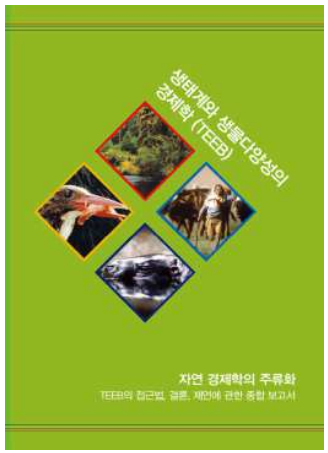
- The post Rio agenda
- Ecology and economy
- Angles of attack
- Sources of knowledge and perspectives such as TEEB, WAVES and IPBES

TEEB for Business Coalition

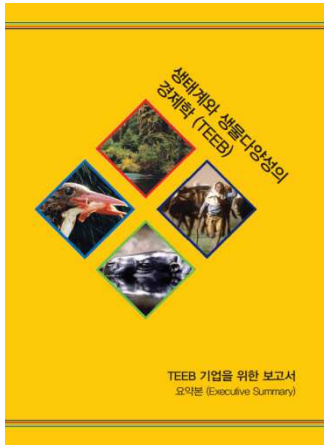
- Established in Singapore in late 2012, working on the programme of *Thought leadership* and *Outreach*

TEEB Activities in Korea

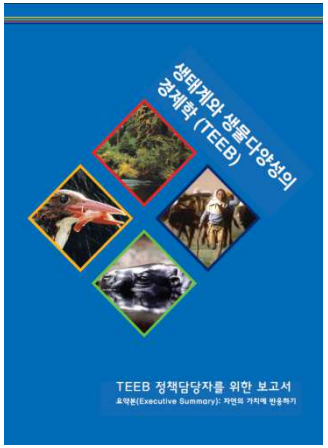
Translation of existing reports



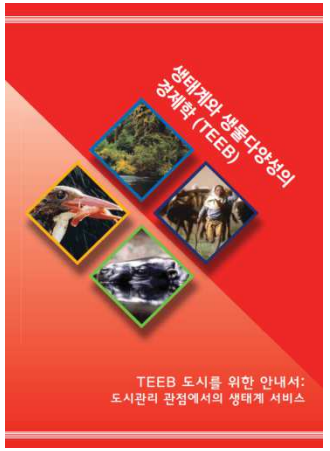
TEEB Synthesis Report



TEEB for Business (executive summary)



TEEB for Policymakers (executive summary)



TEEB Manual for Cities

Communications activities

- TEDx Nature+, TEDx Sinchon @Seoul City Hall, Arirang radio, etc.

Need for Country-level, provincial-level case study!

5. CONCLUSION

5. CONCLUSION

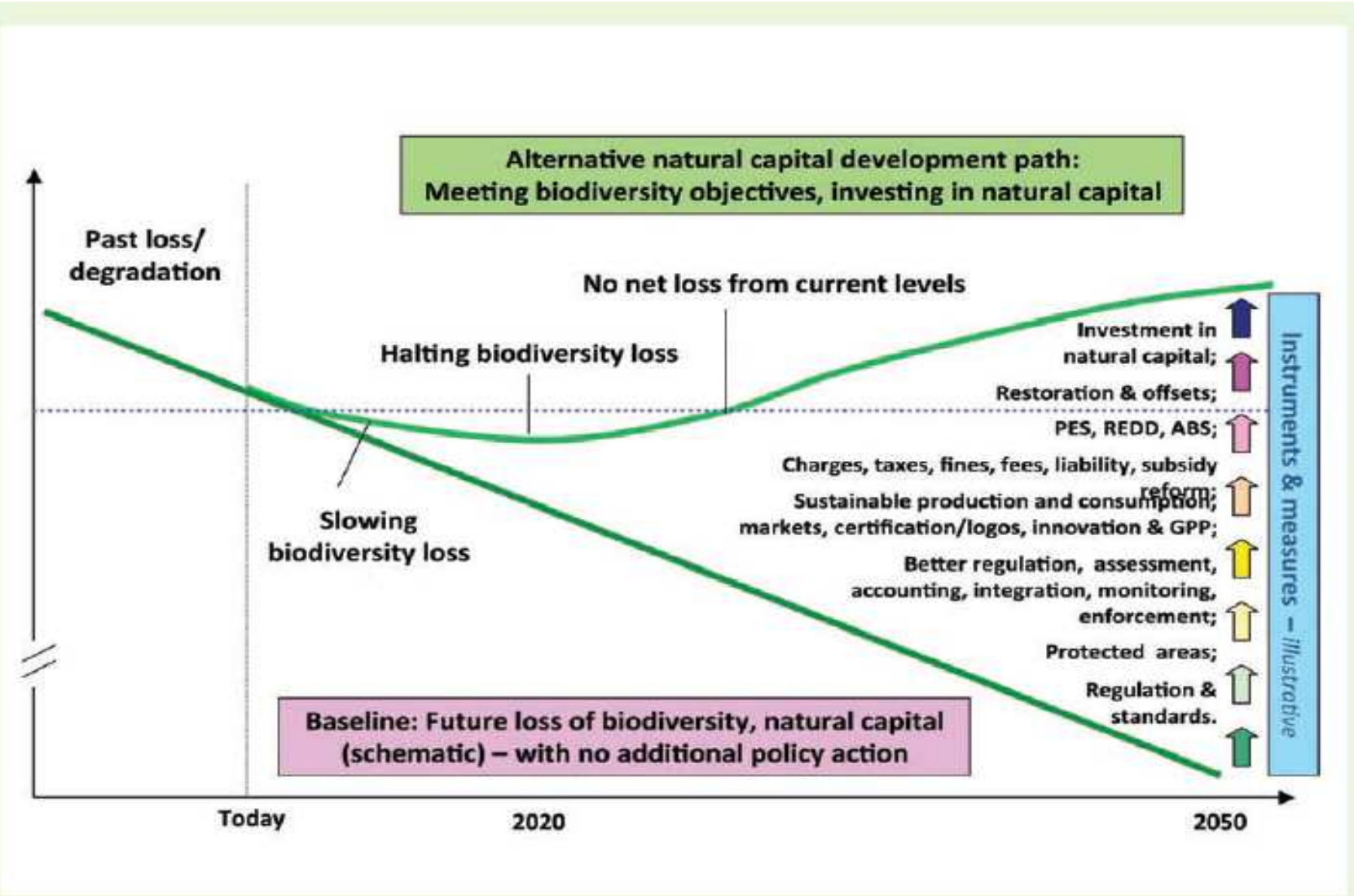


Figure 5.2: Eroding natural capital base and tools for an alternative development path
Source: Patrick ten Brink, own representation

Final thoughts

- There must be a clear understanding of true value of nature and how to take this value into account in public and private decisions in light of the multiple benefits it provides.
- A green economy rests on sustainably managing natural capital, eg. water, wetlands, forest, etc. and human and societal wellbeing depends on nature, particularly for the rural poor.
- Thus, investing in green infrastructure (forest, water, wetlands, etc.) – whether restoration or protected area management – is required not just because people value nature, but also because healthy economy needs nature.

Thank you for your attention!

"We were losing natural capital – the benefits that flow from nature to us… at an extraordinary rate, of the order of two to four trillion dollars worth of natural capital." – Pavan Sukhdev

TEEB: www.teebweb.org
TEEB for Business Coalition: www.teebforbusiness.org

Juhern Kim: zestor33@gmail.com; juhern.kim@gggi.org

Courtesy: Yann-Athus Bertrand