Mainstreaming the Economics of Ecosystems and Biodiversity

"TEEB"

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G8 2007
Environment Ministers Meeting
Potsdam, 15-17 March 2007

TEEB partnership

A global economic study emanated from the European Commission at the Group 8 +5 ministerial summit 2007, aiming at:

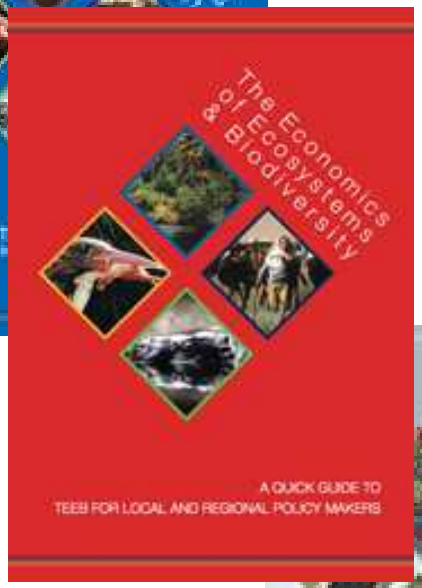
1. **Analysis of global economic benefits of biodiversity**
2. **Economic assessment of the cost of loss and degradation in nature biodiversity and ecosystem services**
3. **Cost of conservation vs failure to take protective measures**

Study combines science, economics and politics

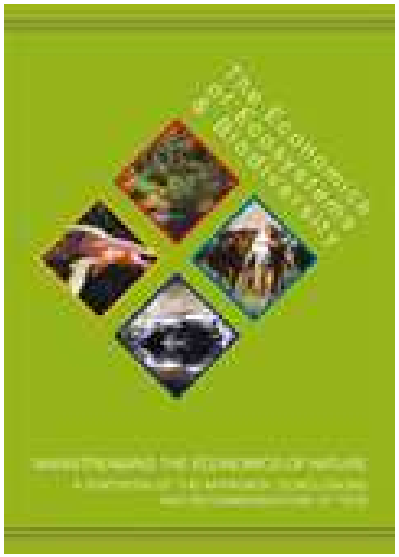
www.teebweb.org

TEEB Report Policy Makers 2009

TEEB Interim Report CBD COP-9, Bonn, May 2008



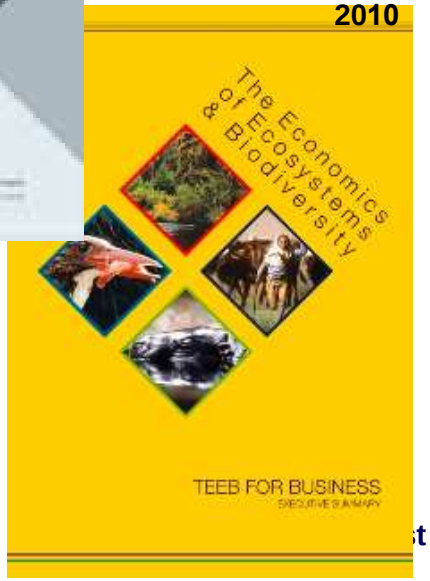
TEEB Report Local &regional Policy makers 2009



TEEB Report mainstreaming the economics of Nature 2010

TEEB Climate Issues Update Strömstad September 2009.

TEEB Report for Business 2010



TEEB to share best practices, tools, methods and experiences and make TEEB global public product.

Guide targeted to key stakeholders

t Asia (ROWA)

Coordinated Editors

Partnership hosted and administered by UNEP

Leader Pavan Sukhdev

More than 500 shareholders: international institutions, universities and individuals and "societies" a variety of economists, ecologists and practitioners ...

The Link: natural capital

Biodiversity makes economic sense

A new look in the area of natural capital and offered to policy makers

- **Nature (Biodiversity)** ⟷ **Ecosystem Services** ⟷ **Economy (Poverty eradication)**

- **Pollination for agriculture 2-8B/yr**
- **Flood damage control (mangroves)**
- **Water purification**
- **Forest carbon storage**
- **Nutrition**
- **Herbal medicine $43B/yr**
- **Anti cancer agents $1B/yr**
- **Fisheries $58 B/yr**
- **Coral reefs $30 B/yr**

TEEB Vision:
Making Nature Economically Visible

- **How to invest in natural capital to help reduce the degradation of ecosystems and their services (Green Economy)**

- **Take advantage of high returns and share equitably with the poorer community**

- **Fair distribution of costs and benefits**

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TEEB

- **An estimated 40 per cent of the global economy is based on biological products and processes.**

- **Principle Findings:**
  - ✓ **A direct relationship between poverty and the loss of ecosystems and biodiversity**
  - ✓ **The degradation of natural capital is a risk to achieving the Millennium Development Goals (MDGs)**

Ecosystem Services

Direct Use Values
economically visible

- **Provisioning services:** food crops, fiber and water, plant based medicines

Non Use Values
economically non visible

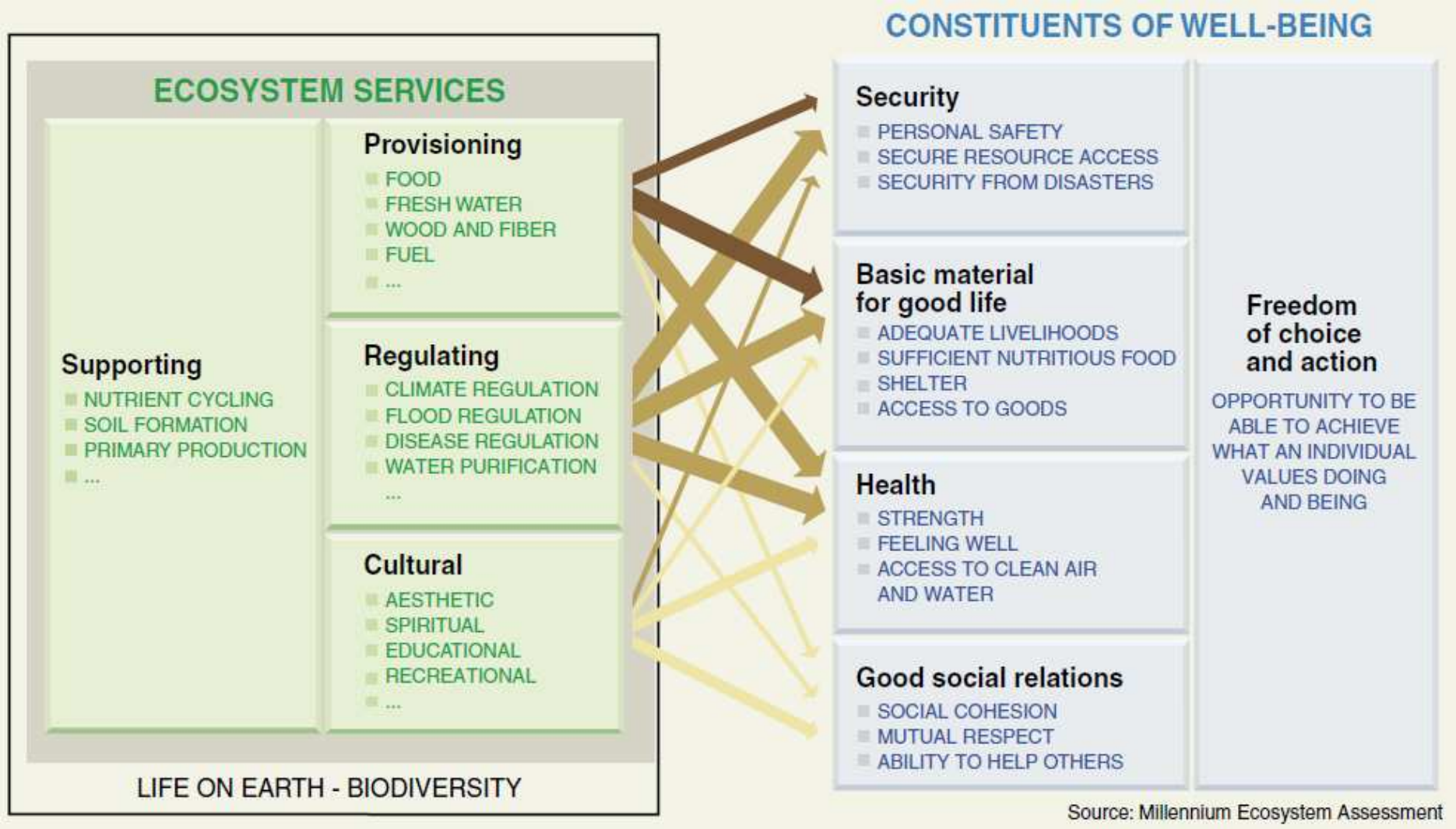
- **Regulating services:** climate regulation, water purification, flood, and disease control
- **Cultural services:** spiritual, recreational, education and cultural values;
- **Supporting services** nutrient cycling, photosynthesis production of atmospheric oxygen, soil formation, water cycling, and provisioning of habitat







Biodiversity as the basis of ecosystem services and human well-being (MA 2005)



MA revealed that 60% of ecosystem services are in decline

Enhanced

Crops
Livestock
Aquaculture
Carbon sequestration

Degraded

Capture fisheries
Wild foods
Wood fuel
Genetic resources
Biochemicals
Fresh water
Air quality regulation
Erosion regulation
Water purification
Pest regulation
Pollination
Natural hazard regulation
Regional & local climate regulation
Spiritual & religious
Aesthetic values

Mixed

Timber
Fiber
Water regulation
Disease regulation
Recreation & ecotourism

Source: Millennium Ecosystem Assessment, 2005

Examples of non-visible costs

- **Cost of regulating services such as water purification remain largely invisible in the economic value and accounts**

- **Cost of deforestation for logging is generally not borne by companies (environmental externalities), but rather costs fall on poor societies relying on these resources.**

Gap Analysis

- **Market failure to account for full economic values of BES has been a significant factor in their continuing decline (GBO3-MA 2005)**
- **When decision-making neglects the benefits of these goods, wrong choices (policies) are made to meet the challenges**
- **Market signals are usually influence by subsidies and taxation**
- **Mainstreaming TEEB in NBSAPs and National Resource Mobilization Strategies as an Innovative financial mechanism**

TEEB focus on values of ecosystem services and MA's "promising (economic) responses"

Promising responses (selected from MA 2005):

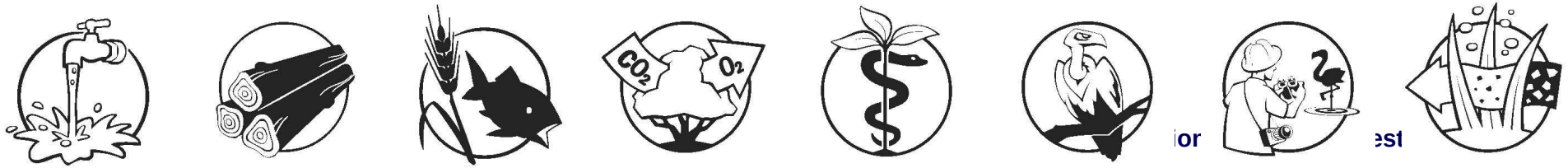
- **Incorporation of nonmarket values** of ecosystems in resource management decisions
- **Elimination of subsidies** that promote excessive use of ecosystem services (and, where possible, transfer these subsidies to payments for non-marketed ecosystem services)
- Measures to **reduce aggregate consumption** of unsustainably managed ecosystem services
- Greater **use of economic instruments** and market-based approaches in the management of ecosystem services (where enabling conditions exist)

TEEB approach to "valuation"

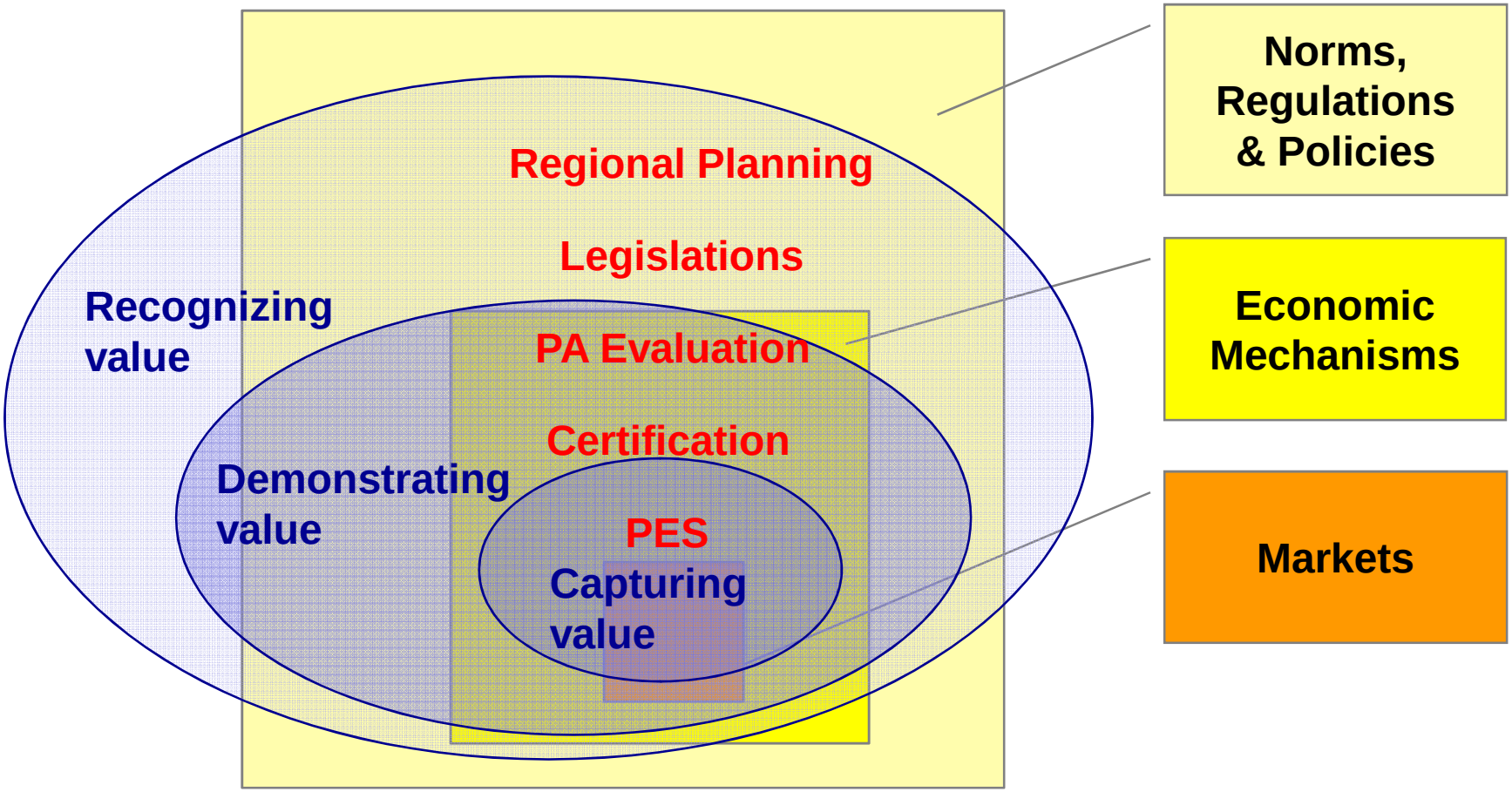
1. **Recognizing value**: a feature of all human societies and communities

2. **Demonstrating value**: in economic terms, to support decision making

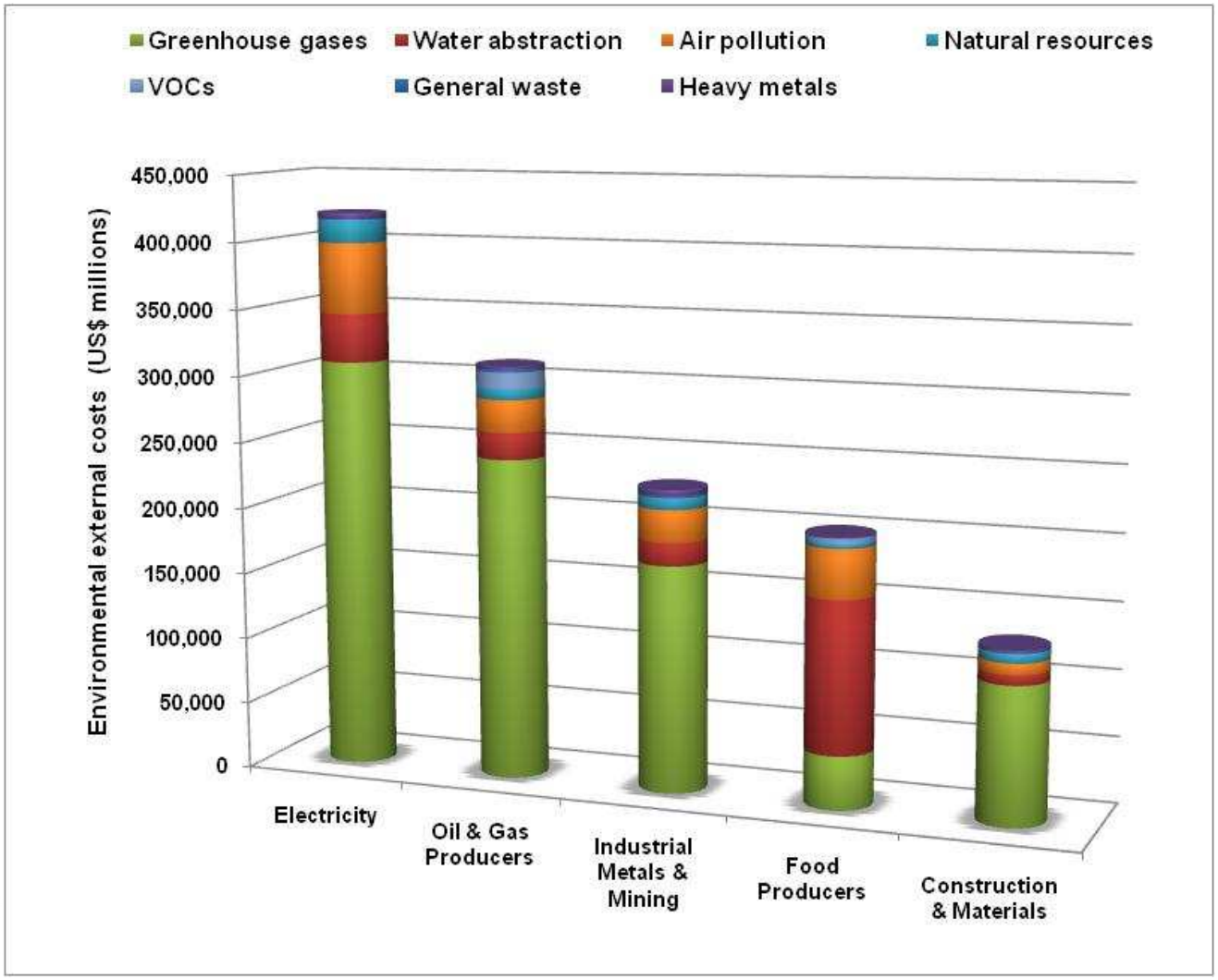
3. **Capturing value**: introduce mechanisms that incorporate the values of ecosystems into decision making



Applying the TEEB Approach …



Demonstrating value: economic impacts



- US$ 6.6 trillion/year estimated global environmental costs of economic activity (11% of 2008 GDP)
- Five sectors account for about 60% of environmental costs

Source: Trucost for UNPRI, 2010

Demonstrating value: dependence

- Value of insect pollination to food crops: €153 billion in 2005
- Example: Michigan USA blueberry crop worth US$ 124 million/year; totally reliant on pollination by bees at cost of about US$ 1.5 million/year (renting hives)

- Example: Wild pollinators increase coffee yields by 20% on farms within 1 km of forest in Costa Rica (Ricketts et al. 2004)
- Pollination services to agriculture are threatened by ‘colony collapse disorder’ mainly affecting domesticated bees

Capturing value: "biodiversity business"

Adding BES to existing business

- Agriculture
- Biodiversity mgmt services
- Cosmetics
- Extractive industries
- Finance
- Fisheries
- **Forestry (2.5-4.7 trillions $)**
- Garments
- Handicrafts
- Pharmaceuticals
- Retail
- Tourism (ex coral reefs)

New markets for BES

- Bio-carbon & REDD-plus
- Water quality trading
- Biodiversity banking

Capturing value: Forest certification

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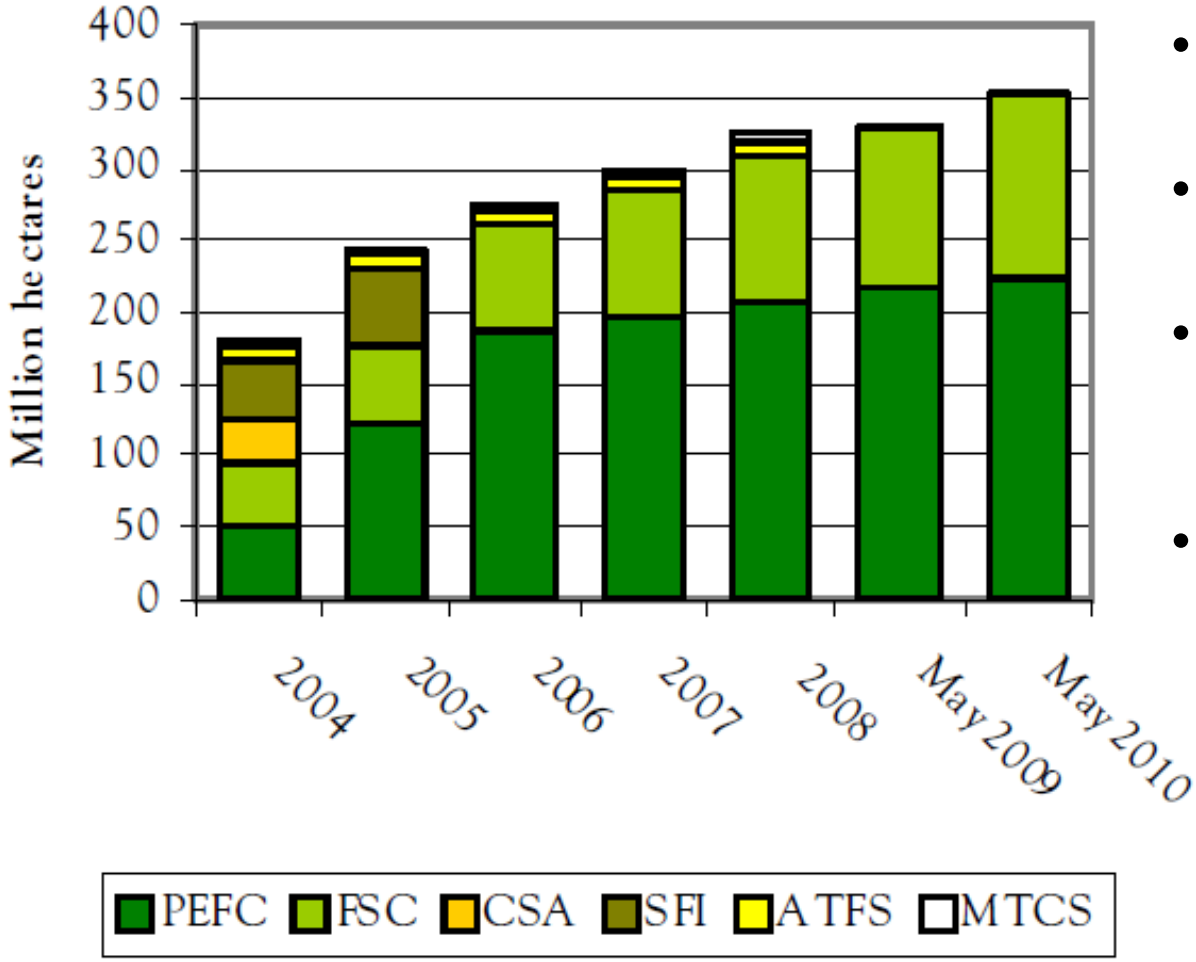
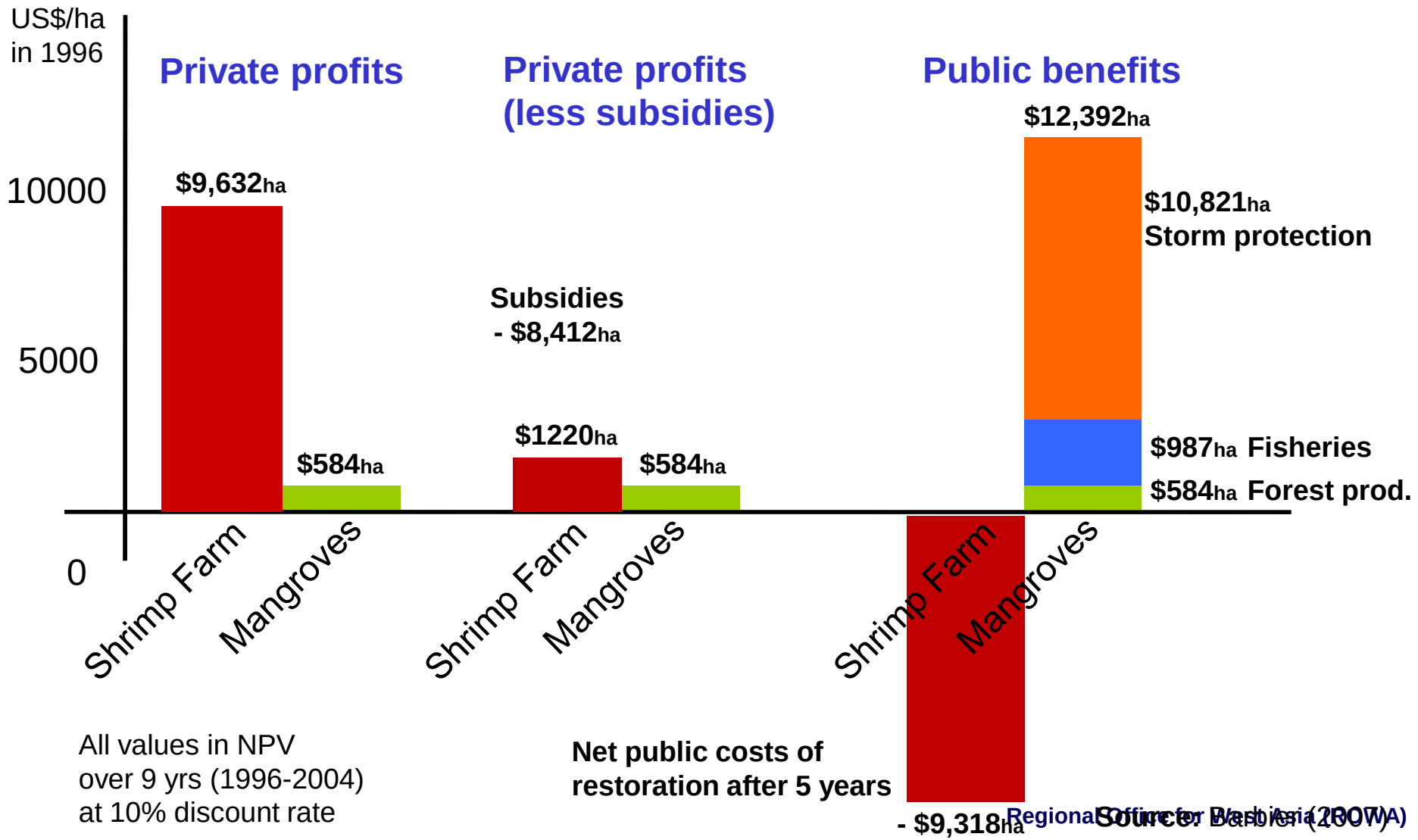


- 355 million hectares (9% of world's forests)
- 26% of global supply of industrial roundwood
- 84% of certified forests are in North America and Western Europe
- 2 schemes dominate: FSC, PEFC

Source: UNECE/FAO Forest Products Annual Market Review 2009-2010

Trade-offs: Shrimp farms vs mangroves

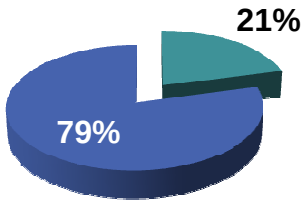
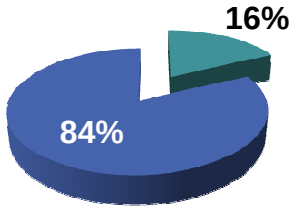
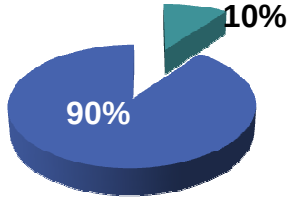
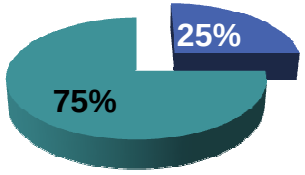
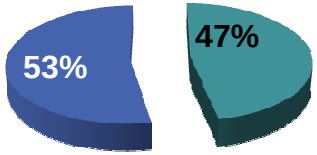
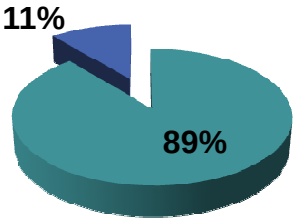


All values in NPV
over 9 yrs (1996-2004)
at 10% discount rate

Net public costs of restoration after 5 years

Source: Barbier (2007)

Equity impacts of ecosystem decline

	Indonesia	India	Brazil
Ecosystem services dependency	99 million	352 million	20 million
Ecosystem services as percent of classical GDP			
Ecosystem services as percent of "GDP of the Poor"			

Ecosystem services

Source: Gundimeda and Sukhdev, D1 TEEB

TEEB: Investments in nature and conservation efforts

- **An additional investment of about $ 45 billion annually in conservation of natural areas globally can provide a value of $ 5 billion of services that depend on nature while generating millions of new jobs and securing livelihoods for rural people and indigenous people**

- **The value of coral reefs, fisheries, flood protection services and tourism is between $ 100,000 and $ 600,000 per square kilometer, and to protect corals it is enough to invest approximately $ 780 per square kilometer, or 0.2 per cent of the value of ecosystem Protected.**

What next for TEEB?

- Capacity building for developing countries (CBD, etc)
- “Country” & “Regional” analysis (Brazil, India, Germany…)
- Green National Accounts (World Bank & partners)
- Business & biodiversity (indicators, valuation, reporting, etc)
- Filling ecological & valuation knowledge gaps
- Communicating the issue to society at large

Recommendations

- The benefits gained from secured ES far exceed the cost of preventing their losses
- Economic invisibility of BES is major cause of losses of ES. (trillions $) and poor are most impacted because of their reliance on natural resources.
- Quick upgrade in the system of national accounts to include changes in stocks of natural capital flows and ecosystem services (the Strategic Plan for the Convention on Biological Diversity Goal A Target 2)
- The negative externalities of businesses are significant and should be measured and disclosed in order to be managed and minimized.
- Ensure transparency, public financial disclosure of procurement policies and accountability, about the impacts of ES on nature
- Compensation schemes: Disclose incentives and apply “polluter pays” and “full cost recovery” principle to recover losses and direct future incentives
- For policy makers: immediate reform of environmentally harmful subsidies.
- Configure (where applicable) the physical accounts for forest carbon stocks (for example for the development of systematic REDD + to reduce forest degradation) GDP does not configure these measures.
- For business: Invest in ecological infrastructure

X/2. Strategic Plan: Target 2

By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into nation accounting, as appropriate, and reporting systems

TEEB Ecological & Economic Foundations

- Ch4 - Socio-cultural context of ecosystem and biodiversity valuation
- Ch5 - The economics of valuing ecosystem services and biodiversity

TEEB for National & International Policy-Makers

- Ch3 - Strengthening indicators and accounting systems for natural capital
- Ch4 - Integrating ecosystem and biodiversity values into policy assessment
- Ch8 - Recognising the value of protected areas
- Ch9 - Investing in ecological infrastructure

TEEB for Local & Regional Policy-Makers

- Ch3 - Methods to consider ecosystem services (cost-benefit analysis)
- Ch6 - Spatial planning instruments and Impact Assessment

TEEB for Business

- Ch3 - Measuring & reporting biodiversity & ecosystem impacts & dependence

Mainstreaming in the CBD

X/2. Strategic Plan and Aichi Biodiversity Targets

- 1Awareness of biodiversity values and steps people can take **D1/2/3/4**
- **2 Biodiversity values in national accounts and development policy** **D1/2**
- 3 Negative and positive incentives **D1/2/3**
- 4 Sustainable production and consumption **D1/2/3/4**
- 5 The rate of loss, degradation and fragmentation of habitats **D0**
- 6 Fisheries and other living marine and aquatic resources **D1/3**
- 7Agriculture, aquaculture and forestry **D1/2/3, CIU, Synth**
- 8 Pollution control **D1**
- 9Invasive alien species **D1**
- 10Coral reefs and other vulnerable ecosystems impacted by climate change **CIU**
- 11Protected area coverage **D1(8)**
- 12Status of threatened species **D0**
- 13Genetic diversity of socio-economically valuable species **D0**
- 14Conservation, restoration and equitable access to ecosystem services **D1/2/3**
- 15Climate change mitigation and adaptation and combating desertification **CIU**
- 16Access and benefit sharing **D1(5.3)**
- 17National biodiversity strategy and action plan **D1/2**
- 18Traditional knowledge **D0**
- 19Science base and technologies **D0**
- 20Capacity for implementing the Convention **D1/2/3**

X/44. Incentive measures (paragraph 7)

Requests the Executive Secretary, … to convene regional workshops for the exchange among practitioners on practical experiences on the removal and mitigation of perverse incentive measures, including, but not limited to, harmful subsidies, and on the promotion of positive incentives, including, but not limited to, market-based incentives, with a view to build or enhance capacities of, and promote common understanding among, practitioners

TEEB for National & International Policy-Makers

- Ch5 - Rewarding benefits through payments and markets
- Ch6 - Reforming subsidies
- Ch7 - Addressing losses through regulation and pricing

TEEB for Local & Regional Policy-Makers

- Ch8 - Marked-based instruments for conservation
- Ch9 - Competitions, certification and labeling

TEEB for Business

- Ch5 - Increasing biodiversity business opportunities

COP-10 Decisions

X/1. Nagoya Protocol on Access Benefit Sharing

X/2. The Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets

X/3. Strategy for Resource Mobilization

X/4. Global Biodiversity Outlook

X/5. Implementation of the Convention

X/6. Biodiversity and poverty eradication and development

X/7. Goals and targets and associated indicators

X/8. UN Decade on Biodiversity 2011-2020

X/9. The multi-year programme of work

X/10. National reporting

X/11. IPBES

X/12. Ways and means to improve the effectiveness of SBSTTA

X/13. New and emerging issues

X/14. Retirement of decisions

X/15. Clearing-house mechanism

X/16. Technology transfer and cooperation

X/17. Global Strategy for Plant Conservation 2011-2020

X/18. CEPA and IYB

X/19. Gender mainstreaming

X/20. Cooperation with other conventions and initiatives

X/21. Business engagement

X/22. Plan of Action on Cities and Local Authorities

X/23. South-South Cooperation

X/24. Review of guidance to the financial mechanism

X/25. Additional guidance to the financial mechanism

X/26. Assessment of the amount of funds needed for GEF-6

X/27. 4th review of the effectiveness of the financial mechanism

X/28. Inland waters biodiversity

X/29. Marine and coastal biodiversity

X/30. Mountain biological diversity

X/31. Protected areas

X/32. Sustainable use of biodiversity

X/33. Biodiversity and climate change

X/34. Agricultural biodiversity

X/35. Biodiversity of dry and sub-humid lands

X/36. Forest biodiversity

X/37. Biofuels and biodiversity

X/38. Invasive alien species

X/39. Global Taxonomy Initiative

X/40. Mechanisms for the effective participation of indigenous and local communities

X/41. Elements of *sui generis* systems for the protection of traditional knowledge

X/42. The Tkarihwaié:ri code of ethical conduct

X/43. Multi-year programme of work on Article 8(j) and related provisions

X/44. Incentive measures

X/45. Administration and budget 2011-2012

X/46. Date and venue of COP-11

X/47. Tribute to the Government and people of Japan

- TEEB has launched the Bank of Natural Capital, a website designed to communicate the TEEB Study findings to citizens.
- Visit it here: http://bankofnaturalcapital.com
- A partnership was also announced by the World Bank in collaboration with organizations including UNEP to 'green' national accounts in order to mainstream 'natural capital' within national economic and development plans

Arabic reports:

- http://www.teebweb.org/InformationMaterial/TEEBReports/tabid/1278/Default.aspx