

# Nature and its role in the transition to a Green Economy

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# Presentation



1. What is a green economy?
2. What is nature's role in the transition to a green economy?
3. What are the building blocks of a transition to a green economy?
4. Issues of concern/debate & summary

# What is a GREEN economy ?



UNEP defines a green economy as “***one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.***”

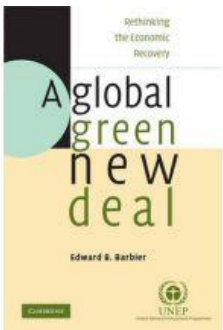
*In its simplest expression, a green economy can be thought of as one which is **low carbon, resource efficient and socially inclusive**”* (UNEP 2011).

# A confusing landscape of similar terms?



**Green Growth (i.e. as used by OECD)** – means “*fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies*” (OECD, 2011)

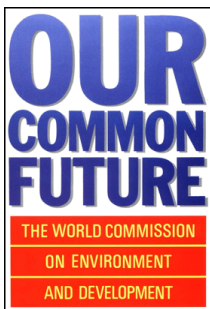
Arguably a narrower concept than the green economy.



**Green New Deals** - gained prominence following the 2007-2008 economic and financial crises - *Economic policy strategy for ensuring a more economically and environmentally sustainable world economic recovery that could act as a catalyst in a transition to a green economy.*

...a shorter time scale stimulus to a green economy

(ten Brink et al., 2012 building on UNEP’s March 2009 Policy Brief and *Global Green New Deal*, Barbier, 2010),



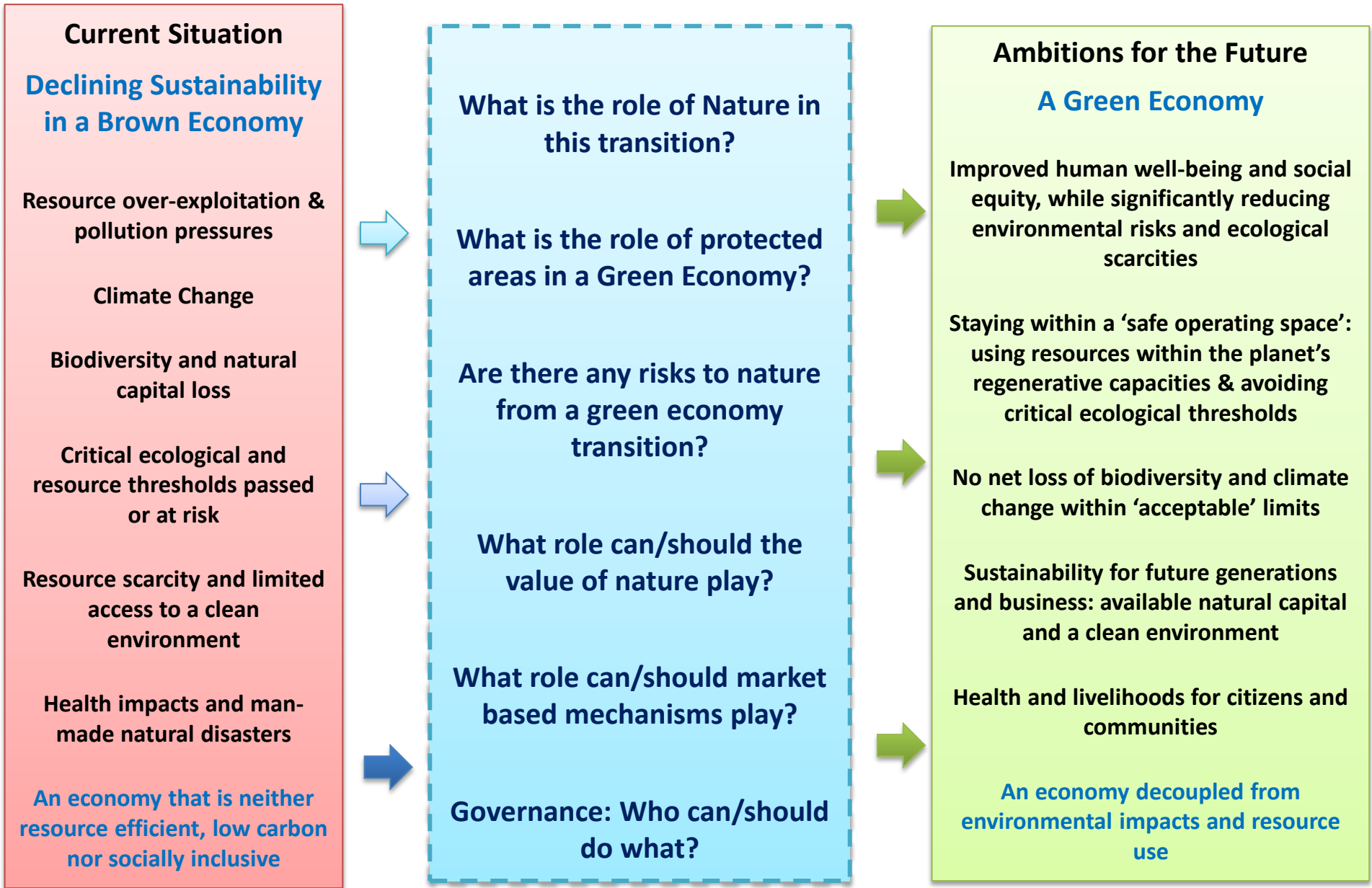
**Sustainable Development (Brundtland Report; SD strategy)** - *development that meets the needs of the present without compromising the ability of future generations to meet their own needs.* (WCED, 1987).

...with its economic, social and environmental pillars, SD is arguably a wider concept than the green economy.

(The Brundtland Report, ‘Our Common Future’ WCED, 1987)



# Nature & the Transition to a Green Economy



# Key Messages - 1



## 1. Working with nature should be at the heart of the transition to a green economy

Nature is essential to the health and growth of economies, societies and individuals through the provision of a multitude of ecosystem services.

In spite of this, the values of nature to economies and society have often been overlooked and not reflected in the decisions of policy makers, businesses, communities or citizens, contributing to the loss of biodiversity and subsequent impacts on people and the economy.

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**“I believe that the great part of miseries of mankind are brought upon them by false estimates they have made of the value of things.”**

**Benjamin Franklin, 1706-1790**

# Ecosystems provide multiple ecosystem services

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## Provisioning services

Food



Fibre

Fuel

Water provision

Ornamental resources

Genetic resources

Medicinal resources

## Regulating Services

Climate regulation

Water and waste purification

Air purification

Natural hazards management

Erosion control

Pollination

Biological control



## Cultural Services

Aesthetics

Landscape value,

Recreation & Tourism

Cultural values

Inspirational services

Education

Scientific Knowledge



**Supporting Services:** Soil formation & fertility, photosynthesis, nutrient cycle

Habitat services such as nursery service, gene pool protection.



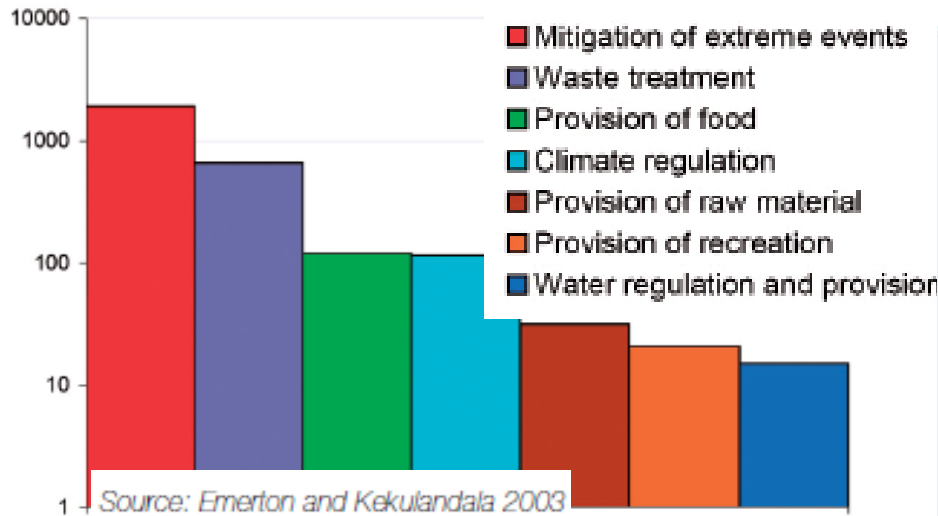
**Some are private goods** (eg food provisioning), **others public goods that can become (part) private** (eg tourism, pollination), **others are pure public goods** (eg health, identify)



# ... generating multiple values in different locations

## Many ecosystem services from the same piece of land

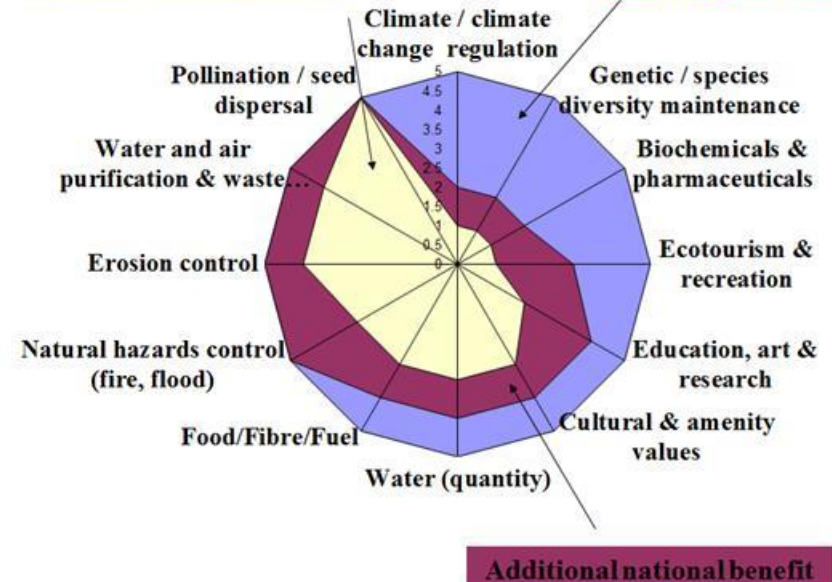
Values of seven Ecosystem Services in Wetlands  
in US\$ per ha per year



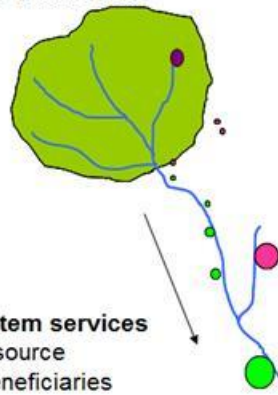
## Benefits local to global

Mainly local benefit

Mainly global benefit



### Forest in wider watershed



Populated areas benefiting from services, but also directly impacting the ecosystem and its services (positively or negatively)

Populated areas in watershed not benefiting from river related flow of services

Populated areas benefiting from fuller flow of services from Forest A

Flow of ecosystem services via river – from source ecosystem to beneficiaries

Adapted from Balmford, A et al 2008

**Benefits are spatially dependent**  
**Key to understand the interactions - it is the link of ecological systems with economic and social systems that defines the value**

# ...measured in different ways

## The Benefits Pyramid

To get the full picture of benefits  
 - one needs mix of monetary, quantitative, spatial, and qualitative information / understanding.

There is a range of tools and metrics at each level

Effort of assessing values generally increases up the benefits pyramid

Non-Specified / assessed Benefits

Increasing up the benefits pyramid

Full value of ecosystem covers all levels

Monetary: eg food provisioning (e.g. fish), avoided water purification costs, carbon storage, medicines

Quantitative: eg increase in carbon store, # of avoided health impacts; number of visitors

Type of benefits: health benefits, social benefits, security, wellbeing.

'Knowns' and unknowns

Monetary Value

Quantitative Review of Effects

Qualitative Review

Full range of ecosystem services from biodiversity

Biodiversity 'value': anthropocentric and intrinsic

Available information

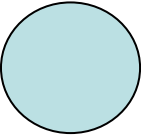

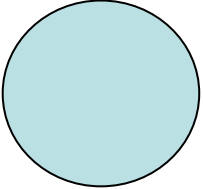

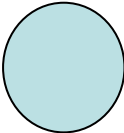
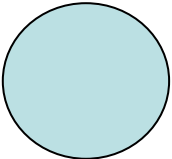
Press interest

Policy needs

## The Evidence Base and Demand

Quantitative / qualitative

Monetary

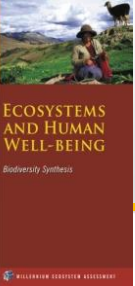
# Key Messages - 2



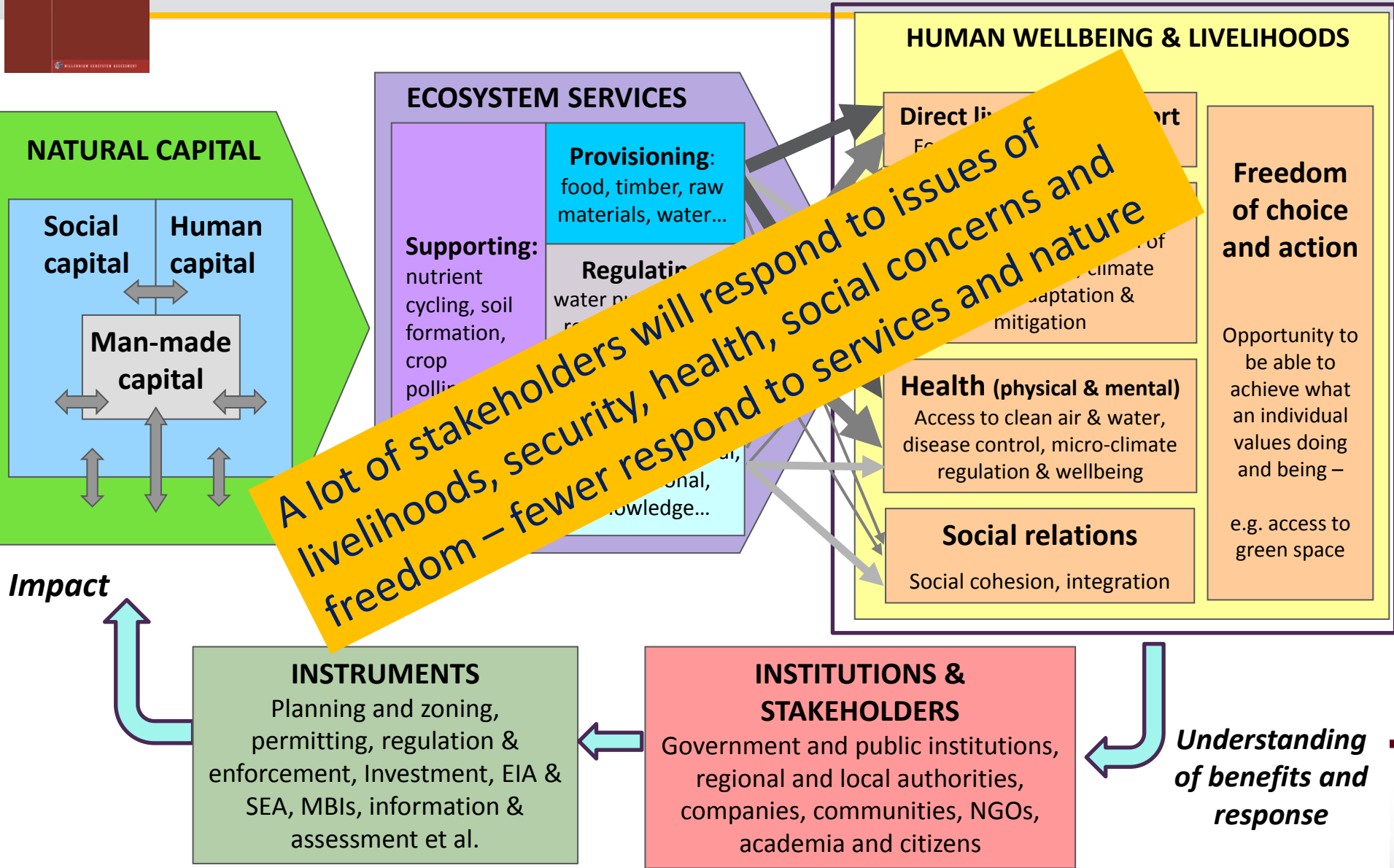
## 2. Human and societal well-being depends on nature.

The rural poor in particular are fundamentally dependent on ecosystem services. **Where natural capital is degraded and lost, there is a risk that the livelihoods of entire communities are undermined and humans suffer.**

**Efforts to conserve, restore, and sustainably use natural capital can improve human well-being, alleviate poverty, support livelihoods and increase intergenerational equity.**



# Understanding nature generated ecosystem services and wellbeing implications critical for the science policy interface



Source: Own Representation building on MA (2005) and TEEB (2011a)

# Degraded ecosystems can undermine well being & livelihoods

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## Example: Working for Water (WfW): SA & The Manalana wetland

- Severely degraded by erosion that threatened to consume the entire system
- Livelihood benefits **from degraded wetland was 34 % of healthy ecosystem**
- WfW public works programme intervened in 2006 to **reduce the erosion and improve the wetland's ability to continue providing its beneficial services**

### Results

- Rehabilitated wetland contributes provisioning services at **297 EUR/h-hold/yr**
- Livelihood benefits ~ 182,000 EUR by the rehabilitated wetland; **x2 costs**
- The Manalana wetland acts as a **safety net for households.**



# Key Messages - 3



**3. All sectors of the economy benefit directly or indirectly from nature and their engagement is required for the transition to the green economy in the context of sustainable development and poverty eradication.**

This is both in their **self-interest (given their reliance on inputs from nature)** and **reflects their responsibilities** (in terms of **impacts, risks and liabilities**).

**Greening the “brown” economy** is as important as **developing green sectors or green niches.**

# The Economy in context: Nature's inputs

## Environment

Inc. "natural assets" - minerals, energy, land, soil, timber, other biological resources and aquatic resources, changes in their extent and state and flow of goods and services

**Abiotic subsoil assets**

**Abiotic resources**  
e.g. mineral, fossil fuels, construction materials

**Abiotic flows**  
e.g. solar energy, wind

**Other Resource flows**  
e.g. water

**Ecosystem services**  
e.g. provisioning, cultural, & regulating services

**Biodiversity**  
Ecosystems, Species, Genes  
  
Extent, state, diversity, rarity..

Natural resources and ecosystem services  
Inputs from Natural Capital  
Labour, institutions  
Inputs from Human and Social Capital

## Society

## The Economy

**Economic Sectors**  
*(examples)*

- Agriculture, hunting, forestry & fishing
- Oil and gas; mining & quarrying
- Wood and wood products
- Food products, beverages & tobacco
- Textiles, textile products & leather
- Pulp, paper & paper products
- Rubber & plastics products
- Research & development

Outputs from one sector can be intermediate inputs to another

Pollution, Waste

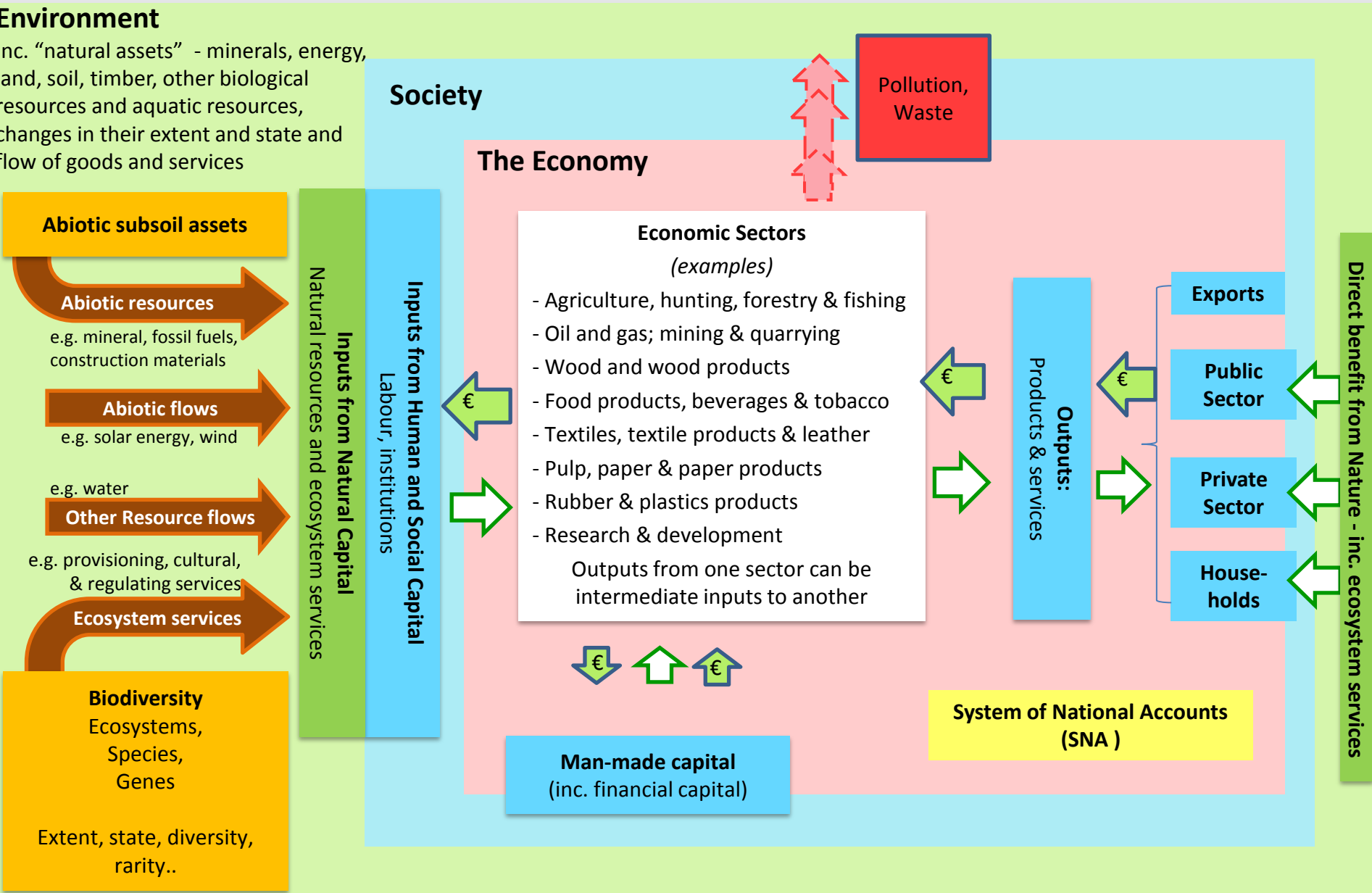
**Outputs: Products & services**

- Exports
- Public Sector
- Private Sector
- Households

Man-made capital (inc. financial capital)

System of National Accounts (SNA)

Direct benefit from Nature - inc. ecosystem services



# Key sectors of the **GREEN** economy include:

- Agriculture
- Fisheries
- Water
- Forests
- Energy
- Manufacturing
- Buildings
- Transport
- Tourism
- Waste management

**Primarily investing in natural capital**

**Primarily investing in energy and resource efficiency**

**Also working with nature can lead to cost-effective solutions and multiple benefits**

+ Cities

*Source: UNEP Green Economy Report*

**All sectors important – whether due to their dependency/benefits from nature’s services, their impacts on the environment, or their opportunities for action.**

**Also pharmaceuticals, food and drink, education, health...**



# Key Messages - 4



**4. There must be a clear understanding of the value of nature and how to take this value into account in public and private decisions in light of the multiple benefits it provides. This is one of many ways of assessing the role and importance of nature.**

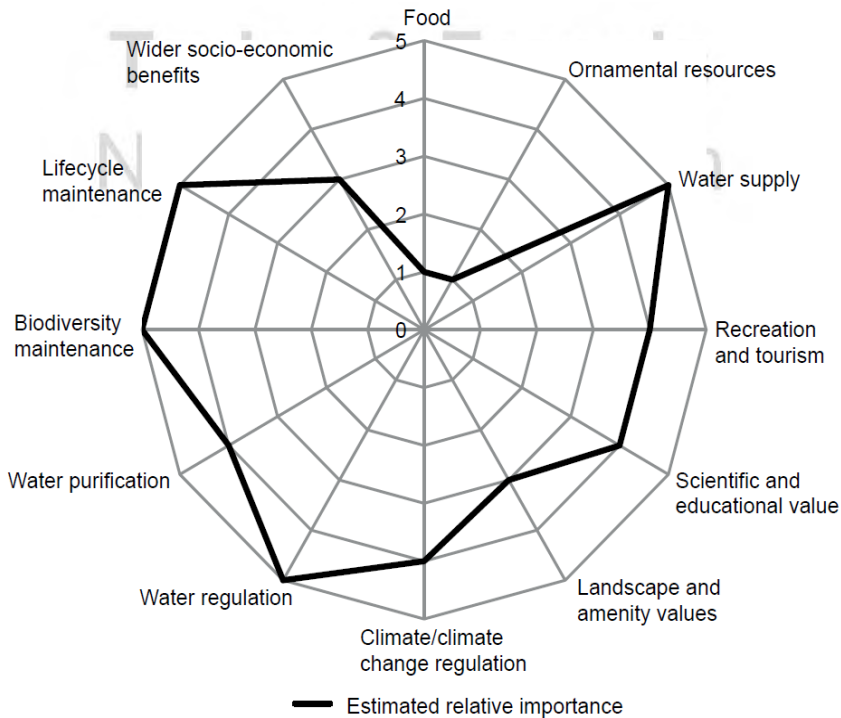
It is important to understand that **identifying the value of nature does not suggest that it should have a cost or a price or be traded** in the market and hence **commoditized**.

Furthermore, an **economic valuation** does **not** necessarily imply a policy response **using market-based instruments**; there are **many instruments that can be used to reflect the values of nature.**

# Scoping

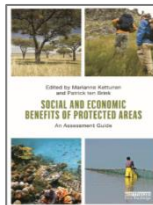
vs.

# Detail

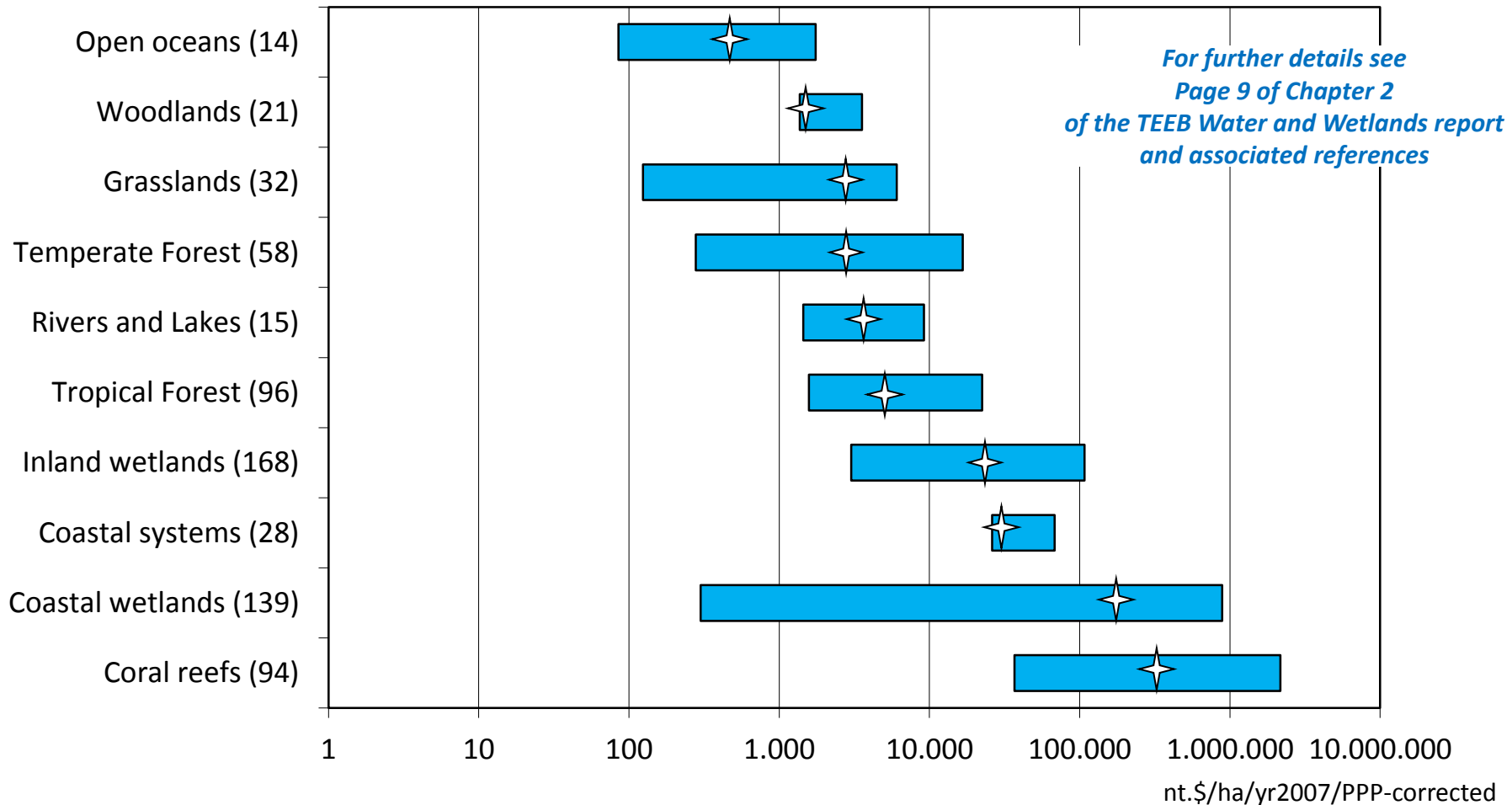


Identified benefit	Scale	Estimated value
Landscape/amenity value and existence value of endemic species	Local/global	€500 to €800 per person for a total of €3,000,000 for the Povoação region alone
Carbon storage	Global	465,364 tC/year (vegetation) 223,667 tC/year (peat)
Water regulation (flood and landslides prevention)	Local	Costs of damage €20,000,000 in 1997
Water purification	Local	€46.5 family/year for a total of €110,556 /year

FIGURE A1.1 Socio-economic benefits provided by PA of Pico da Vara/Ribeira do Guilherme, ranked according to their perceived importance on a scale of 1-5 (1 = low importance, 5 = high importance, see Chapter 4).



# The evidence base: range of values of ecosystem services



# Protected Areas - “crown jewels” of biodiversity

Of immense Intrinsic value

Also offer:

Food security

Water security (supply & quality)

Climate mitigation & adaptation,

Knowledge & education

Culture & identity

Recreation and tourism

and many other ecosystem services



*Dudley and Stolton, 2010*

**Protected for biodiversity, accepted and funded as multiple benefits appreciated by decision makers and stakeholder?**

# EU's Natura 2000 network: 26,000 sites ~ 18 % of EU

## Funding a challenge

Costs ~ 5.8 bnEUR/yr

Source: Gantioler et al 2010

## Natura 2000 benefits

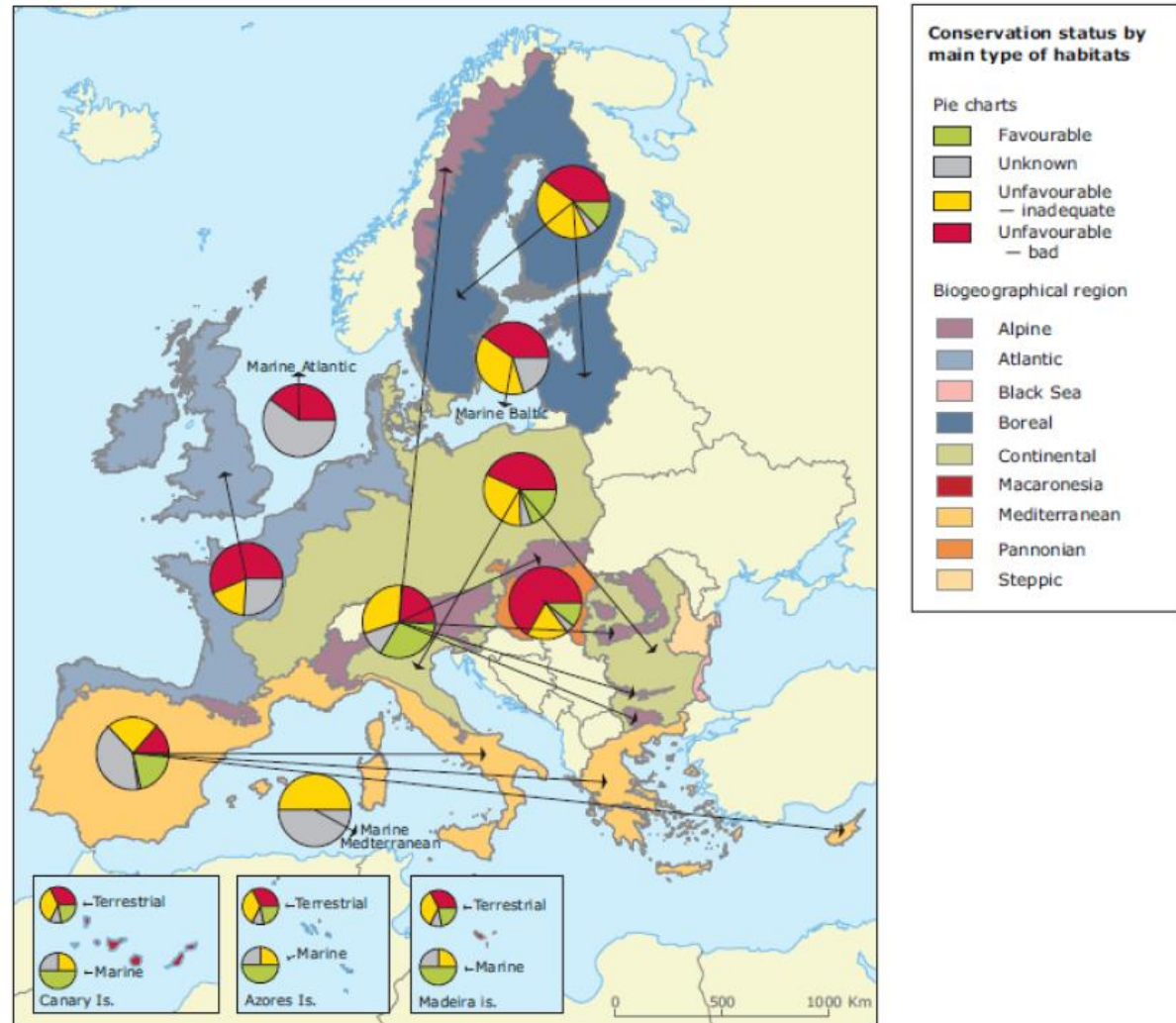
Illustrative value of  
between €200-300 bn/yr

ten Brink et al. (2012)

## Carbon Value:

Natura 2000 network stores ~  
9.6 btC (equiv. 35 bt CO<sub>2</sub>), Worth  
~ €607bn-€1,130bn (stock value  
in 2010)

Markandya & Ding in ten Brink et al., 2012



**European Commission using the argument of Natura 2000's values to get support and funding...**

# Key Messages - 5



**5. Investments in nature today – whether restoration or protected area management – can save money and promote economic growth in the long term** and must therefore be seen as an integral part of the transition to and the foundation of a green economy.

**Investments in nature** can be significantly **more cost-effective** than investments in other forms of capital or **engineered solutions** for delivering certain services or pursuing specific policy objectives, especially if the wider range of co-benefits delivered are factored into the equation.

This has been shown to be the case, inter alia, for **water purification and supply, flood control, avalanche control, and carbon storage.**

# Evidence base - Assessing values and actions

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**Assessing the value of working with natural capital has helped determine where ecosystems can provide goods and services at lower cost than by man-made technological alternatives and where they can lead to significant savings:**

**USA-NY:** Catskills-Delaware watershed for NY: PES/working with nature saves money (~5US\$bn)

**New Zealand:** Te Papanui Park - water supply to hydropower, Dunedin city, farmers (~\$136m)

**Mexico:** PSAH to forest owners, aquifer recharge, water quality, deforestation, poverty (~US\$303m)

**France:** Priv. Sector: Vittel (Mineral water) PES et al for water quality

**Venezuela:** PA helps avoid potential replacement costs of hydro dams (~US\$90-\$134m over 30yr)

**Finland:** restoring green infrastructure for cost-effective flood mitigation (~ 15% cheaper)

**Germany:** peatland restoration: avoidance cost of CO<sub>2</sub> ~ 8 to 12 €/t CO<sub>2</sub> (0-4 alt. land use). Lower than many other carbon capture and storage options

**Critical to assess where working with nature saves money for public (city, region, national), private sector, communities and citizens & who can make it happen**

# Case example of multiple benefits

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## The Essex Marshes, UK

- Over 25 years the Essex coast lost approximately 50% of its 30,000 ha of salt marshes, and **1% continues to be lost every year**
- In 2002, the Essex Wildlife Trust created a coastal re-alignment project to **restore the salt marshes**

### Results

- Over the next 20 years monetary benefits are expected to be **£500 000/ year through savings and income generation**
- Additional benefits include: **sea wall maintenance, improved water quality, flood defence, and ecotourism opportunities**



# Protected areas as promoters of regional economy (Finland)

Name or national park	Local, accumulative economic impacts of visits (EUR mil / year)	Person-years of employment
<i>Some examples of total 37</i>		
Nuukio	2.1	16
Pallas-Yllastunturi	34.3	450
Oulanka	15.5	200

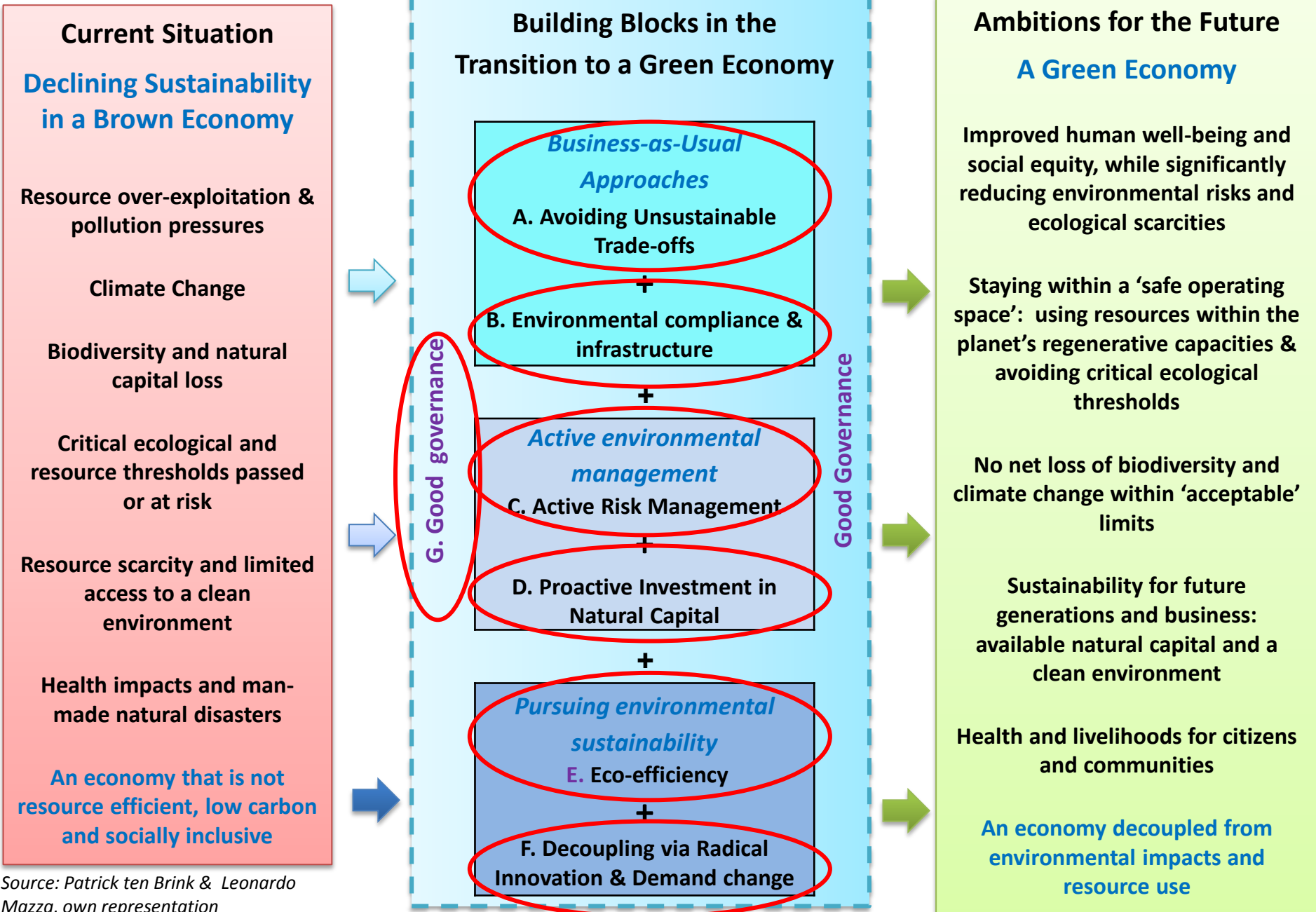
Etc.

According to the assessment €1 investment in national parks and other key protected areas can result in €10 return to local economies.

See Kettunen et al. (2012) [TEEB Nordic](#), Kettunen and ten Brink (2013) and [Metsähallitus](#) for references



# KM 6: There are a range of building blocks for the transition to a green economy



# Examples of Actions

## Building Blocks in the Transition to a Green Economy

### *Business-as-Usual Approaches*

A. Avoiding Unsustainable Trade-offs

+

B. Environmental compliance & infrastructure

+

### *Active environmental management*

C. Active Risk Management

+

D. Proactive Investment in Natural Capital

+

### *Pursuing environmental sustainability*

E. Eco-efficiency

+

F. Decoupling via Radical Innovation & Demand change

**A: Assessment to understand the whole picture – winners/losers, impacts & response in project design and selection (SEA, EIA, proofing tools)**

**B: Compliance with emissions & ambient quality standards & Investment in water & waste water infrastructures**

**C: Flood risk mapping, taxonomy and pathways for invasive species**

**D: Restoration of ecological infrastructure, e.g. wetlands, peatlands, flood plains & conservation, protected area management; connectivity measures**

**E: EHS reform, positive incentives, polluter pays, fiscal reform – improving pricing + rolling tech. standards**

**F: Research and development for new products & applications – pharmaceuticals, biomimicry & Information for demand changes / purchasing.**

**G: Indicators & Accounts – e.g. Nat. capital accounts, transparency on subsidies harmful to biodiversity**

G. Good governance

Good Governance



# Green infrastructure for water management, Vihti (Finland)

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## Benefits of creating urban wetland

- Water quality ↑
- Cost-effective way for managing water quality
- Recreation area for local people
- Biodiversity conservation



# Key Messages - 7



**7. Good governance is critical to the transition to the green economy and an integral part of the above six approaches.**

Components of good governance inter alia include:

- institutions and their roles;
- processes and participation;
- transparency and disclosure; and
- monitoring and enforcement.

## Useful for site managers to:

Develop **site management plans** to ensure **wise use of nature**, meeting **conservation objectives** and the **sustained provision of ecosystem services** where these do **not compromise the conservation objectives** –contributing to the **GE & wider SD**.

**Engage with own political / policy processes** to ensure a green economy is **both desirable & achievable**

**Proactively communicate the multiple benefits of nature** (ensure acceptance, integration & funding of PAs) & **nature-based solutions** (e.g. using GI) for **wider policy objectives** (helping mainstream biodiversity)

# Key Messages - 8



**8. Managing the transition** to a green economy will need to **take into account not only the opportunity of win-wins**, but also the **risks of losses** for certain groups and trade-offs across sectors and over time.

This applies both to **specific local decisions and communities** and **wider structural changes to the economy**.

# Understanding winners & losers important for realpolitik of policies

## Leuser National Park on Sumatra, Indonesia Distribution of ecosystem benefits

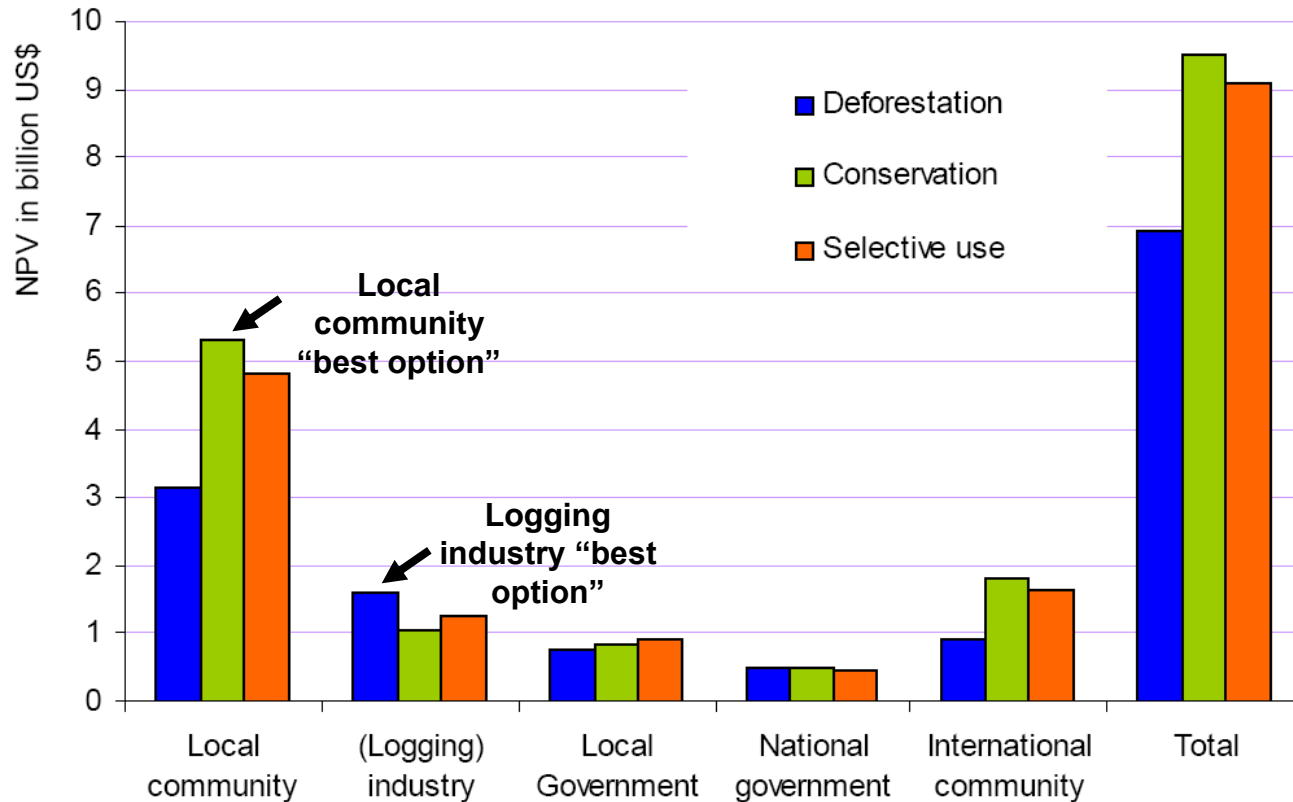


Figure 1: Benefit distribution among stakeholder under different land use scenarios in the Leuser Ecosystem (25,000 sq km), Indonesia, in Net Present Value (NPV) in billion US\$ over 30 years, at a discount rate of 4%.

Sources: van Beukering, P.J.H., H.S.J. Cesar, M.A. Janssen (2003). Economic valuation of the Leuser National Park on Sumatra, Indonesia. *Ecological Economics* 44, pp 43-62. and van Beukering, P.J.H., H.S.J. Cesar, M.A. Janssen (2002). Economic valuation of the Leuser Ecosystem in Sumatra. In: *Conservation Dividends? ASEAN Biodiversity Vol 2*. Nr. 2, 17-24.

What is “best” depends on who you are: understanding who wins & who stands to lose in decisions is paramount.

# Key Messages - 9

9. There is a need to step-up the pace of change and move from discrete cases of green economy transition to a fundamental systemic transition warranted by scientific findings.

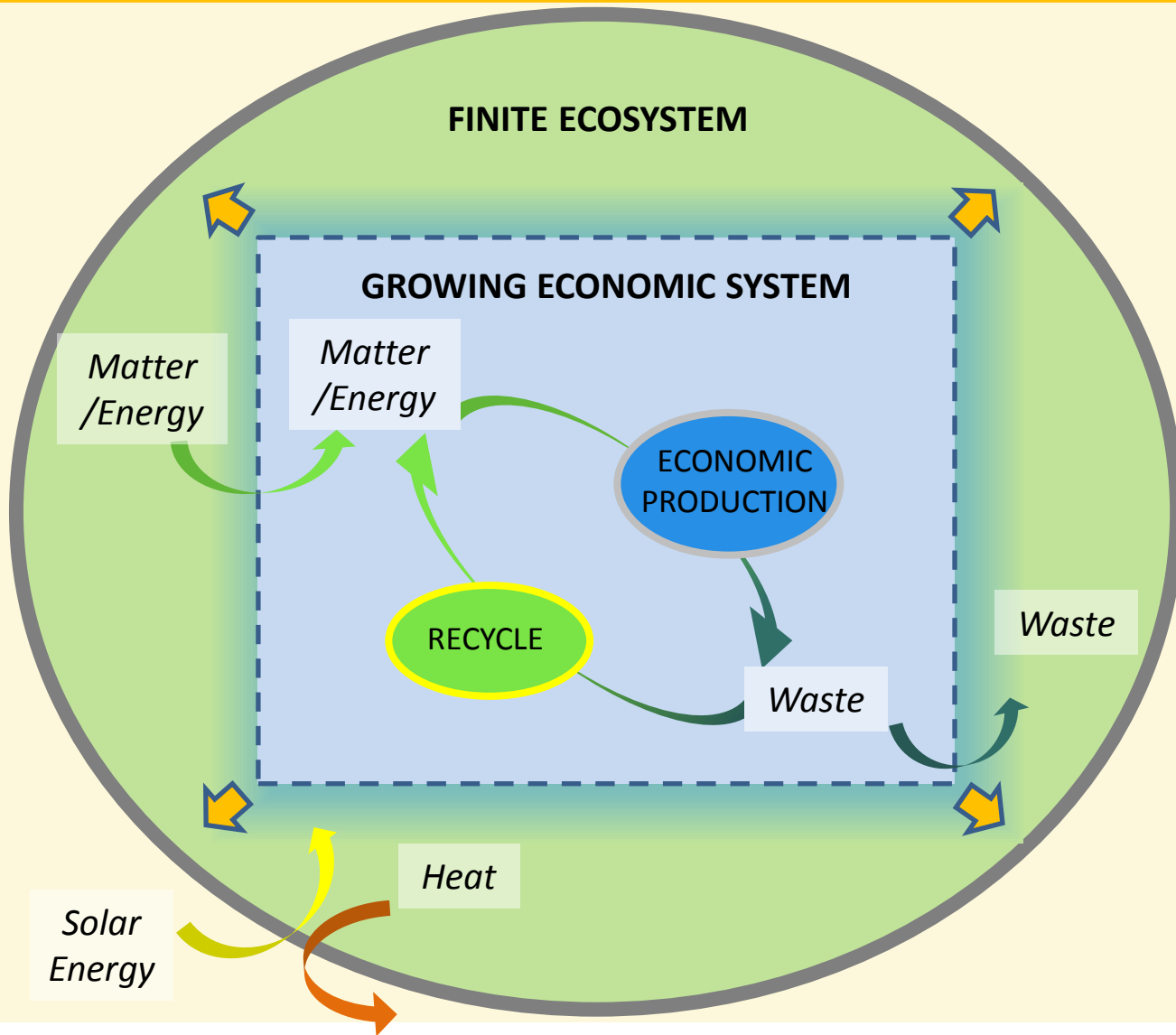
It will take **active engagement** by **government, business, communities** and **citizens** for the transition to a green economy to realise its potential for improving human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.

**Protected areas managers** have a **core role** in this transition and **engagement with government, citizens and wider stakeholders** can help meet conservation objectives,





# The Economy is pushing at the ecological boundaries



# There are many Challenges, but also Commitments...

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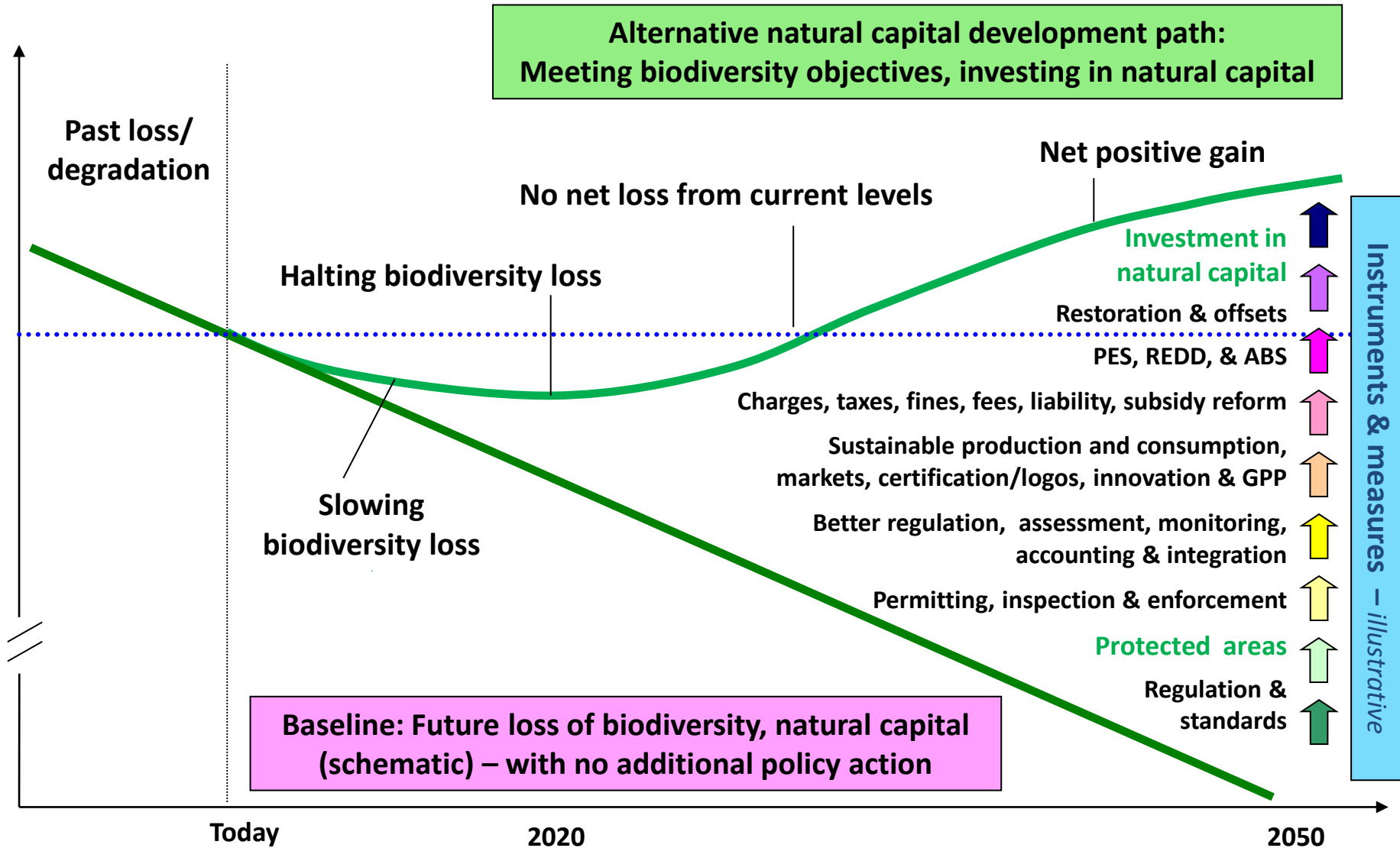
## Challenges

- **Feeding the 9 billion; Water; Poverty alleviation, Urbanisation, Jobs, Climate change, Financial crisis etc**
- **The rising level of consumption and production will put increasing stress on the planet's resources and ecosystems – limits, scarcity, price volatility, critical (ecological and social) thresholds...**

## Commitments

- **Rio Conventions: CBD; UNFCCC and UNCCD**
- **Subsidy reform: Aichi targets, G20, EU, countries**
- **Natural capital Accounts/SEEA: WAVES, SNA/SEEA, Gabarone Declaration**
- **Finance and business: Natural capital declaration and EP&Ls**
- **Science policy interface: IPBES**
- **Sustainable Development : MDGs (poverty, nutrition, education , equity, health, environment)**
- **Proactive investment in natural capital (restoration) : Aichi targets, EU Biodiversity Strategy, Natura 2000 network and GI.**

# ... and many tools for an Alternative Development Path, Towards a Green Economy



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# Reflections / Controversial issues

# ... is it wrong to put assess the values on nature?

## The true value of nature is not a number with a pound sign in front



George Monbiot

guardian.co.uk, Monday 6 June 2011 20.00 BST  
Article history

## Putting a price on nature can't be worse than giving it all away for free

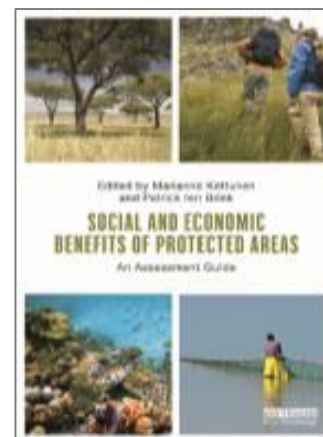
The natural world gives us clean air and water, fertile soils and immense wellbeing. Putting a price tag on it might just stop us mistaking free for worthless

### DAMIANCARRINGTON'S ENVIRONMENTBLOG

Posted by  
Damian Carrington  
Thursday 2 June 2011  
10.02 BST  
guardian.co.uk

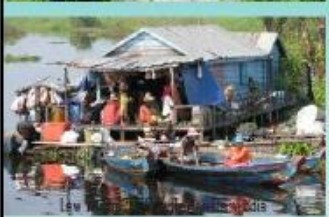


**Both are right, but both are wrong – it is about appreciating the role and importance of nature – using many metrics.**



# Does the Natural Capital concept help?

- **Nature is more than “natural capital”** - but, NC is a **useful metaphor** to communicate the value of nature to people and economy.
- **Nature is also more than the flow of ecosystem services** - however, an understanding of the **ecosystem services** can offer an important additional evidence base to inform decisions and motivate action.
- **Without** talking of the **multiple benefits of nature (in multiple metrics, inc. economic)** there is a **strategic risk** that nature will be **overlooked**.
- Talking **intrinsic value and conservation objectives** is unfortunately not sufficient in our times.



# ... will promoting a green economy benefit nature?

**Yes!**

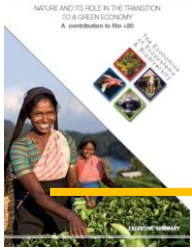
**...it should...**

**But, it needs attention:**

- **Understanding economic growth's pressure on nature**
- **Integrating the pressures and losses into decision making**
- **Ensuring that nature's multiple benefits are understood**
- **Not forgetting the intrinsic values**
- **Representing societal values over inter-generational timeframes.**
- **Responsibility for managing our natural heritage should leave a positive legacy to future generations.**



# Conclusions

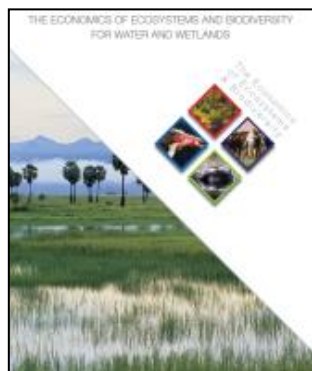
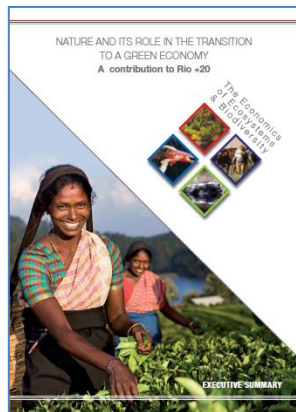


1. **Nature**, in all its diversity, provides a wide range of **benefits and values** to society and the economy, referred to as **natural capital**. But nature is more than “just” Natural capital.
2. A green economy aims to **incorporate these values from ecosystem services and biodiversity** into decision-making across all levels of governance – **biodiversity proofing / mainstreaming**.
  - Seeking to avoid or minimise trade-offs (green the brown)
  - Env benefits through resource efficiency ( “ )
  - Proactive investment in natural capital (build the green)
3. There are **opportunities and risks** in transitions to green economies as regards to human welfare and development -- **transition management is critical for success**.
4. **Leading by example, cooperation and partnerships** essential to achieve the transition.
5. **PA management and Green Infrastructure** are at the **heart** of the transition to a **green economy**

**Important for those engaged with PAs to engage with own political /policy processes in their own country to ensure a green economy is both desirable and achievable.**



# Further information



## [Nature in the Transition to a Green Economy](#)

ten Brink et al., 2012

## [TEEB for National and International Policy Makers](#)

(ed Patrick ten Brink 2011)

## [TEEB Water and Wetlands](#)

Russi et al., 2012

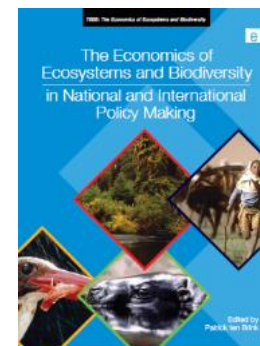
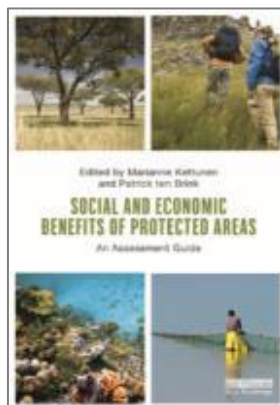
## [Guide to Multi-benefits of Cohesion Policy Investments in Nature & GI](#)

IEEP & Milieu 2013

## **& Book: On Benefits Assessment for Protected Areas**

Kettunen & ten Brink (2013)

## [Social and Economic Benefits of Protected Areas - An Assessment Guide](#)



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