



# Investing in the Green Economy

“Japan’s Challenges in the Global Green Age:  
Growth Strategies towards Biodiversity and a Low-carbon  
Society”

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United Nations Environment Programme

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A multidimensional crisis rooted  
in patterns of development



# The global context

**Multiple crises:** More than a financial and economic crisis:

- **Social** - 18 to 51 million unemployed over 2007 levels & the number of extremely poor has increased by at least 100 million people worldwide.
- **Fuel** - rising prices cost developing economies USD 400 bn in higher energy bills in 2007.
- **Food** - rising prices cost developing countries USD 324 bn in 2007.
- **Ecosystems** - EUR 50 bn worth of biodiversity is being lost each year.
- **Climate** - current global GHG emissions at 42 Gt per annum - 5 times higher than the threshold.



# On a business as usual path...

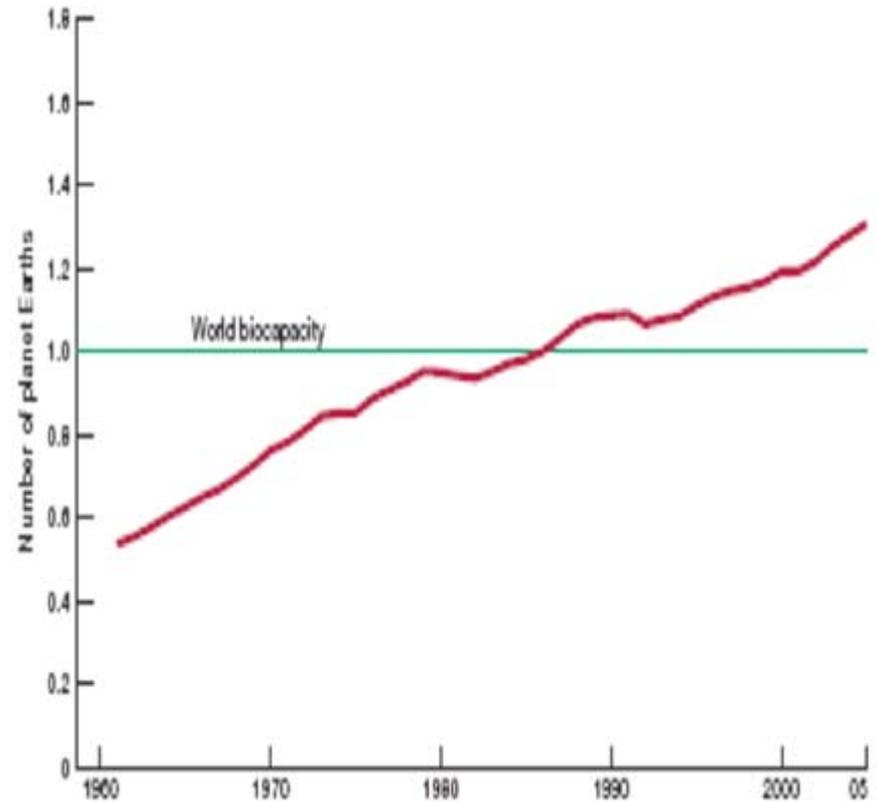
## **By 2030 and beyond...**

- Global energy demand up by 45%
- Oil price up to USD 180 per barrel
- GHG emissions up 45%
- Global average temperature up 6° C in the next century
- Sustained losses equivalent to 5-10% of global GDP as compared to the 3% of GDP loss from the current financial crisis
- Poor countries will suffer costs in excess of 10% of their GDP

# Discounting Natural Capital

- 1981 – 2005: global GDP more than doubled, but 60% of world's ecosystems degraded/exploited unsustainably (MEA, 2005)
- Global GHG emissions at 42 GtCO<sub>2</sub> per annum are 5 times higher than the Earth can absorb ...
- 'Ecological Footprint' exceeds Earth's regenerative capacity...

Fig. 2: HUMANITY'S ECOLOGICAL FOOTPRINT, 1961-2005

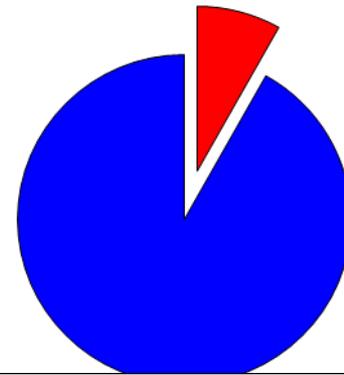


# Ecosystem Losses & Poverty

## Natural Capital in Wealth Creation

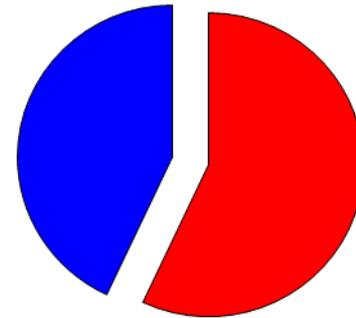
**India Example:** 480 Million people earn their livelihood mainly in small farming, animal husbandry, informal forestry, fisheries ...

**Ecosystem services /  
classical GDP**



**7.3 %**

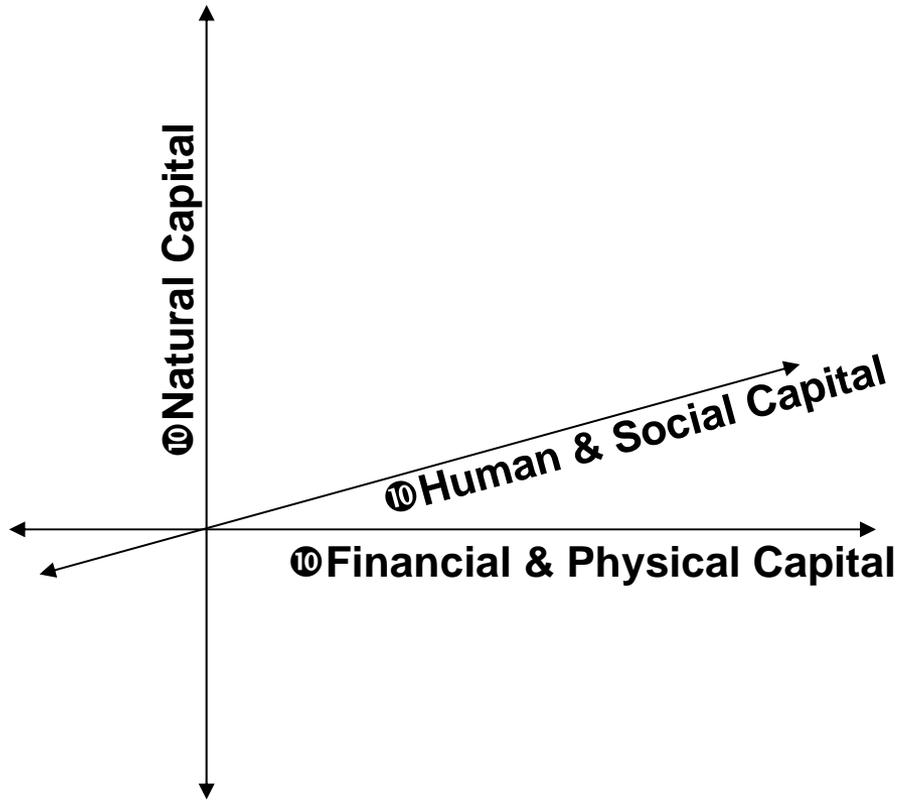
**Ecosystem services/  
“GDP of the Poor”**



**57 %**

Source: GIST’s Green Accounting for Indian States Project, 2002-03 data

# Our Capital Space... and our Economic Compass...



**“We cannot manage what we do not measure”**

# Opportunity Amid Crisis

# The Global Green New Deal

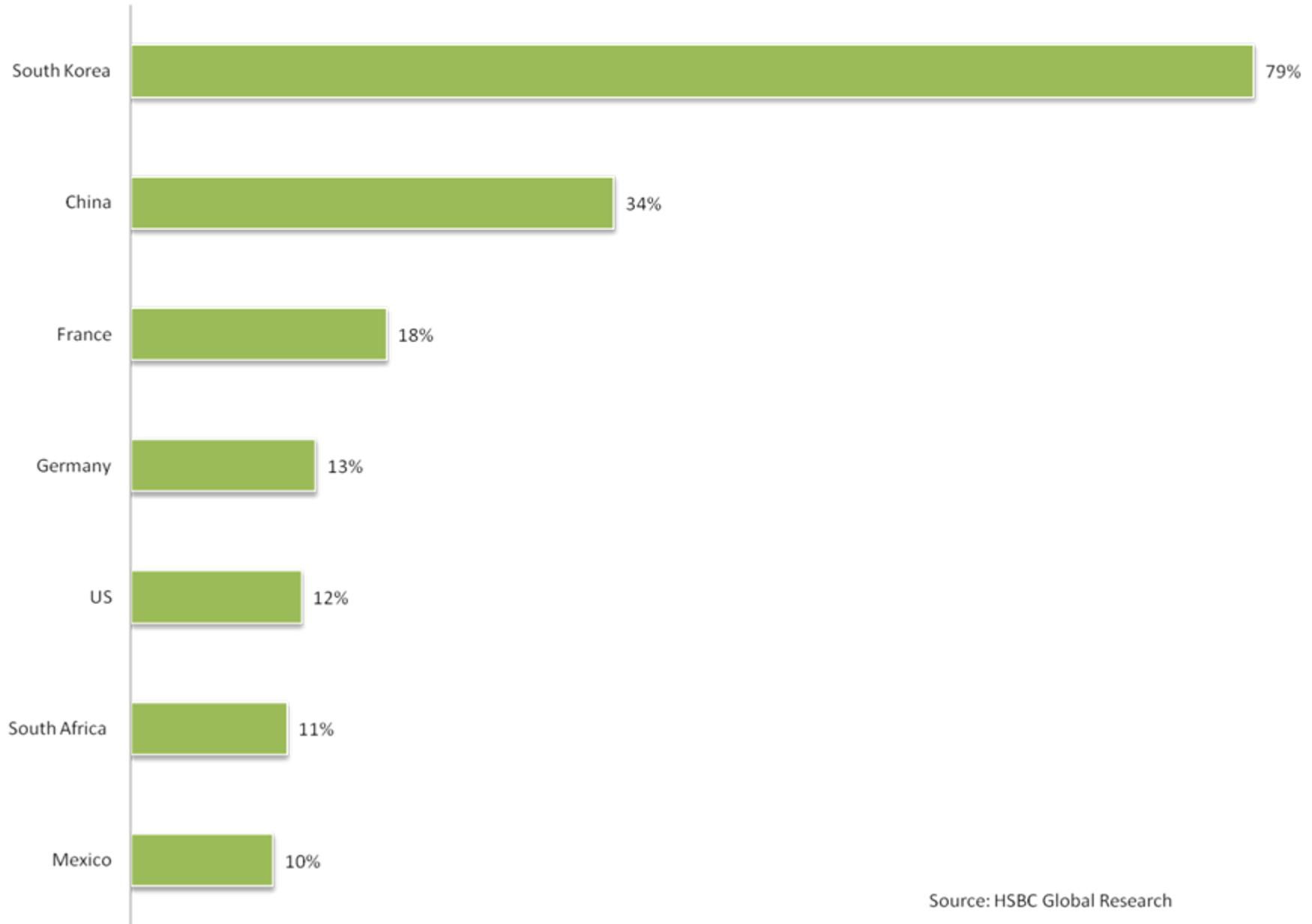
- Revive the world economy, create new and decent jobs, and protect the vulnerable
- Reduce carbon dependency, ecosystem degradation, and water scarcity - 1% of GDP in green sectors over two years
- Eliminate persistent poverty by 2015...achieve the MDGs
- Seed a process of transformative change by rebalancing financial and economic capital, human capital and natural capital

From : “Rethinking the Economic Recovery: A Global Green New Deal”, UNEP, Feb 2009

# Green Stimulus

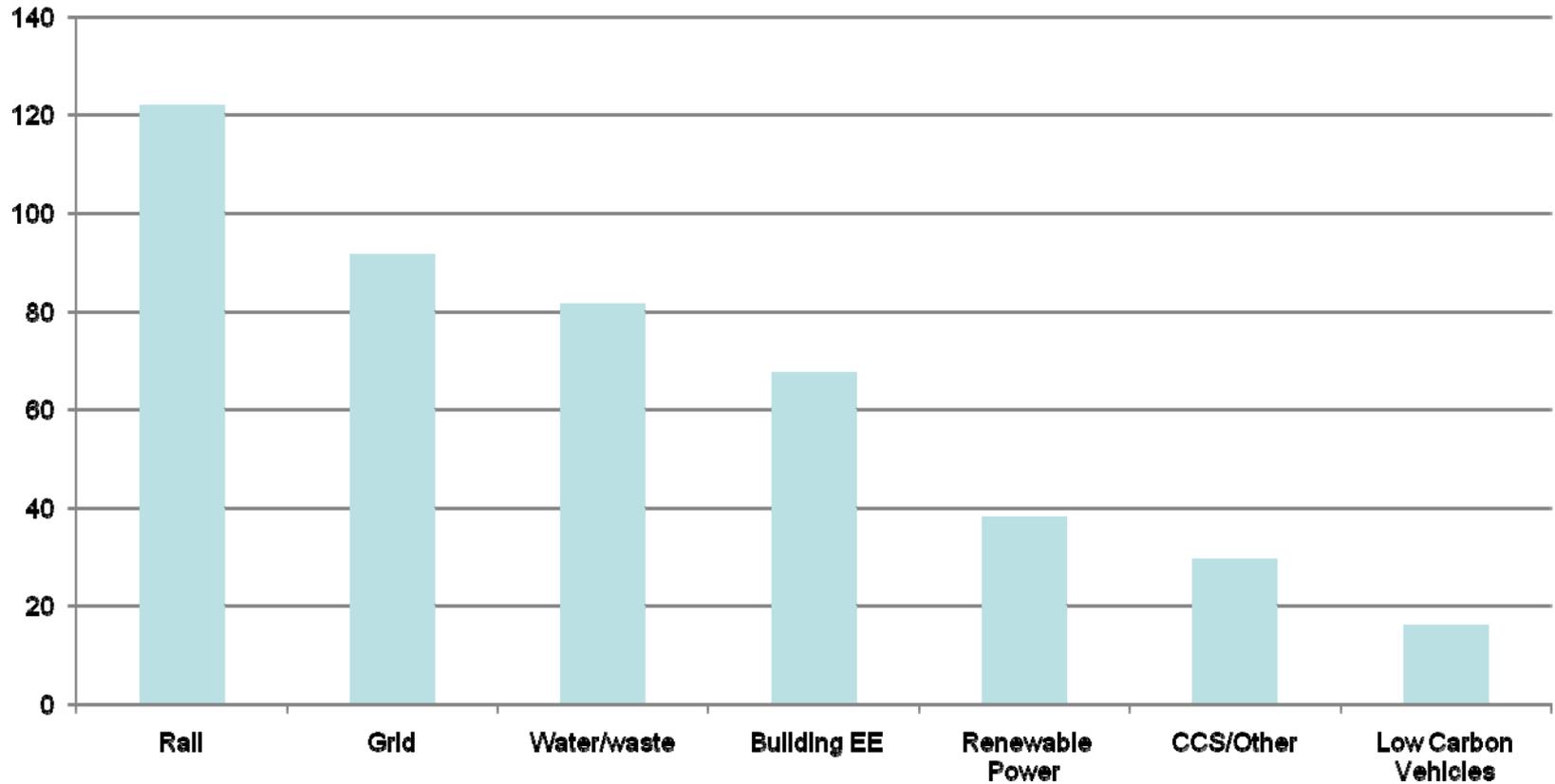
Country	Stimulus \$bn	% of GDP/GNI	Green Stimulus \$bn	% of green stimulus	Green stimulus as % of GDP
Australia	26.7	2.49	2.5	9%	0.2
China	586.1	13.88	221.3	38%	5.2
Japan	485.9	10.03	12.4	3%	0.3
Korea, Rep	38.1	4.44	30.7	81%	3.6
France	33.7	1.12	7.1	21%	0.2
Germany	104.8	2.74	13.8	13%	0.4
UK	30.4	1.09	2.1	7%	0.1
US ARRA	787	5.27	94.1	12%	0.6
US EESA	185	1.29	18.2	10%	0.1
Canada	31.8	2.03	2.6	8%	0.2

## Green Stimulus Ranking as % of Total Stimulus of August 2009 (UNEP GGND Update to the G20 - September 2009)



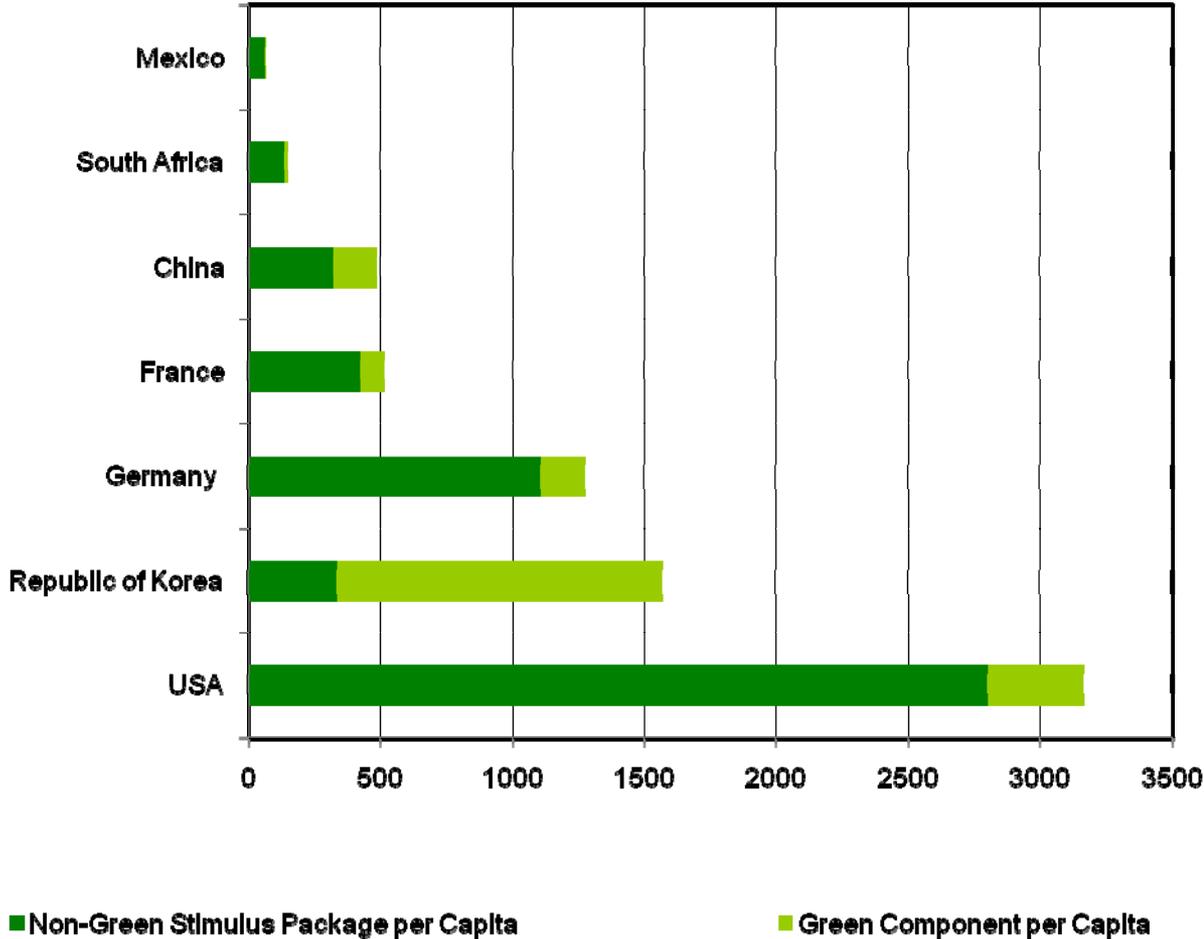
Source: HSBC Global Research

## G20 Green Stimulus Spending Per Sector, as of September 2009 (US\$ Billion)



Source: HSBC Global Research, UNEP

# Total Stimulus Package per capita and Green Component, as of September 2009 (US\$)



Source: HSBC Global Research, UNEP

# Japan's Green Stimulus

- “Immediate Policy Package to Safeguard People’s Daily Lives”: December 2008, US\$ 485.9 bn including US\$ 12.4 bn for energy efficiency
- “Policy Package to Address the Economic Crisis”: April 2009, US\$ 154 bn, including US\$ 23.6 bn of green spending (renewable energy, carbon dioxide capture and storage, energy efficiency)
- Climate change investment themes account for 6% of Japan’s recovery package.

# Global Green New Deal Components

## Domestic policy initiatives

- a) reforming perverse subsidies, taxes, and other incentives;
- b) creating proper incentives;
- c) rationalising land use and urban policy;
- d) adopting Integrated Water Resources Management;
- e) improving and enforcing environmental legislation;
- f) ensuring monitoring and accountability related to the implementation of the stimulus packages.

## International policy architecture

- a) multilateral and bilateral trade regimes conducive to the flow of environmental goods and services,
- b) international aid in support of the national shift towards a green economy;
- c) the proper functioning of a global carbon market;
- d) the development of global markets for ecosystem services;
- e) the development and transfer of environmentally friendly technologies;
- f) international coordination in implementing green stimulus packages.

# Making the Economic Case for Reform and Transition to a Green Economy

# Definition of Green Economy

- A system of economic activities related to the production, distribution and consumption of goods and services that result in improved human well-being over the long term, while not exposing future generations to significant environmental risks and ecological scarcities.
- A green economy is characterized by substantially increased investments in green sectors, supported by enabling policy reforms.

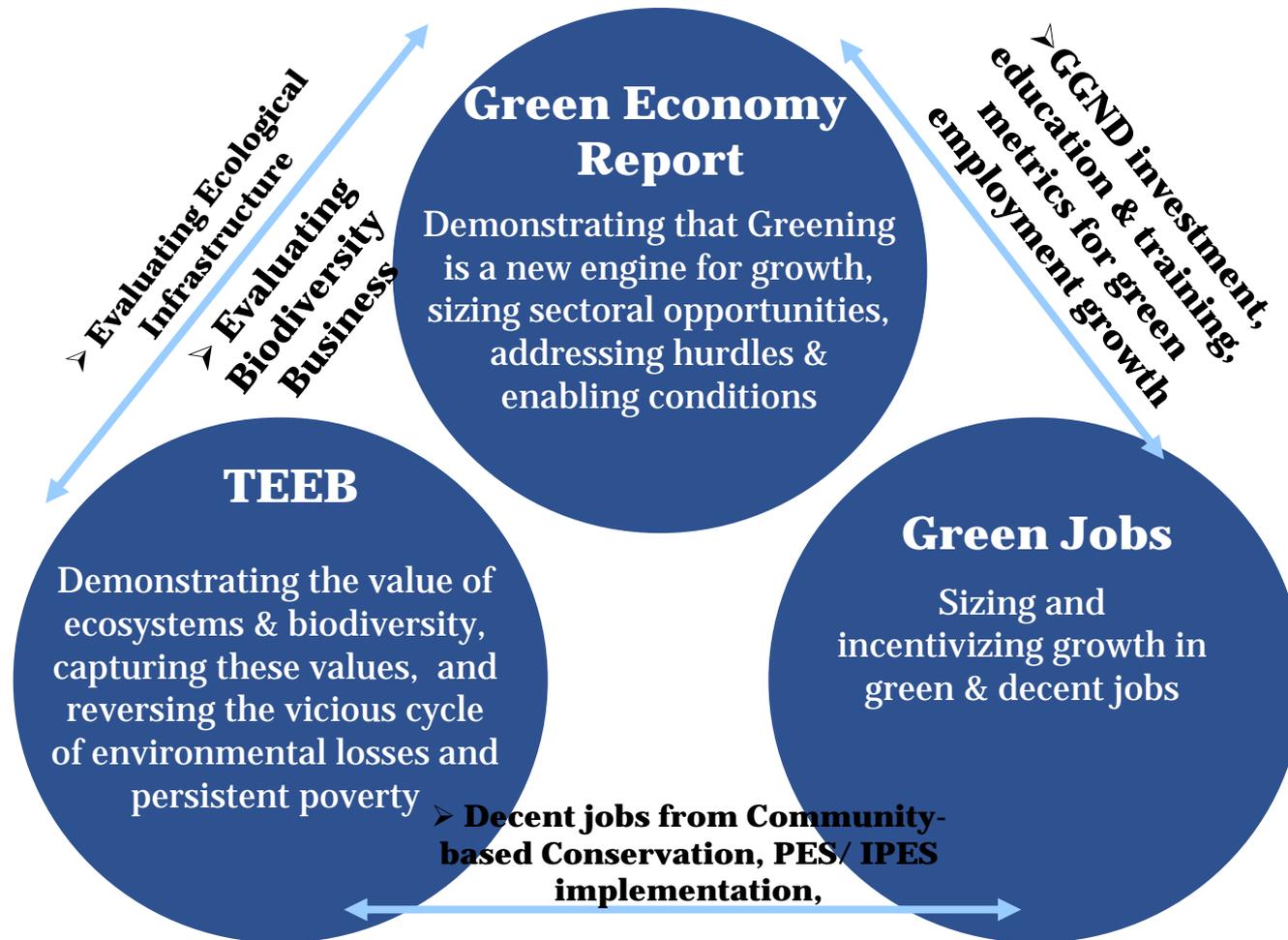
# Definition of Green Economy

- Greening the economy refers to the process of reconfiguring businesses and infrastructure to deliver better returns on natural, human and economic capital investments, while at the same time reducing greenhouse gas emissions, extracting and using less natural resources, creating less waste and reducing social disparities.

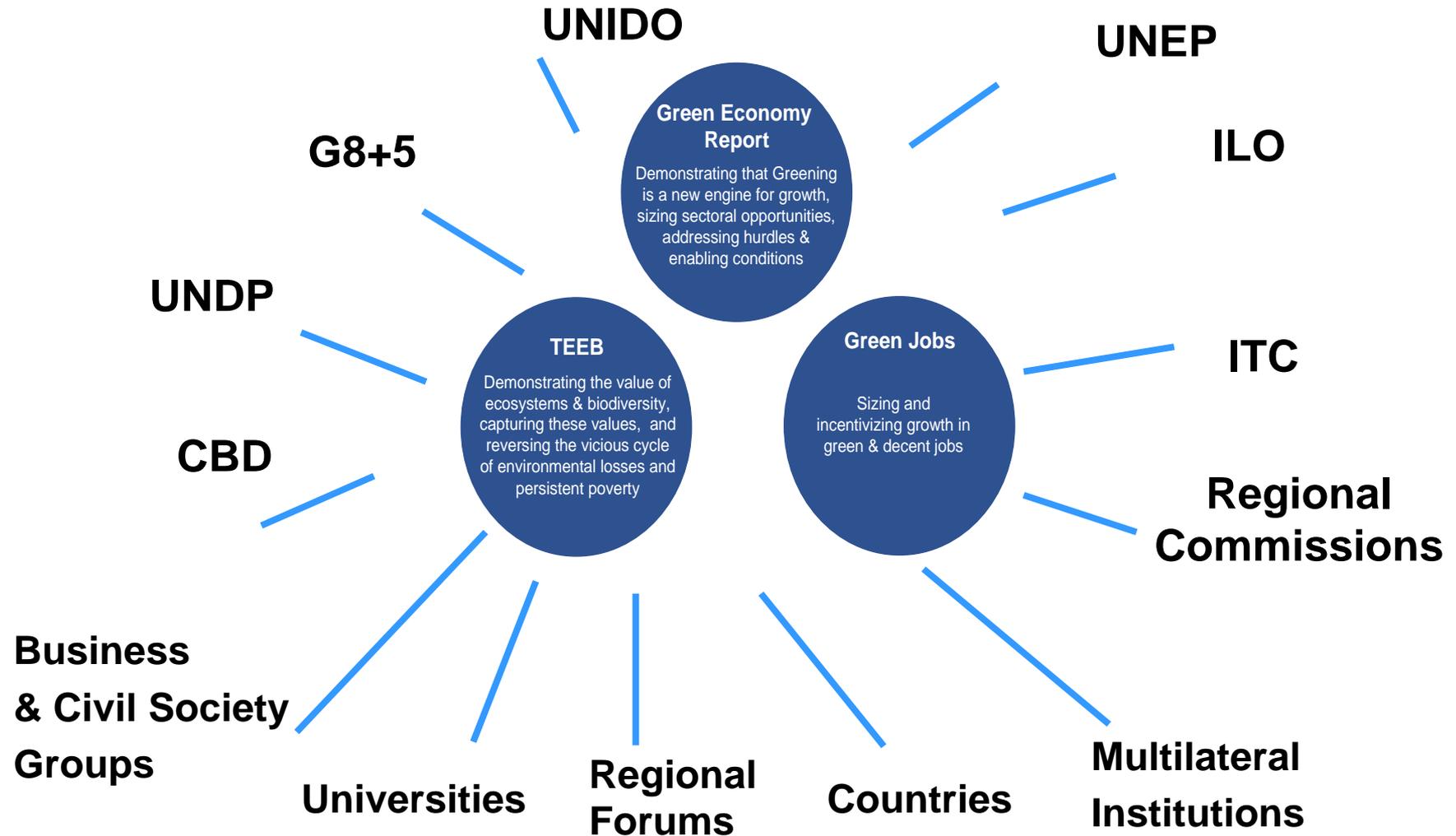
# Green Economy Initiative components



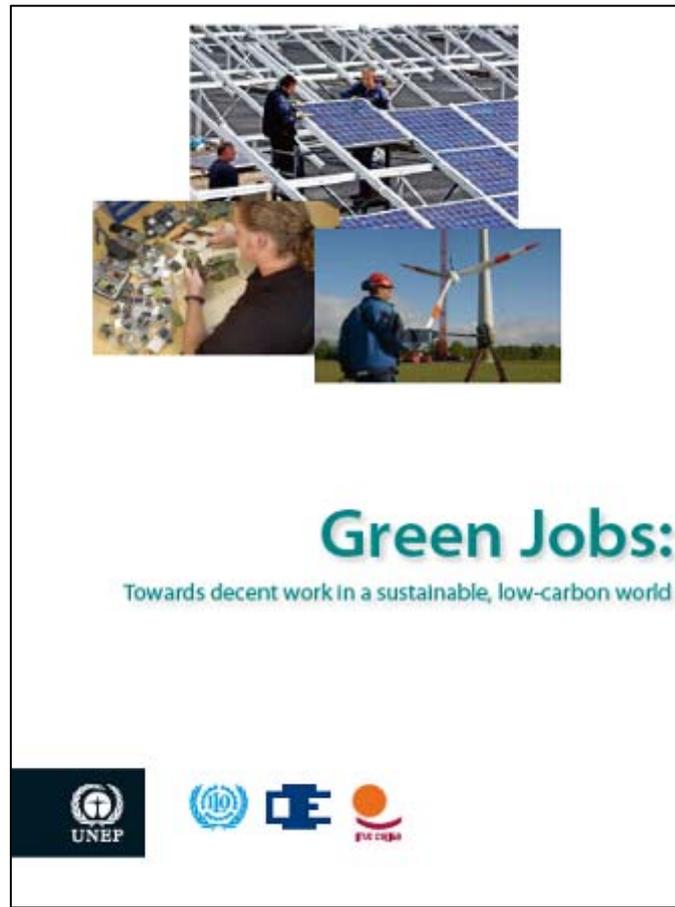
# The Green Economy Initiative



# A Wide Global Network



# Green Jobs

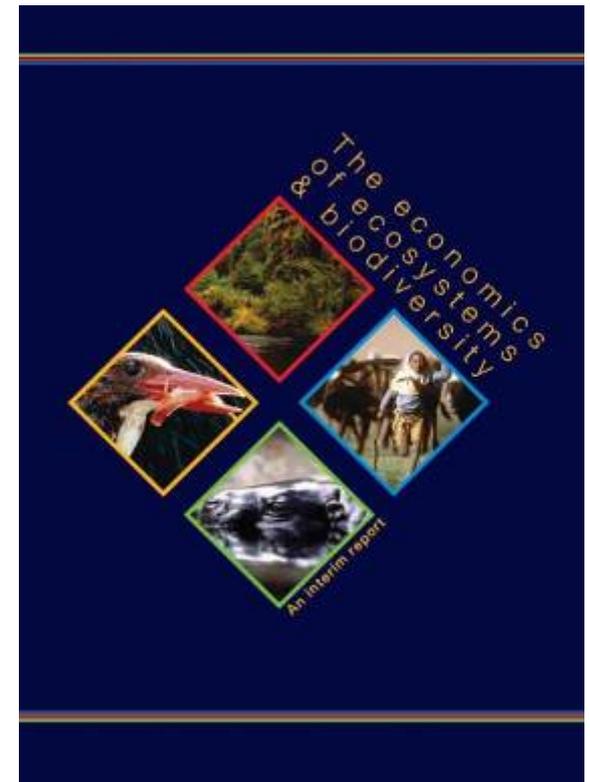


- “Where capital flows today, jobs follow tomorrow”
- How does ‘greening’ impact employment ?
- What are the key sectors at risk ? What are the key sectors of opportunity ? What is the net change?

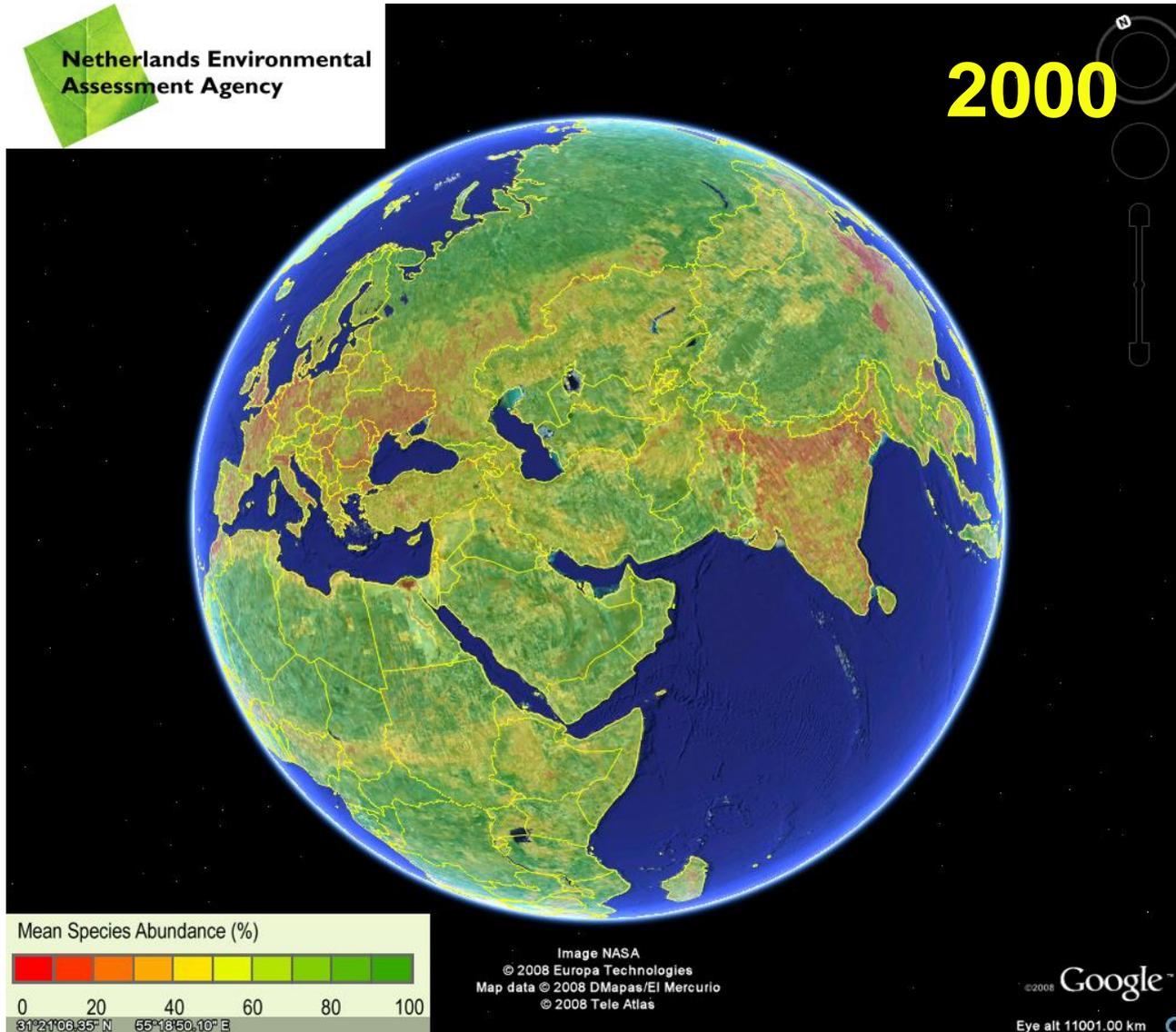


# The Economics of Ecosystems and Biodiversity (TEEB)

- Economic size & welfare impact of losses is huge
- Strong link with poverty & risk of MDG's failure
- Discount rates are ethical choices



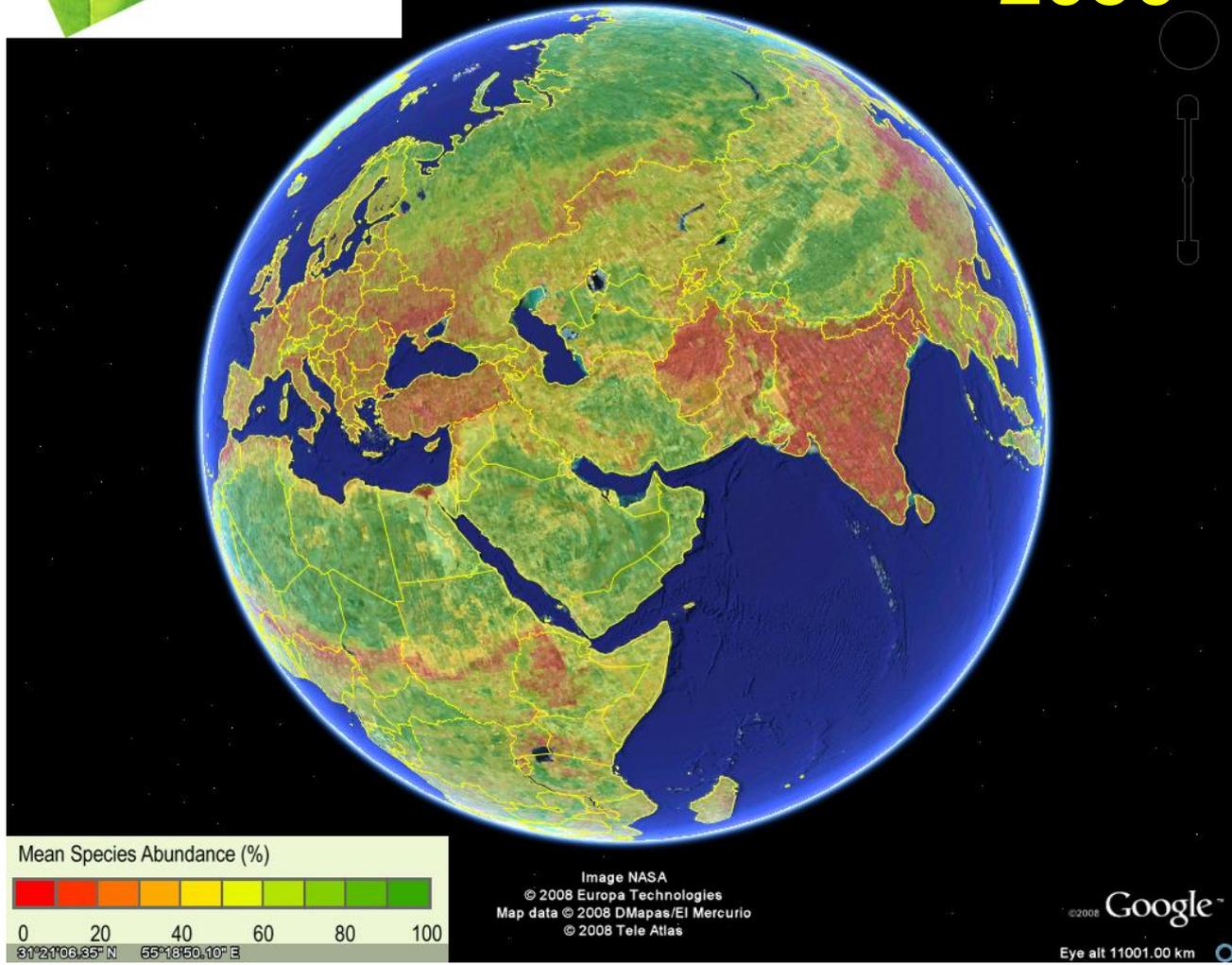
# “Business as Usual” Forecast : Global Biodiversity Loss



# “Business as Usual” Forecast : Global Biodiversity Loss



2050



# Four urgent strategic priorities:

- **to halt deforestation and forest degradation** (i) as an integral part of climate change mitigation and adaptation focused on 'green carbon' and (ii) to preserve the huge range of services and goods forests provide to local people and the wider community;
- **to protect tropical coral reefs** – and the associated livelihoods of half a billion people – through major efforts to avoid global temperature rise and ocean acidification;
- **to save and restore global fisheries** and related jobs, currently an underperforming asset in danger of collapse and generating US\$ 50 billion less per year than it could;
- **to recognise the deep link between ecosystem degradation and the persistence of rural poverty** and align policies across sectors with key Millennium Development Goals.

# Available solutions: instruments for better stewardship of natural capital

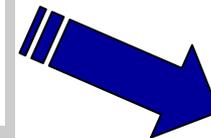
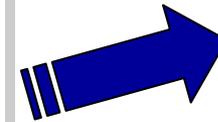
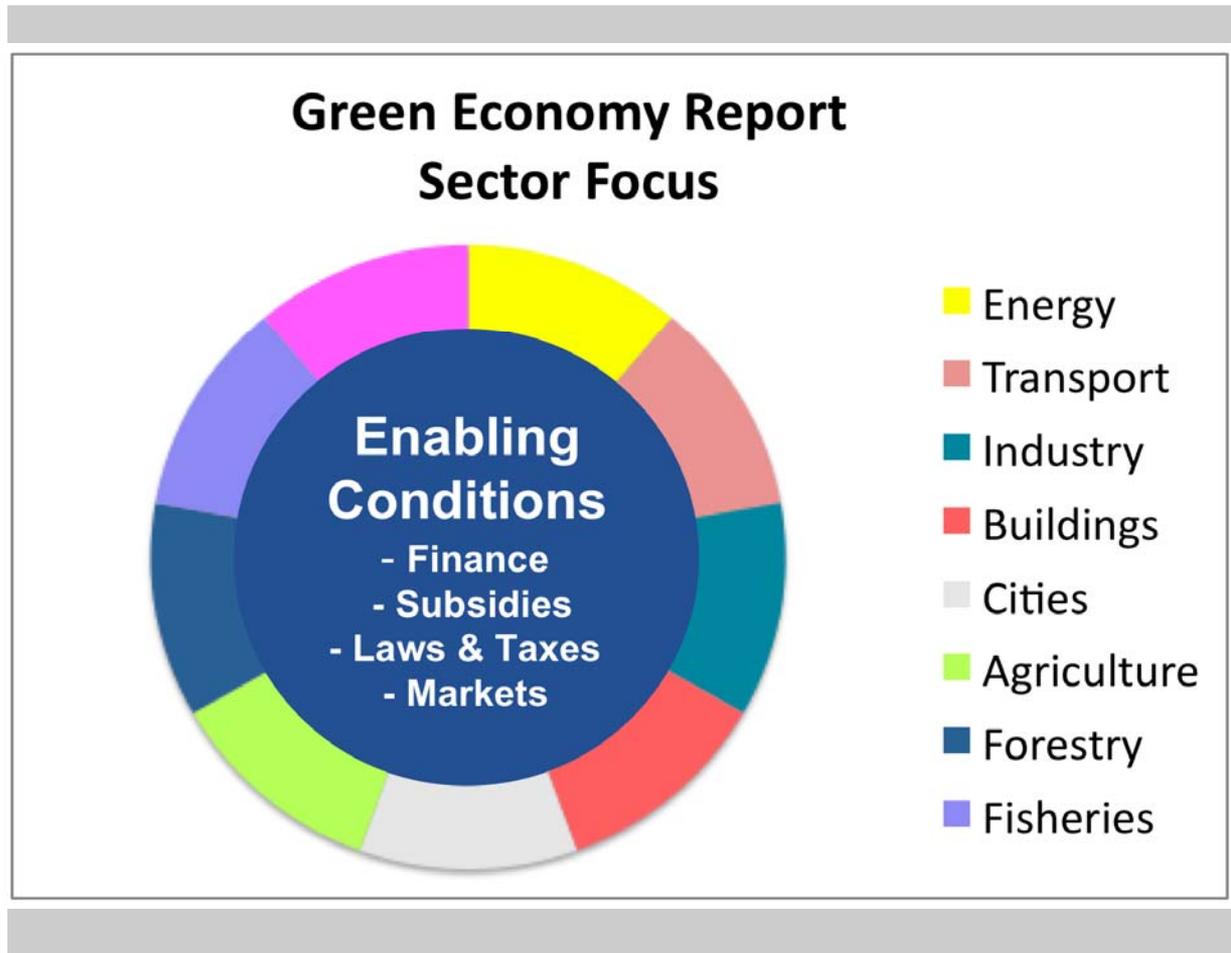
- **Rewarding benefits through payments and markets**
- **Reforming environmentally harmful subsidies**
- **Addressing losses through regulation and pricing**
- **Adding value through protected areas**
- **Investing in ecological infrastructure**

# The road ahead: responding to the value of nature

- The need to move our economies onto a low-carbon path and the benefits of doing so are now widely acknowledged
- – yet the need to move towards a resource efficient economy, and the role of biodiversity and ecosystems in this transition, are still largely misunderstood or under-appreciated.
- Building on the momentum created by the CBD COP in Nagoya, 2010

# Green Economy Report

## Making the Economic Case for Reform





# Green Economy Components

Increased investment in green sectors

- Cities
- Buildings
- Tourism
- Finance
- Industry
- Transport
- Renewable energy
- Waste management
- Agriculture
- Water
- Forests
- Fisheries

Supported by enabling conditions

- ⊕ Taxes
- ⊕ IPRs
- ⊕ Subsidies
- ⊕ Standards
- ⊕ Pricing
- ⊕ R&D
- ⊕ Trade
- ⊕ Training
- ⊕ Market access
- ⊕ Education
- ⊕ Green technologies



# Challenges in Agriculture

- Declining productivity: Globally, the growth rate of agricultural productivity is declining, and climate change will exacerbate this trend.
- Water: Agriculture accounts for 70 per cent of global freshwater use and is also responsible for most surface water pollution.
- Climate change: About 13% of global greenhouse gas emissions come from agriculture, mainly due to its heavy reliance on nitrogen fertilizers.
- Subsidies: Agricultural production is dependent on subsidies, particularly in developed economies. In 2008, agricultural subsidies in OECD countries amounted to US\$265 Bn.
- Prices: Food prices have been instable, driven in hikes by fuels prices
- Land: Land scarcity and land degradation, declining soil fertility and increasing erosion are leading to desertification.



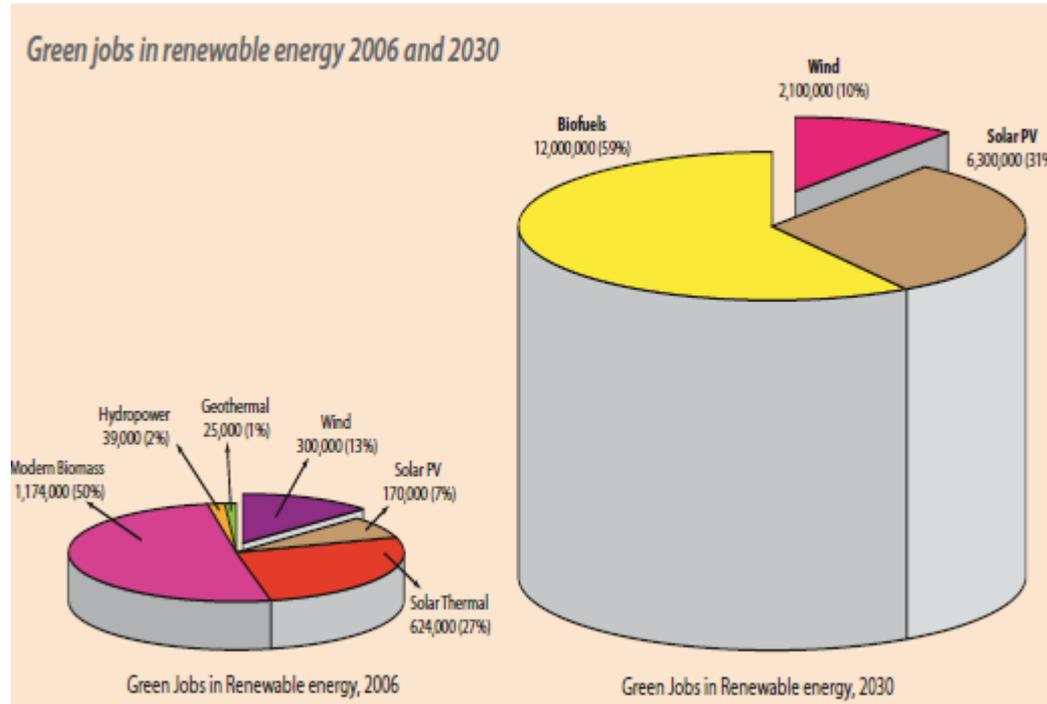
# Agriculture & Green Economy Opportunities

- **Productivity:** 114 cases of conversion to organic/near organic in Africa showed 116% increase in productivity.
- **Market:** Global trade of organic reached US\$50 billion.
- **Economic gains:** 97% of revenues generated in Europe/North America; more than 80% of producers are in Africa, Asia and Latin America.
- **Employment:** 30% more jobs per ha than non-organic in East Africa; 178,000 new jobs in Mexico.
- **Environment:** CO2 emissions per ha 48% to 68% lower. High potential for sectoral CDMs and other carbon finance

# Challenges in the Energy sector

- Energy security: Current patterns of energy production and distribution still leaving billions without access to modern forms of energy; global stress about future energy supply.
- Climate change: About 25% of global greenhouse gas emissions come from the power sector, all energy-related emissions would account for half of GHG emissions.
- Health: Energy related pollution is responsible for more death than malaria and tuberculosis combined.
- Subsidies: Global energy subsidies range from US\$240 to US\$310 billion/year or around 0.7% of global GDP, but there is inadequate support for renewable energy development.
- Prices: Unstable prices affecting food prices and government revenue.

# Energy & Green Economy Opportunities



- About 2.3 million jobs in renewable energy sector in comparison to 2 million employed in oil & gas refining industry in 1999.
- Globally, investing US\$630 bn in the renewable energy sector by 2030 would create 20 million additional jobs.

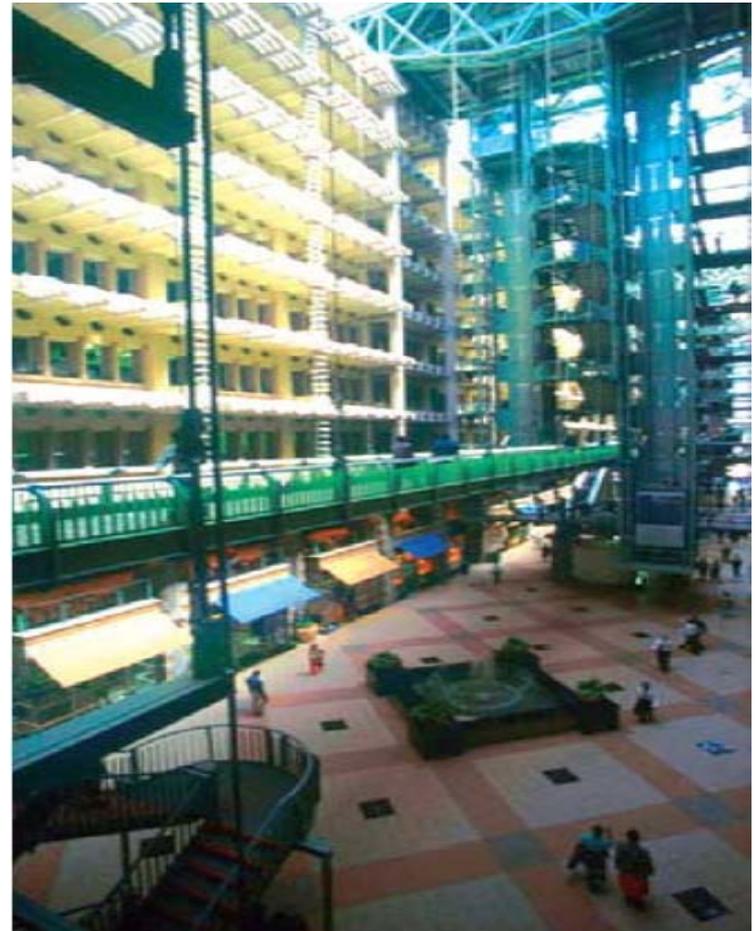
# Green Buildings

- **Investments in improved energy efficient buildings = 2-3.5m jobs in Europe & USA.**
- **Germany retrofitting existing housing stocks to improve energy efficiency. So far, over 200,000 apartments retrofitted, 25,000 new jobs created and 116,000 existing jobs sustained.**
- **In Australia a proposed US\$ 3b green housing over 4 years is expected to reduce GHG emissions by 3.8mtons/year = 160,000 jobs**

# Green buildings

- Eastgate building in Zimbabwe uses less than 10% of the energy of a conventional building its size.
- Eastgate's owners saved \$3.5 million on a \$36 million building because an air-conditioning plant didn't have to be imported.
- Rents are 20% lower than in other buildings.

Eastgate building in Zimbabwe mimics cooling mounds of termites.



Source: Mick Pearce



# Challenges in Transport

- **Today's transport systems are a source of:**
  - **Congestion (and associated losses in productive time)**
  - **Energy consumption and greenhouse gas emissions**
  - **Resource depletion**
  - **Reduction of accessibility**
  - **Degradation of human health (through air pollution, noise, vibration etc)**
  - **Reduction in human security (through traffic accidents)**
- **The sector consumes approx. 20% of global energy demand, 80% is derived from fossil fuels**
- **Road transport growth: 2.8% a year mainly in developing countries**
- **Global transport energy-related CO2 emissions are projected to increase by 1.7% a year from 2004 to 2030**

# Transport & Green Economy Opportunities

- Shifting 25% of all air travel in 2050 under 750 km to high speed rail travel would result in savings of around 5 GT of CO<sub>2</sub>/year (IEA, '08)
- More than 3.8 million jobs could be created globally through the increased production of low emission vehicles
- Investment in clean and efficient public urban transit transport contributes secondary employment effects, with a multiplier of 2.5 to 4.1 per direct job created



# Challenges in Waste Management

- **The rapid increase in production of solid and hazardous waste often results in environmental pollution, health hazards, toxic emissions, and loss of resources.**
- **Globally, 2.5 to 4 billion tons of waste generated in 2006.**
- **Solid waste services consuming 1 to 2 percent of GDP in developing countries.**
- **20 to 50% of a city's administration budget is consumed by solid waste management.**
- **Poor collection: (30-60 %) in low-income regions despite low per capita generation.**
- **Changing composition of waste: Shift from high organics to higher plastic and paper reflecting an increase in relative standard of living.**



# Waste & Green Economy Opportunities

- The municipal waste market value in OECD countries is estimated at US\$ 125 billion. Emerging economies like China, India & Brazil account for US\$ 25 billion.
- In France, half of the employment in environmental sector was in solid waste and waste water management.
- In the US recycling generates US\$236 billion annually and employs over one million people at 56,000 public and private facilities.
- About 600 million tones of materials are extracted from waste around the world for recycling.
- Using secondary materials offers substantial energy savings: aluminum (95%), copper (85%), plastics (80%), steel (74%), lead (65%), and paper (64%).
- Private sector involvement has reduced the waste service cost by at least 25% in countries such as UK, USA and Canada and at least 20% in Malaysia. In Latin America, higher labour and vehicle productivity has reduced the service cost by about 50%.

# Enabling conditions

- Place green investment at core of fiscal stimulus
- Include green investment in regular budget
- Create public-private funding mechanisms
- Create domestic enabling conditions (fiscal/pricing policy, standards, education & training)
- Create enabling international conditions (trade, ODA, technology transfer, IPRs, climate agreement)

# Major Opportunities for Japanese Corporations

- Renewable energy technologies (solar, geothermal)
- Recycling industries
- Sustainable transport
- Energy and material efficiency
- Green construction



# Green Economy Advisory Services



# Green Economy on the Move...

- Several major national and regional initiatives underway:
  - Japan Low-carbon Society 2050
  - Republic of Korea's National Strategy for Green Growth
  - France Grenelle de l'environnement
  - Rwanda
  - Azerbaijan
  - East Asia low-carbon green growth
  - Etc.



# Advisory Services

- UNEP currently initiating partnerships in Green Economy in over a dozen countries in Africa, Asia and the Pacific, West Asia e.g :
  - Republic of Korea: review of National Strategy for Green Growth
  - China: UNEP Policy research (feeding into five-year plan) (on-going)



# Regional Green Economy Initiatives

- East Asia Low carbon Green Growth Initiative
- Green Economy Initiative in Eastern and Central European countries (sustainable agriculture)
- Green Economy Initiative for the Arab Region in partnership with the League of Arab States, and regional NGOs
- African Green Economy Initiative

# Partnerships and Global Engagement



# Engaging Global Policy Processes

- UN Inter-agency initiatives – Joint Crisis Initiative
- UN Delivering as One on Green Economy
- Green Economy Coalition
- G 20 meetings
- Sessions of the Commission on Sustainable Development
- UN climate change conferences
- UNEP Governing Council
- International Association for Impact Assessment 2010 meeting in Geneva (April 2010) among other targeted events. Etc...
- Rio+20 process



# More Information

**UNEP Green Economy Website**

**<http://www.unep.org/greeneconomy/>**