

# **The Economics of Ecosystems & Biodiversity**



**1st Global Business of Biodiversity Symposium**

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## **The Economics of Ecosystems and Biodiversity: Report for Business**

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# The Economics of Ecosystems & Biodiversity



## TEEB for Business (Deliverable 3)

1. Business, biodiversity and ecosystem services
2. Business impacts & dependence on biodiversity and ecosystem services
3. Measuring & reporting biodiversity and ecosystem impacts & dependence
4. Scaling down biodiversity & ecosystem risks to business
5. Increasing biodiversity business opportunities
6. Business, biodiversity and sustainable development
7. A recipe for biodiversity and business growth



World Business Council for Sustainable Development



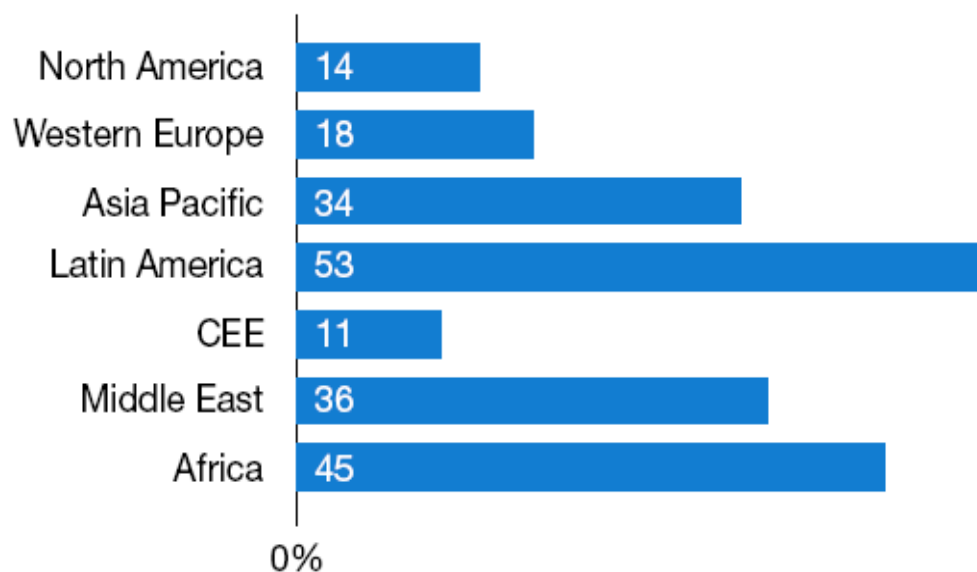
## Chap 1: Business, biodiversity and ecosystem services (BES)

- The value of nature is changing:
  - Increasing scarcity of natural resources
  - Increasing visibility of ecosystem values
  - More demanding citizens, consumers and public policies
  - New technologies that add value to biodiversity & ecosystems
- All businesses are affected, directly or indirectly
- New and growing BES risks must be managed
- Just as climate change has stimulated new technologies, business models and markets, BES offer opportunities for investors and entrepreneurs



## Growing business awareness of BES

Respondents who were 'extremely' or 'somewhat concerned' about biodiversity loss as a threat to their business growth prospects.



Q: How concerned are you about the following potential threats to your business growth prospects?

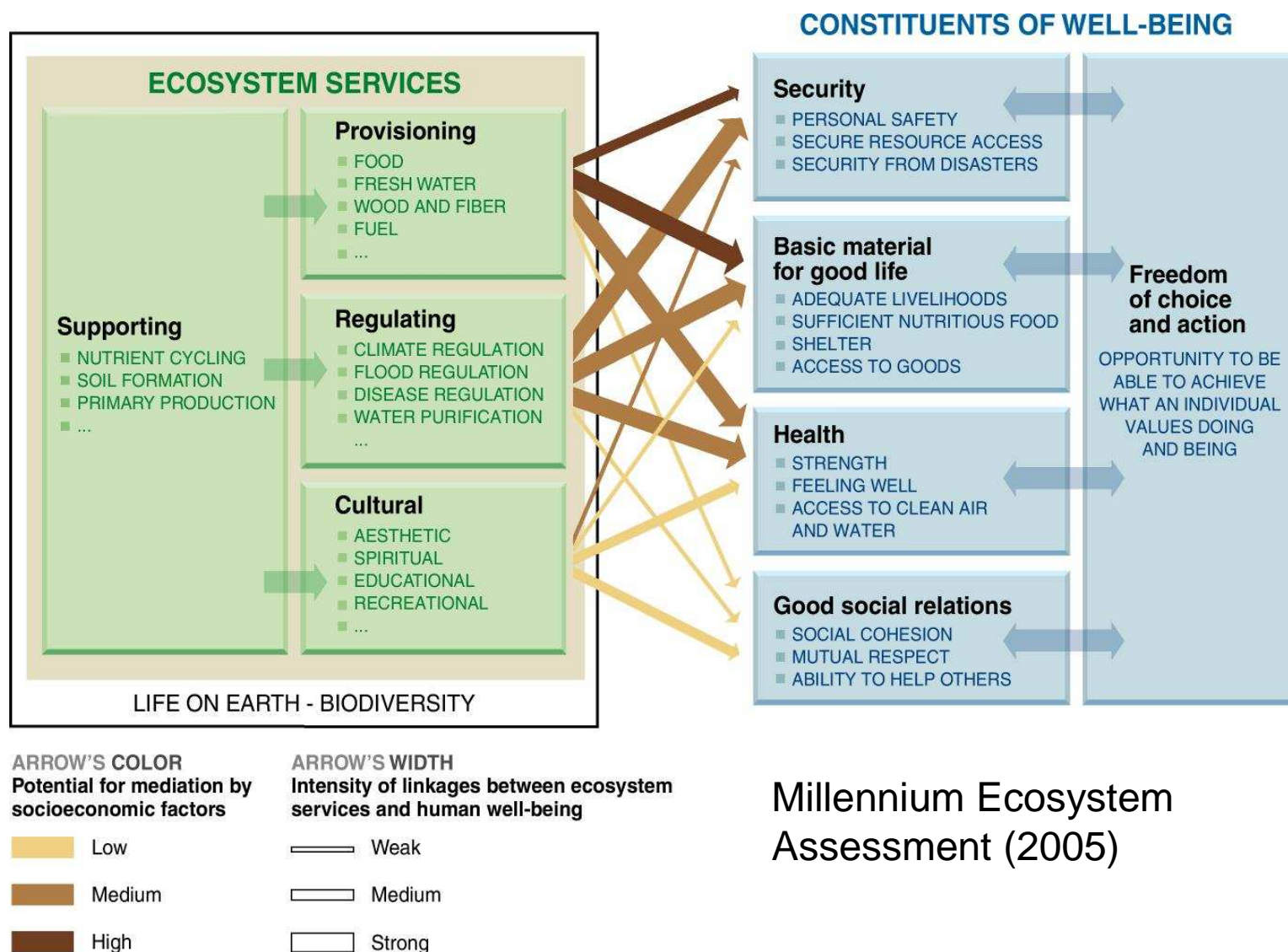
Base: All respondents (139, 442, 289, 167, 93, 28, 40) Please note small base for Middle East

Source: PricewaterhouseCoopers 13th Annual Global CEO Survey 2010

# The Economics of Ecosystems & Biodiversity



## Chap 2: Impacts and dependence



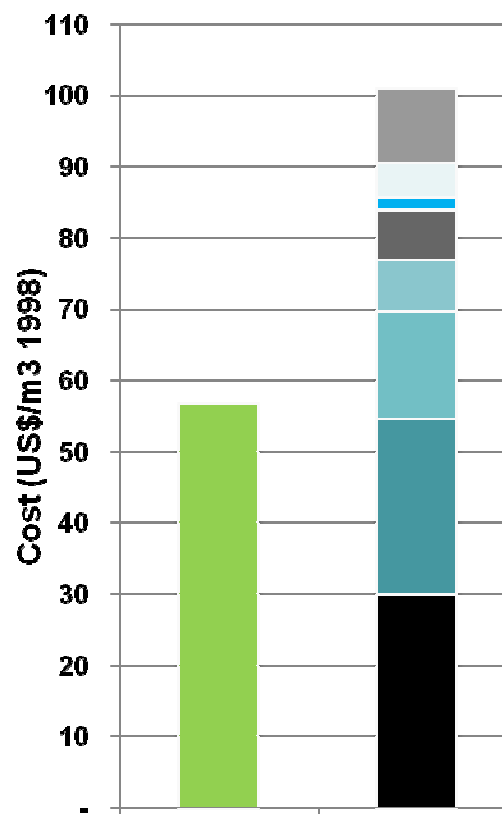
# The Economics of Ecosystems & Biodiversity



## Valuing business impacts on BES: Deforestation in China (Trucost plc)

Ecosystem service losses (1950-88)	<b>US\$12.2 Bn</b>
Property loss from flooding	5.5%
Loss of river transport capacity	1.7%
Sedimentation of water bodies	0.3%
Desertification (crop yields)	7.7%
Reduced lumber output	7.9%
Loss of plant nutrients	16.7%
Reduced water runoff	27.2%
Reduced precipitation	33.0%

Source: Hongchang, W. (1997)







## Valuing business dependence on BES: Blueberries in Michigan (Syngenta)

- Michigan blueberries: US\$ 124 million/year, 90% reliant on pollination by bees at cost of US\$ 1.5 million per year
- Domesticated bees threatened by hive collapse ()
- Operation Pollinator launched in 2009 in the USA and EU (13 countries)
- Restore native pollinators in agricultural landscapes by creating suitable habitat (field margins)
- Wild bees are natural 'back-stop' for managed hives





## Chap 3: Measuring & reporting BES impacts and dependence

- BES information management and accounting systems
- BES in capital investment
- Collecting & using BES information:
  - product level
  - group level
- Recommendations
  - Technical
  - Market
  - Disclosure



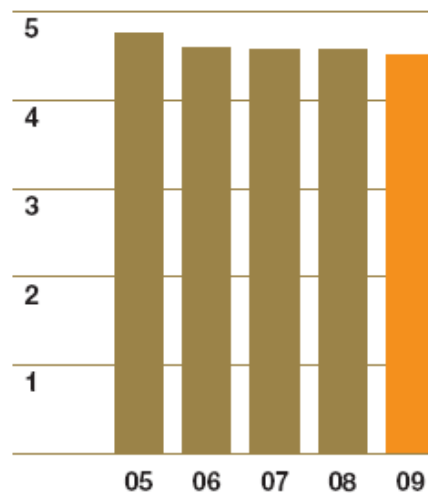




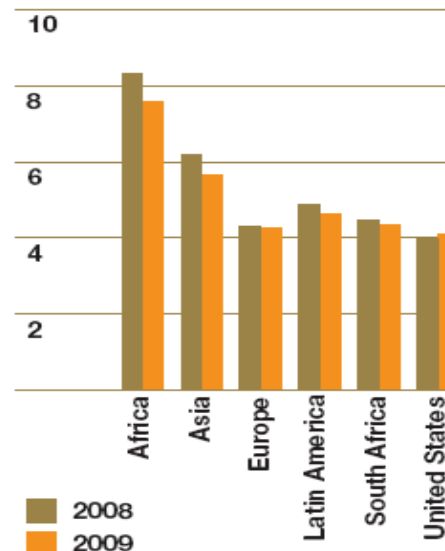
## Reporting BES impacts & dependence: Water reporting by SAB Miller

- Target: increase water productivity by 25% by 2015
- Potential savings: 20 billion litres of water/year

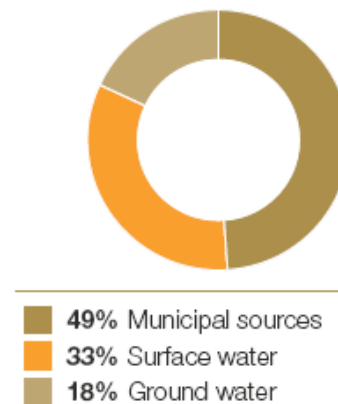
Water to beer ratio  
hl water/hl beer



Regional water to beer ratio  
hl water/hl beer



Water sources  
percentage breakdown by volume

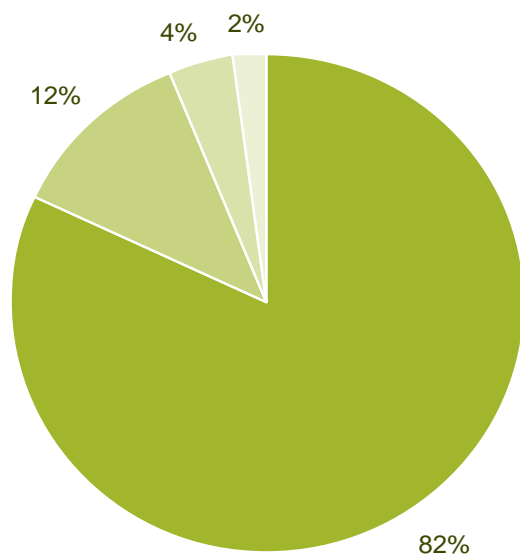


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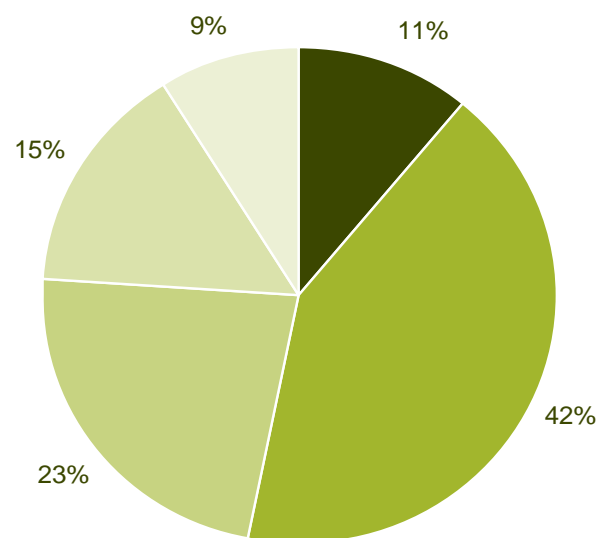


## More work needed on reporting

Top 100 companies  
Annual reports



Top 100 companies  
Sustainability reports



- Don't produce sustainability report
- No mention of biodiversity or ecosystems
- Passing mention of biodiversity or ecosystems
- Discuss approach to reduce impact on biodiversity
- Identify biodiversity as a key strategic issue

Source: PwC input to TEEB Report for Business



## More work needed on BES indicators

### Climate change: CO<sub>2</sub>e

### Biodiversity and ecosystems:<sup>1</sup>

- Living Planet Index (LPI)
- Wild Bird / Waterbird indices
- IUCN Red List Index (RLI)
- Marine Trophic Index
- Forest / Mangrove / Seagrass extent
- Coral reef condition (cover)
- Water Quality Index
- Ecological Footprint
- Nitrogen deposition rate
- Number of Alien Species (in Europe)
- Exploitation of fish stocks
- Climatic Impact Indicator (on birds)
- Protected Area extent
- Coverage by PAs of important habitats
- Area of forest under sustainable mgmt.
- International IAS policy adoption
- National IAS policy adoption
- ODA in support of CBD
- LPI for utilized vertebrates
- RLI for food & medicinal species
- RLI for traded bird species

### **Business needs indicators for:**

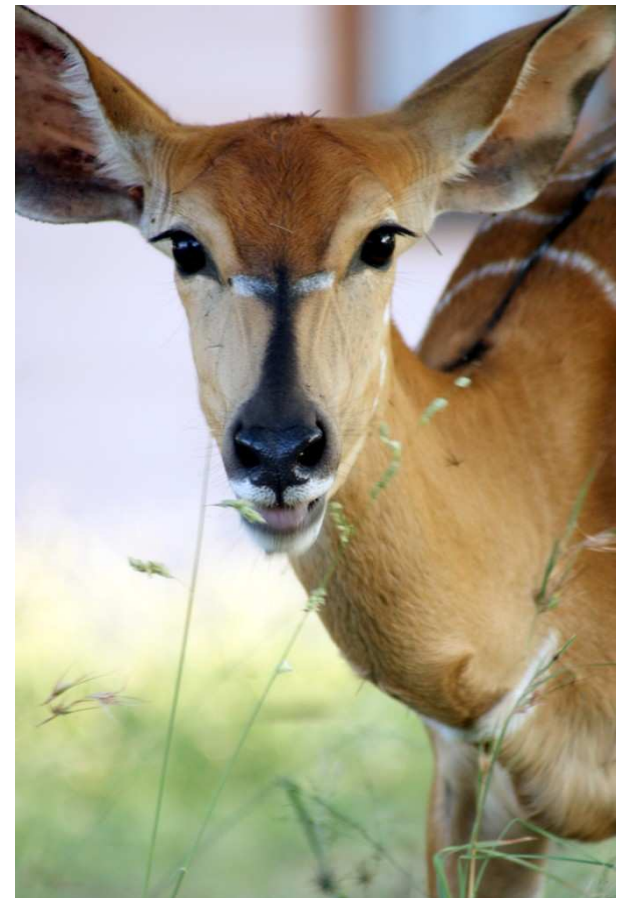
- **site, product, group level**
- **processes & performance**
- **internal & external reporting**

1/ Adapted from: Butchart *et al.* (2010) "Global Biodiversity: Indicators of Recent Declines" Science Express (29 April)



## Drivers of improved BES reporting

- Stakeholder expectations
  - Global Reporting Initiative
  - Carbon Disclosure Project
  - Forest Footprint Disclosure Project
- Accountancy standards
  - UK Environment Agency & ICAEW “Environmental Issues and Annual Financial Reporting” (2009)
- Regulatory requirements
  - US Securities and Exchange Commission “Guidance Regarding Disclosure Related to Climate Change” (February 2010)
- **Potential extension to BES?**





## Chap 4: Scaling down biodiversity & ecosystem risks to business

- **Integrated Biodiversity Assessment Tool**



- <http://www.biodiversityinfo.org/ibat/>
- GIS database for site-level risk assessment
- Based on World Database of Protected Areas, World Biodiversity Database, IUCN Red List of Threatened Species

- **Business and Biodiversity Offsets Program**



- <http://www.forest-trends.org/biodiversityoffsetprogram/>
- Guidance on designing and implementing biodiversity offsets to ensure “no net loss”
- Led by Forest Trends, Wildlife Conservation Society and Conservation International

- **Certification and labelling**



- <http://www.isealalliance.org/>
- Global hub for social and environmental standards
- Members represent fair trade, forest stewardship, organic agriculture, fisheries, etc.





## Net benefits of wetland restoration: Aggregate Industries UK

- Proposed extension of existing quarry in North Yorkshire
- Farming > sand and gravel extraction > wetland and lake
- Potential benefits:
  - Biodiversity GB£ 1.4 million (£53/ha/hh)
  - Recreation GB£ 356,000
  - Flood storage GB£ 224,000
  - Carbon storage GB£ 4,700
- Expected costs:
  - Lost agricultural output GB£ 722,000
  - Restoration & management costs GB£ 176,000
- Net benefits: GB£ 1.1 million (NPV)

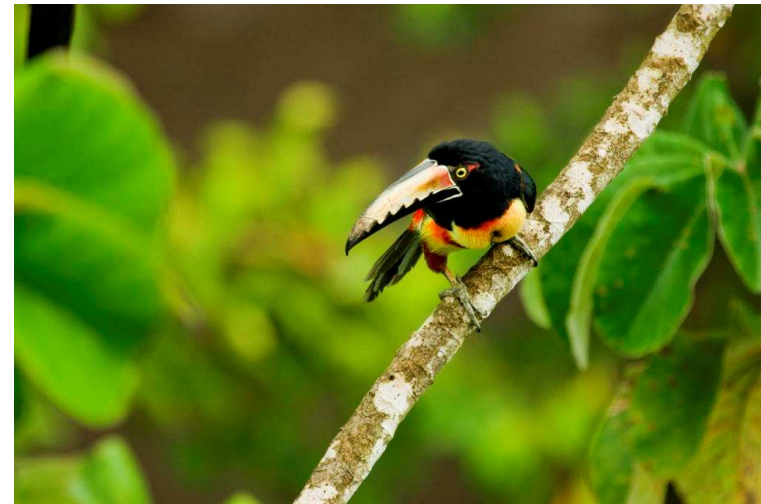
Source: Olsen &  
Shannon 2010



## Chap 5: Increasing biodiversity business opportunities

### Adding BES to existing business

- Agriculture
- Biodiversity mgmt services
- Cosmetics
- Extractive industries
- Finance
- Fisheries
- Forestry
- Garments
- Handicrafts
- Pharmaceuticals
- Retail
- Tourism



- **New markets for biodiversity and ecosystem services**
- Bio-carbon & REDD
- Biodiversity banking
- Enabling policy & tools

# The Econ





## Biodiversity offsets and banking: Wetland mitigation banks in the USA

- Authorized under federal Clean Water Act
- Developers must compensate for loss of wetlands
- Most compensation is 'in-kind' and within the same watershed as the damage
- Developers can do it themselves or purchase wetland 'credits' from approved 'banks'
- 450+ approved wetland banks, most privately financed on commercial basis
- US market currently worth ~\$2 billion/year



## Enabling policy for markets for BES

- **Subsidy reform** (agriculture, fisheries, water, transport, etc)
- **Tax credits and other incentives** for conservation
- **Certification and eco-labelling** (voluntary / mandatory)
- **Payment for Ecosystem Services** (national, international)
- **Environmental responsibility** (EU Environmental Liability Directive, damage assessment and compensation)
- **Environmental trading schemes** (REDD+, USA wetland and species mitigation, Australia biodiversity banking)
- **Public access to information** (Global Reporting Initiative, Carbon / Forest / Water footprint disclosure projects)





## Chap 6: Business, biodiversity and sustainable development

- Integrating BES and social development
  - Food security, health, human rights, labor rights, poverty reduction
- Business impacts on BES relevant to the poor
- Governance, property rights and benefit-sharing



## Aligning BES and development: Rio Tinto in Madagascar

- Net Positive Impact (NPI) policy entails impact avoidance, mitigation, restoration and offsets
- Support for conservation project (60,000 ha lowland forest)
- Potential benefits:
  - Carbon storage US\$26.7 million
  - Wildlife habitat US\$2.7 million
  - Hydrological regulation US\$760,000
  - Eco-tourism US\$2.5 million
- Potential costs:
  - PA start-up and management US\$3.2 million
  - Lost agricultural output & NTFPs US\$9.7 million
- Benefit-sharing with local communities (REDD revenue)



Source: Olsen & Anstee (2010)



## Chap 7: A recipe for biodiversity and business growth

- Millennium Ecosystem Assessment: Synthesis for Business
- IUCN & WBCSD Handbook for Corporate Action
- International Council on Mining and Metals
- International Petroleum Industry Environmental Conservation Assoc.
- Global Reporting Initiative
- World Economic Forum / Global Agenda Council on Valuing Nature
- In Good Company: German Business & Biodiversity Initiative
- Canadian Business and Biodiversity Initiative
- FRB/Orée Biodiversity Accountability Framework
- Declaration of Biodiversity (Japan, Nippon Keidanren)
- Guidelines for Private Sector Engagement in Biodiversity (Japan gov't)



## What can business do TODAY?

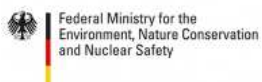
1. Identify impacts and dependence on biodiversity and ecosystem services (BES)
2. Assess the business risks and opportunities associated with these impacts and dependencies
3. Develop BES information systems, set targets, measure and value performance, report results
4. Avoid, minimize and mitigate BES risks, using in-kind compensation ('offsets') where appropriate
5. Grasp emerging BES business opportunities, e.g. cost-efficiencies, new products and new markets
6. Integrate BES actions with wider Corporate Social Responsibility
7. Engage with business peers and other stakeholders to improve BES guidance and policy



# The Economics of Ecosystems & Biodiversity



**Main TEEB funders:**



**The TEEB for Business report is available at:**

([www.teebweb.org](http://www.teebweb.org))

**Deadline for comments and contributions:**  
**6 September 2010**

**Main D3 writers:**



World Business Council for Sustainable Development





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