Connecting the dots
The nexus between ecosystems and business
1. Elevator speech – *getting hooked*
   ✓ Asking the right questions
2. Definitions and concepts – *setting the scene*
   ✓ Biodiversity, ecosystems and ecosystem services
3. Status and supply – *urgency for action*
   ✓ Based on the findings of the Millennium Ecosystem Assessment (MA) and Global Environment Outlook (GEO) reports
4. Drivers and causes of change – *cause and effect*
   ✓ Direct and indirect
5. Consequences of degradation – *impacts*
   ✓ Social and economic (business)
6. Responses – *ways forward*
   ✓ What companies can do and tools that help
Elevator speech - relevance for business
Exercise: Should I care?
Yes or no – what do you think?

- Company operations are vulnerable to changes in the quality and quantity of ecosystem service inputs – e.g., water
- Company license to operate is challenged by new stricter environmental policies and legislation – e.g., GHG emissions
- Company reputation, brand or image is sensitive to public opinion and NGO actions about nature conservation – e.g., boycotts & campaigns
- Companies respond to increased demand for green products – e.g., eco-labeled & certified
- Companies face biodiversity impact assessments when seeking external finance
### Exercise:
**Ecosystems dilemma assessment**

#### I have (or my company has) been affected by the following ecosystem challenges:
- Water scarcity
- Climate change
- Habitat change
- Biodiversity Loss
- Overexploitation of oceans
- Nutrient overloading

#### I have (or my company has) benefited from the following ecosystem services:
- Provisioning
- Regulating
- Cultural
- Supporting

#### I have (or my company has) taken the lead on addressing ecosystems:
- To manage risk
- To improve operational efficiencies
- To gain business opportunities

#### I have (or my company has) considered the long-term consequences of ecosystem degradation in my strategy:

#### I have (or my company has) taken into account the direct impact if we have on ecosystems:

#### I have (or my company has) taken into account the indirect impact if we have on ecosystems:
Ecological balance is one of the three pillars of sustainable development.

All businesses depend and impact on ecosystems and their services – either as part of their core operations or through their value chain.

Ecosystem degradation can undermine the business license to operate by posing significant risks to companies, their suppliers, customers and investors.

Sustainable ecosystem management can create new business opportunities and markets.
What are biodiversity, ecosystems and ecosystem services?
The Web of Life

- Sit back and enjoy the movie
  
  http://countdown2010.net/daversity
A few definitions

**biodiversity** • The variability among living organisms
  – Within species & populations
  – Between species
  – Between ecosystems

**ecosystem** • A dynamic complex of plant, animal, and micro-organism communities and the non-living environment interacting as a functional unit

**ecosystem services** • The benefits people obtain from ecosystems
  • The “goods and services of nature”
Ecosystem services – an overview

**Provisioning**
Goods or products produced by ecosystems

**Regulating**
Natural processes regulated by ecosystems

**Cultural**
Non-material benefits obtained from ecosystems

**Supporting**
Functions that maintain all other services
Provisioning services: Goods produced or provided by ecosystems

- **Food**
  - Crops
  - Livestock
  - Capture fisheries
  - Aquaculture
  - Wild foods

- **Fiber**
  - Timber
  - Cotton, hemp, silk
  - Biomass fuel

- **Freshwater**

- **Genetic resources**

- **Biochemicals, natural medicines & pharmaceuticals**

Source: Millennium Ecosystem Assessment, 2005.
Regulating services: Natural processes regulated by ecosystems

- Air quality regulation
- Climate regulation
  - Global (CO₂ sequestration)
  - Regional and local
- Water purification and waste treatment
- Water flow regulation
- Natural hazard regulation
- Erosion regulation
- Disease regulation
- Pest regulation
- Pollination

Source: Millennium Ecosystem Assessment, 2005.
Cultural services: Non-material benefits obtained from ecosystems

- Recreation
- Ecotourism
- Spiritual and religious values
- Ethical and “existence” values

Source: Millennium Ecosystem Assessment, 2005.
Supporting services: Functions that maintain all other services

- Nutrient cycling
- Primary production
- Photosynthesis
- Water cycling

Source: Millennium Ecosystem Assessment, 2005.
Circle the ecosystem services you have enjoyed this week.

Exercise:
Think about your life…

Source: Millennium Ecosystem Assessment
Exercise: Do you know the answers?

- Is biodiversity an ecosystem service?
- Are minerals and fossil fuels ecosystem services?
- If fossil fuels are not an ecosystem service, then why is freshwater?
Ecosystem status and projected supply of ecosystem services
2005: Millennium Ecosystem Assessment

- Many of the world’s ecosystems are in serious decline
- Continuing supply of critical ecosystem services like water purification, pollination and climate regulation are in jeopardy
- 6 interconnected challenges are of particular concern for business

Water scarcity     Climate change     Habitat change     Biodiversity loss     Over-exploitation of oceans     Nutrient overloading
What was the Millennium Ecosystem Assessment?

- **Largest assessment of health of ecosystems ever undertaken**
- **Examined links between ecosystems and human well-being**
- **Partnership of UN agencies, five conventions, business, and NGOs**
- **1,360 experts from 95 countries over 4 years**
- **Scientifically credible and politically legitimate source of information**
The MA’s major finding regarding ecosystems

The structure and functioning of the world’s ecosystems has changed rapidly the past 50 years

- 20% of the world’s coral reefs have been lost and more than 20% are degraded
- 35% of mangrove area has been lost in the last several decades
- Amount of water in reservoirs quadrupled since 1960
- Withdrawals from rivers and lakes doubled since 1960

Source: Millennium Ecosystem Assessment, 2005.
25% of earth’s land surface is now cultivated
Desertification

Lake Chad
1960: The World’s 6th largest lake
1963-2001: Shrunk by 95%, wetlands spoiled

## MA major finding regarding ecosystem services

### 60% of the world’s ecosystem services are degraded

<table>
<thead>
<tr>
<th>Degraded</th>
<th>Mixed</th>
<th>Enhanced</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Provisioning</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Capture fisheries</td>
<td>• Timber and wood fiber</td>
<td>• Crops</td>
</tr>
<tr>
<td>• Wild foods</td>
<td>• Other fibers (e.g., cotton, hemp, silk)</td>
<td>• Livestock</td>
</tr>
<tr>
<td>• Biomass fuel</td>
<td></td>
<td>• Aquaculture</td>
</tr>
<tr>
<td>• Genetic resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Biochemicals, natural medicines, &amp; pharmaceuticals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Freshwater</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Regulating</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Air quality regulation</td>
<td>• Water regulation</td>
<td>• Global climate regulation (carbon sequestration)</td>
</tr>
<tr>
<td>• Regional &amp; local climate regulation</td>
<td>• Disease regulation</td>
<td></td>
</tr>
<tr>
<td>• Erosion regulation</td>
<td></td>
<td></td>
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<tr>
<td>• Water purification &amp; waste treatment</td>
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<tr>
<td>• Pest regulation</td>
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<tr>
<td>• Pollination</td>
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<tr>
<td>• Natural hazard regulation</td>
<td></td>
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</tr>
<tr>
<td><strong>Cultural</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Spiritual, religious, or cultural heritage values</td>
<td>• Recreation &amp; ecotourism</td>
<td></td>
</tr>
<tr>
<td>• Aesthetic values</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Millennium Ecosystem Assessment, 2005.
## Balance Sheet – Ecosystems

### Provisioning services

<table>
<thead>
<tr>
<th>Service</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>crops</td>
</tr>
<tr>
<td>livestock</td>
<td>↑</td>
</tr>
<tr>
<td>capture fisheries</td>
<td>↓</td>
</tr>
<tr>
<td>aquaculture</td>
<td>↑</td>
</tr>
<tr>
<td>wild foods</td>
<td>↓</td>
</tr>
<tr>
<td>Fiber</td>
<td>timber</td>
</tr>
<tr>
<td>cotton, silk</td>
<td>+/-</td>
</tr>
<tr>
<td>wood fuel</td>
<td>↓</td>
</tr>
<tr>
<td>Genetic resources</td>
<td>↓</td>
</tr>
<tr>
<td>Biochemicals, medicines</td>
<td>↓</td>
</tr>
<tr>
<td>Water</td>
<td>freshwater</td>
</tr>
</tbody>
</table>

### Regulating services

- Air quality regulation: ↓
- Climate regulation – global: ↑
- Climate regulation – regional and local: ↓
- Water regulation: +/-
- Erosion regulation: ↓
- Water purification and waste treatment: ↓
- Disease regulation: +/-
- Pest regulation: ↓
- Pollination: ↓
- Natural hazard regulation: ↓

### Cultural services

- Spiritual and religious values: ↓
- Aesthetic values: ↓
- Recreation and ecotourism: +/-

*Source: Millennium Ecosystem Assessment, 2005.*
Species loss – overexploitation of Atlantic Cod off Newfoundland
MA Scenarios

- Not predictions – scenarios are plausible futures
- Both quantitative models and qualitative analysis used in scenario development
The four MA Scenarios

- **Global Orchestration**: Equity, economic growth and public goods
- **TechnoGarden**: Green technologies and ecological economics
- **Order from Strength**: National security
- **Adopting Mosaic**: Integrated management, local adaptation and learning

Reactive - Global - Regional - Proactive
MA Scenarios - storyline

- **Global Orchestration** – Globally connected society that focuses on global trade and economic liberalization and takes a reactive approach to ecosystem problems but that also takes strong steps to reduce poverty and inequality and to invest in public goods such as infrastructure and education.

- **Order from Strength** – Regionalized and fragmented world, concerned with security and protection, primarily emphasizing regional markets, paying little attention to public goods, and taking a reactive approach to ecosystem problems.
MA Scenarios - storyline

- **Adapting Mosaic** – Regional watershed-scale ecosystems are the focus of political and economic activity. Local institutions are strengthened and local ecosystem management strategies are common; societies develop a strongly proactive approach to the management of ecosystems.

- **TechnoGarden** – Globally connected world relying strongly on environmentally sound technology, using highly managed, often engineered, ecosystems to deliver ecosystem services, and taking a proactive approach to the management of ecosystems in an effort to avoid problems.
Drivers affecting the projected future – by 2050

- **Population size** (reaching 8-10 billion people)
- **Per capita income** (growing 2-4 times)
- **Land conversion** (converting 10-20% of additional grassland and forestland)
- **Overexploitation incl. overfishing** (increasing pressure)
- **Invasive alien species** (continuing spread)
- **Reactive nitrogen flow** (increasing by another 66% – already doubled during the past 50 years)
- **Climate change** (continuing global warming – expected to become the predominant global cause of ecosystem degradation and ecosystem service loss)
Projected changes in the provision of Ecosystem Services

- Demand for food crops to grow by 70-85%
- Water availability to increase by 5-7%
- Water demand to grow by 30-85%
- Number of plant species to decline by 10-15%
The drivers and underlying causes of ecosystem and ecosystem service change
Exercise:
What are the drivers and causes....

What do you think are the main drivers and underlying causes of ecosystem and ecosystem service change and degradation? How many can you write down in 1 minute?
Main drivers – as per the MA

Direct Drivers of Change
- Changes in land use
- Species introduction or removal
- Technology adaptation and use
- External inputs (*e.g.*, irrigation)
- Resource consumption
- Climate change
- Natural physical and biological drivers (*e.g.*, volcanoes)

Indirect Drivers of Change
- Demographic
- Economic (*globalization, trade, market and policy framework*)
- Sociopolitical (*governance and institutional framework*)
- Science and Technology
- Cultural and Religious

Human Well-being and Poverty Reduction
- Basic material for a good life
- Health
- Good Social Relations
- Security
- Freedom of choice and action

Ecosystem Services

Life on Earth - Biodiversity

Strategies and interventions
Exercise:
Think about your life…

Of all the ecosystem services, how many do people actually pay the full cost for?
Underlying cause – missing markets undervaluation and lack of incentives

Private vs. public goods dilemma

Rivalry

Excludability

Private good

Shrimp
Timber
Non timber forest products

Club good/
collective good

Common good
“open access”

Fishery

Non-excludability

Non-rivalry

Storm protection
Fish nursery

Pure public good

Fishery

Shrimp
Timber
Non timber forest products

Private good
Exercise:
Financial vs. economic value

1. Which land use generates the highest financial return?
2. Which land use represents the highest socio-economic value?

Implication of undervaluation – shrimp vs. mangrove

Net present value (economic) per hectare
- Mangrove: US$ 35,696
- Shrimp farm: US$ 213

Value (US$ /ha)

- Coastal protection
- Fishery nursery
- Timber and non-timber products
- Less subsidies
- Pollution costs

Note: 10% discount rate, Source: Millennium Ecosystem Assessment; Sathirathai and Barbier 2001
Direct values
Outputs that can be consumed directly, such as fish, medicines, wild foods, recreation, etc.

Indirect values
Ecological services, such as catchment protection, flood control, carbon sequestration, climatic control, aesthetics, etc.

Option values
The premium placed on maintaining resources and landscapes for future possible direct and indirect uses, some of which may not be known now.

Existence values
The intrinsic value of resources and landscapes, irrespective of its use such as cultural, aesthetic, bequest significance, etc.

Total Economic Value – TEV
Consequences of ecosystem change
Consequences for human well-being – as per the MA

Source: Millennium Ecosystem Assessment, 2005.
Businesses impact on ecosystems and ecosystem services

Ecosystem change creates business **risks** and **opportunities**

Businesses rely and depend on ecosystems and ecosystem services
## Business risks and opportunities

<table>
<thead>
<tr>
<th>Type</th>
<th>Risk</th>
<th>Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operational</strong></td>
<td>• Increased scarcity / cost of inputs</td>
<td>• Increased resource use efficiency</td>
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<tr>
<td></td>
<td>• Reduced quality of inputs</td>
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<tr>
<td></td>
<td>• Disruption to business operations</td>
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<tr>
<td><strong>Regulatory</strong></td>
<td>• Stricter environmental policies &amp; legislation</td>
<td>• License to expand operations</td>
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<tr>
<td>and legal</td>
<td>• Fines</td>
<td>• Ability to shape government policy</td>
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<td></td>
<td>• Permit or license suspension</td>
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<td><strong>Reputational</strong></td>
<td>• Damage to brand or image</td>
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<td></td>
<td>• Challenge to “license to operate”</td>
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<tr>
<td><strong>Market and</strong></td>
<td>• Changes in customer preferences</td>
<td>• New products or services</td>
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<tr>
<td><strong>product</strong></td>
<td></td>
<td>• Markets for certified products</td>
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<tr>
<td></td>
<td></td>
<td>• Markets for ecosystem services</td>
</tr>
<tr>
<td><strong>Financing</strong></td>
<td>• Higher cost of capital</td>
<td>• Green banking</td>
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<td></td>
<td>• More rigorous lending requirements</td>
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</table>
What can business do?
1. Address risks and explore opportunities – Apply the Corporate *Ecosystems Services Review* (ESR)

2. Undertake ecosystem *valuation*

3. Measure, manage and mitigate

4. Engage in developing:
   - Markets for ecosystem services
   - Eco-efficiency
Apply the Corporate Ecosystem Services Review (ESR)
Assess which ecosystem services the company impacts and depends on
  ✓ Covering direct operations and those of suppliers and customers

Evaluate the trends and drivers affecting the assessed ecosystem services

Identify risks and opportunities arising from trends in ecosystem services

Develop strategies for addressing risks and opportunities
  ✓ Reduce impacts and scale up solutions
  ✓ Identify, evaluate and respond to new business opportunities
  ✓ Set targets for improvement, and report on the results
  ✓ Build alliances with research organizations, NGOs, industry associations and governments
Steps in a corporate ecosystem services review

1. Determine scope
2. Identify priority ecosystem services
3. Analyze trends in priority services
4. Identify business risks and opportunities
5. Develop strategies
Step 1: Considerations when selecting scope

1. Which stage of the supply chain?
   - Which customer(s)?
   - In which geographic market(s)?

2. Who and where specifically?
   - Which supplier(s)?
   - In which geographic market(s)?
   - What aspect of the business?
     - Business unit
     - Product line
     - Facility
     - Project
     - Landholdings
   - Which customer(s)?
   - In which geographic market(s)?

3. Is it strategic, timely and supported?
Step 2: Identifying priority eco services

<table>
<thead>
<tr>
<th>Ecosystem services</th>
<th>Key input suppliers</th>
<th>Company operations*</th>
<th>Major customers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dependent upon</td>
<td>Impact</td>
<td>Dependent upon</td>
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<tr>
<td><strong>Provisioning</strong></td>
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<tr>
<td>Crops</td>
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<tr>
<td>Livestock</td>
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<td>Capture fisheries</td>
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<tr>
<td>Timber</td>
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<tr>
<td>Cotton, hemp, silk, etc</td>
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<tr>
<td>Biomass fuel</td>
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<tr>
<td>Fresh water</td>
<td>●</td>
<td>● -</td>
<td>○</td>
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<tr>
<td>Genetic resources</td>
<td>○</td>
<td>○ ?</td>
<td>○</td>
</tr>
<tr>
<td>Biochemicals, natural medicines and pharmaceuticals</td>
<td>○</td>
<td>○ +</td>
<td>○</td>
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<tr>
<td><strong>Regulating</strong></td>
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<td>Air quality regulation</td>
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<tr>
<td>Climate regulation</td>
<td>●</td>
<td>● -</td>
<td>○</td>
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<tr>
<td>Water regulation</td>
<td>○</td>
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<td>○</td>
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<td>○</td>
<td>○ -</td>
<td>○</td>
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<tr>
<td>Water purification and waste treatment</td>
<td>○</td>
<td>○ -</td>
<td>○</td>
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<td>Disease regulation</td>
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<td>Pest regulation</td>
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<td>Pollination</td>
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<td>Natural hazard regulation</td>
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<tr>
<td><strong>Cultural</strong></td>
<td></td>
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</tr>
<tr>
<td>Spiritual, religious, or cultural heritage values</td>
<td>○</td>
<td>○ +/-</td>
<td>○</td>
</tr>
<tr>
<td>Recreation, ecotourism, or aesthetic values</td>
<td>○</td>
<td>○ +/-</td>
<td>○</td>
</tr>
</tbody>
</table>

- Some impact or dependence
- Significant impact or dependence
+ Positive impact
- Negative impact

* The business unit, facility, geographic operations, or product line being reviewed in the ESR
Step 3: Evaluate trends

1. Trends in ecosystem services
   - Supply and demand
   - Quantity, quality and/or timing

2. Direct drivers
   - Land-use change
   - Over-consumption
   - Climate change
   - Pollution
   - Invasive, non-native species
   - Other

3. Company activities
   - How
   - Where
   - To what degree

4. Activities of others
   - Who
   - How
   - Where
   - To what degree

5. Indirect drivers
   - Demographic
   - Economic
   - Governmental
   - Technological
   - Cultural and religious
### Step 4: Risks and opportunities

<table>
<thead>
<tr>
<th>Type</th>
<th>Risk</th>
<th>Opportunity</th>
</tr>
</thead>
</table>
| Operational            | • Increased scarcity or cost of inputs  
                         • Reduced quality of inputs  
                         • Reduced output or productivity  
                         • Disruption to business operations | • Increased resource use efficiency  
                         • Integrated ecosystem/manufacturing processes |
| Regulatory and legal   | • Extraction moratoria  
                         • Lower quotas  
                         • Fines  
                         • User fees  
                         • Permit or license suspension  
                         • Permit denial  
                         • Lawsuits | • License to expand operations  
                         • Ability to shape government policy |
| Reputational           | • Damage to brand or image  
                         • Challenge to “license to operate” | • Improved or differentiated brand |
| Market and product     | • Changes in customer preferences | • New products or services  
                         • Markets for certified products  
                         • Markets for ecosystem services  
                         • New revenue streams from company-owned or managed ecosystems |
| Financing              | • Higher cost of capital  
                         • More rigorous lending requirements |
Step 5: Develop strategies

1. Internal strategy or operational changes
2. Industry peer or other sector engagement
3. Policy-maker engagement
Use to build on existing efforts…

- Strategic planning
- Organizational support for a strategy
- Infusing ecosystem services thinking
  - Strategic planning
  - Existing environmental impact assessments, environmental management systems, etc.
- Better address stakeholder concerns
What the ESR is not

- It does not identify or address every environmental issue
- It is not strictly quantitative
- It is not dependent upon economic valuation of ecosystem services
- It does not require a long, multi-year analysis
Undertake ecosystem valuation
The problem

Despite the economic importance of ecosystem services to production, consumption, trade and investment, these values remain largely unreflected in the policies, prices and markets that shape economic behaviour.

Decisions are made on the basis of only partial information.

Not only does this incur unnecessary costs and losses as ecosystems are degraded, it also means that many of the opportunities to capture and gain from ecosystem values are missed.
### Biome Area (mill ha) Global value (US$ trill/yr)

<table>
<thead>
<tr>
<th>Biome</th>
<th>Area</th>
<th>Global value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open ocean</td>
<td>33,200</td>
<td>8,381</td>
</tr>
<tr>
<td>Coastal</td>
<td>3,102</td>
<td>12,568</td>
</tr>
<tr>
<td>Tropical forest</td>
<td>1,900</td>
<td>3,813</td>
</tr>
<tr>
<td>Temperate forest</td>
<td>2,955</td>
<td>894</td>
</tr>
<tr>
<td>Grass/rangelands</td>
<td>3,898</td>
<td>906</td>
</tr>
<tr>
<td>Tidal marsh/mangroves</td>
<td>165</td>
<td>1,648</td>
</tr>
<tr>
<td>Swamps/floodplains</td>
<td>165</td>
<td>3,231</td>
</tr>
<tr>
<td>Lakes/rivers</td>
<td>200</td>
<td>1,700</td>
</tr>
<tr>
<td>Cropland</td>
<td>1,400</td>
<td>128</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>51,625</strong></td>
<td><strong>33,268</strong></td>
</tr>
</tbody>
</table>
A snapshot of ecosystem values

Left column: Commonly measured economic values
- Grazing
- Timber and fuelwood

Right column: Nonmarketed and other economic values
- Carbon sequestration
- Watershed protection
- Non-timber forest products
- Recreation and hunting

Source: Millennium Ecosystem Assessment

Graph showing total economic value in dollars per hectare for countries such as Morocco, Algeria, Tunisia, Italy, Croatia, Turkey, and Syria.
We should see ecosystems as an economic part of infrastructure

- Business should think of ecosystems as:
  - Valuable assets and natural capital
  - Ultimately as elements of the basic infrastructure that supports production, consumption, trade and investment

- But conventional definitions of infrastructure often omit natural ecosystems

- Yet there are large pay-offs to valuing and investing in ecosystems as economic infrastructure
Investing in ecosystems can make economic sense

US$ 200 billion

US$ 14 billion

Scientists estimate that up to 65% of the destruction from hurricane Katrina could have been avoided if actions had been taken to conserve the shoreline protection provided naturally by wetlands.
Ecosystem valuation is ONLY a means to an end

- Placing monetary values on ecosystem services is not an end in itself
- The aim is to provide information to make better and more informed decisions:
  - Better meeting targets and goals
  - Avoiding costs and losses
  - Maintaining/Increasing revenues
  - Finding cost-effective means of complying with obligations and managing environmental footprints
Business case for valuation

- Quantifying ecosystem services as inputs, ecosystems as assets
- Identifying new investments, markets and products for value capture and profit
- Identifying areas for cost saving, loss avoidance and revenue/ productivity maintenance
- Assessing environmental liability and facilitating regulatory compliance
- Articulating environmental performance and impacts
- Reflecting shareholders’ environmental performance values
Measure, manage and mitigate.
Measuring, managing and mitigating one’s ecosystem impacts and dependencies requires incorporating environmental externalities into core management decisions.

WBCSD tools that help do that include:

- The Global Water Tool
- The GHG Protocol
- Sustainable Procurement of Wood and Paper-based Products Guide
- Measuring Impact Framework
Maps a company’s water use and assesses water risks relative to global operations and supply chain by comparing sites with validated water and sanitation data on a country and watershed basis.

Company data is kept secure by user – **not** saved on the WBCSD website.
Benefits of the Global Water Tool

- Compares a company’s water uses (including staff presence, industrial use, and supply chain) with key external water-related data
- Creates key water GRI Indicators, inventories, risk and performance metrics and geographic mapping
- Establishes relative water risks in a company’s portfolio to prioritize action
- Enables effective communication with internal and external stakeholders on a company’s water issues
- Allows calculation of water consumption & efficiency
The Greenhouse Gas Protocol

- A protocol for quantifying and reporting the greenhouse gas (GHG) emission benefits of climate change mitigation projects

- Maintaining a well-designed corporate GHG inventory presents business benefits by:
  - Managing GHG risks and identifying reduction opportunities
  - Public reporting and participation in voluntary GHG programs
  - Participating in mandatory reporting programs
  - Participating in GHG markets
  - Recognition for early voluntary action.
Information guides

✓ Designed to help customers develop their own procurement policies for wood and paper-based products

Decision support tools

✓ Provides credible & simple information on existing approaches to the “responsible” procurement of wood and paper-based products from “legal & sustainable” sources
Ten key issues related to sustainable procurement

**Sourcing and legality aspects**

- **Origin**
  - Where do the products come from?

- **Information accuracy**
  - Is the information about the products credible?

- **Legality**
  - Have the products been legally produced?

**Environmental aspects**

- **Sustainability**
  - Have forests been sustainably managed?

- **Special places**
  - Have special places, including sensitive ecosystems, been protected?

- **Climate change**
  - Have climate change issues been addressed?

- **Environmental protection**
  - Have appropriate environmental controls been applied?

- **Recycled fiber**
  - Has recycled fiber been used appropriately?

- **Other resources**
  - Have other resources been used appropriately?

**Social aspects**

- **Local communities and indigenous peoples**
  - Have the needs of local communities or indigenous peoples been addressed?
“Beyond the bottom line” - why measuring impacts on society makes business sense

Benefits of measuring impact

- Better business
- Risk management
- Community relations
- Governments and regulators
- New partnerships
- Protect and grow Market share
- New business opportunities
- Employee satisfaction
Measuring Impact Framework – Four-step Methodology

**Step 1** - Set boundaries

**Step 2** – Measure direct and indirect impacts

**Step 3** – Assess contribution to development

**Step 4** – Prioritize management response
Engage in developing:
Markets for ecosystem services
Types of markets that can be established for ecosystem services

- **Direct payments**
  - Creating incentives for resource managers to supply ecosystem services
  - Direct financial, e.g., private payment for watershed protection

- ** Tradable permits**
  - Using the market to manage environmental liabilities
  - Voluntary, e.g., biodiversity offsets not required by law or voluntary carbon offsets

- **Certification**
  - Helping consumers and investors make informed choices
  - Voluntary eco-labeling, e.g., FSC, PEFC or firm-level policies, e.g., Equator Principles
1. Direct payments

- Payments for the delivery of specific ecosystem services or, more commonly, payments for maintaining or adopting land uses that are thought to provide such ecosystem services.

- Governments in several countries have developed subsidies and tax incentives to encourage resource conservation.

  Payment for watershed protection: conserving natural forests in watersheds and reducing pollutant loads in runoff from upland areas can be a cost-effective means of providing reliable supplies of clean water for hydroelectric power generation, irrigation, industrial, domestic and recreational uses.
2. Tradable permits

- Create new rights or liabilities for the use of natural resources, and then allow business to trade (i.e., buy and sell) these rights or liabilities.

- Growing trade in carbon credits, based on government-allocated emission allowances and/or the purchase of voluntary carbon offsets by both organizations and individuals. Global carbon trade worth over US$ 30 billion in 2006.

Wetland banking in the US, trade in forest conservation obligations in Brazil, and markets for groundwater salinity credits in Australia.
3. Certification

- Eco-labeling and certification schemes to distinguish products and services by their social and environmental performance (consumers will prefer to buy or even pay more for certified goods and services).

✓ **Agriculture**: Good Agricultural Practices (GAP) to ensure that agriculture is undertaken in a responsible way that respects food safety, the environment, workers’ rights and the welfare of animals.

✓ **Forestry**: about 7% (approx. 270 million hectares) of the world's forests are independently certified.

✓ **Fisheries, tourism, financial services**…

![Figure 5: Certified forestry area worldwide, 1998-2006](image)
5 steps to becoming a good trader

1. Know that you are **selling** ecosystem services at full cost
2. Know that you are **buying** ecosystems services at full cost
3. Ensure clear **ownership** of the ecosystems services that are to be traded
4. Ensure clear and transparent **accountability** of the ecological value accruing to the owner as a result of the sale
5. Create **competition** among buyers and sellers
Seven approaches to achieving eco-efficiency:

1. Reduce material intensity
2. Minimize energy intensity
3. Reduce dispersion of toxic substances
4. Undertake recycling
5. Capitalize on use of renewables
6. Extend product durability
7. Increase service intensity
Ecosystems are everywhere and are everyone’s business:

- The diversity of life – biodiversity – underpins the supply of most ecosystem services.
- The degradation of ecosystems and the services they provide limits sustainable development.
- Sustainable development must be based on healthy economies that deliver on ecological balance and poverty alleviation.
- Conserving biodiversity, reversing ecosystem degradation and using ecosystems services sustainably is a collective responsibility and needs governments, civil society and business to work together.
Business and ecosystems are inextricably linked:

- Business interacts with and depends on ecosystems and ecosystems services.
- Degradation of ecosystems and their services limits development options for society and threatens the business license to operate.
- Ecosystem valuation must become an integral part of planning and decision making by business, but also by governments and consumers.
- Transparent policy frameworks and government regulations are needed for business to contribute fully to conserving biodiversity, reversing ecosystem degradation and using ecosystems services sustainably.
- Within ecosystem regulatory frameworks, the use of market mechanisms can contribute to its effective implementation.
The business case for biodiversity conservation and sustainable ecosystem management can be made by:

- Assessing business ecosystem impacts and dependence
- Measuring, monitoring and managing ecosystems interactions and assets
- Scaling up and implementing mitigation and adaptation measures and sustainable use solutions
- Pursuing new ecosystem based business opportunities
- Seeking effective partnerships with key stakeholders that share this objective.