wbcsd business ecosystems training

BET India Module 2

Measuring and Assessing Impacts and Dependencies

Main presentation

December 2012

Business Ecosystems Training – Contributors

All content is based on WBCSD material and publically available reports.

BET curriculum and structure was designed by KPMG

The structure and content development of BET was governed by an Advisory Committee consisting of WBCSD member companies and Regional Network partners, NGOs, UN and academic institutions.

Session 1
Icebreaker and Introduction

[Option 1]

Module 2: Measuring impacts and dependencies

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Session 1
Introduction

[Option 2]

Module 2: Measuring impacts and dependencies

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Icebreaker and Introduction (cont.)

[Option 1]

a) Your current role and scope of work

b) Your knowledge of how to measure ecosystem impacts

c) What you want to learn from the course and Module 2

5 minutes

Icebreaker and Introduction

[Option 2]

- Catch the ball!!!

Icebreaker and Introduction (cont.)

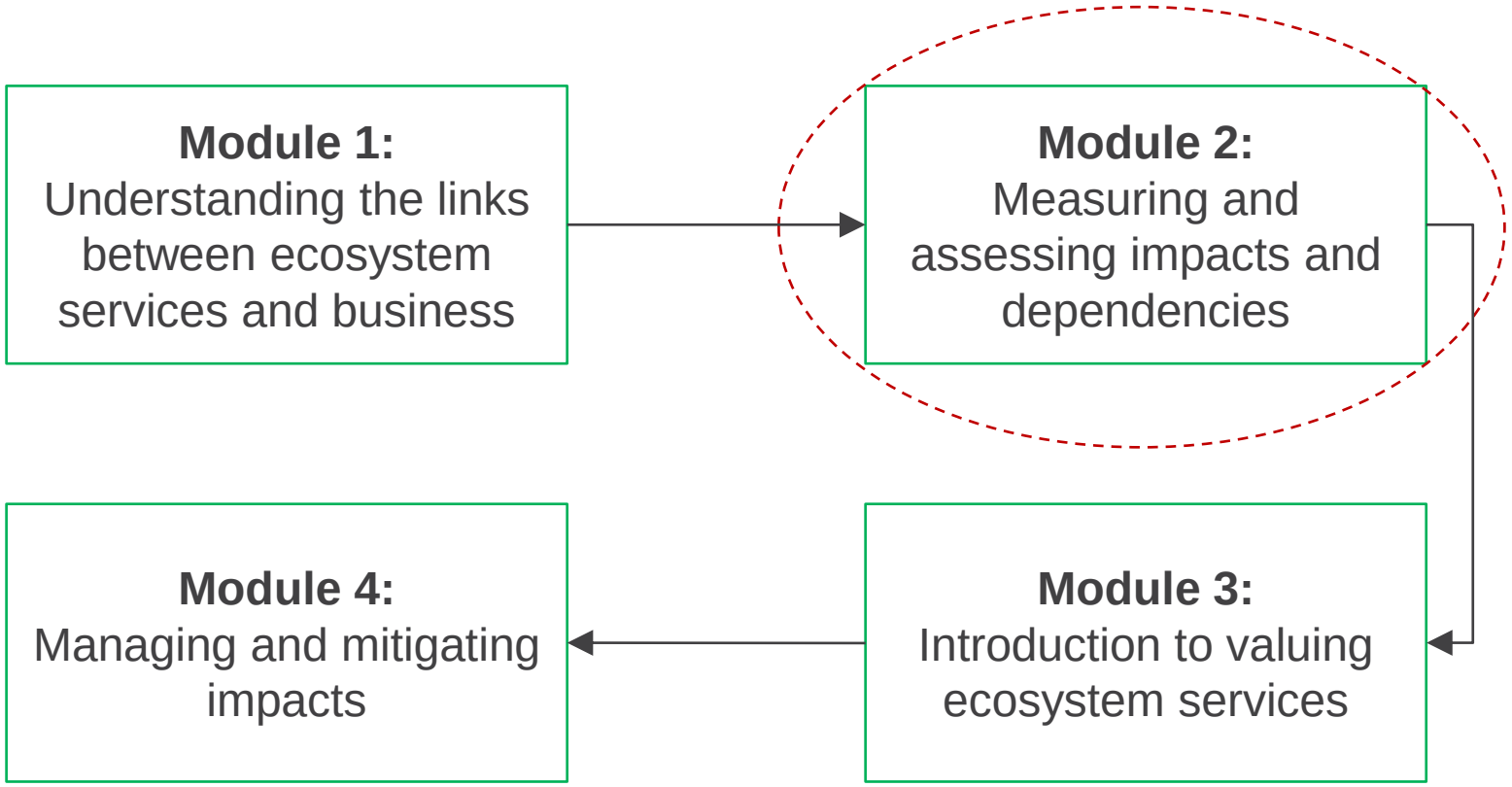
[Option 3]

Please discuss:

- What do you hope to learn from Module 2?

5 minutes

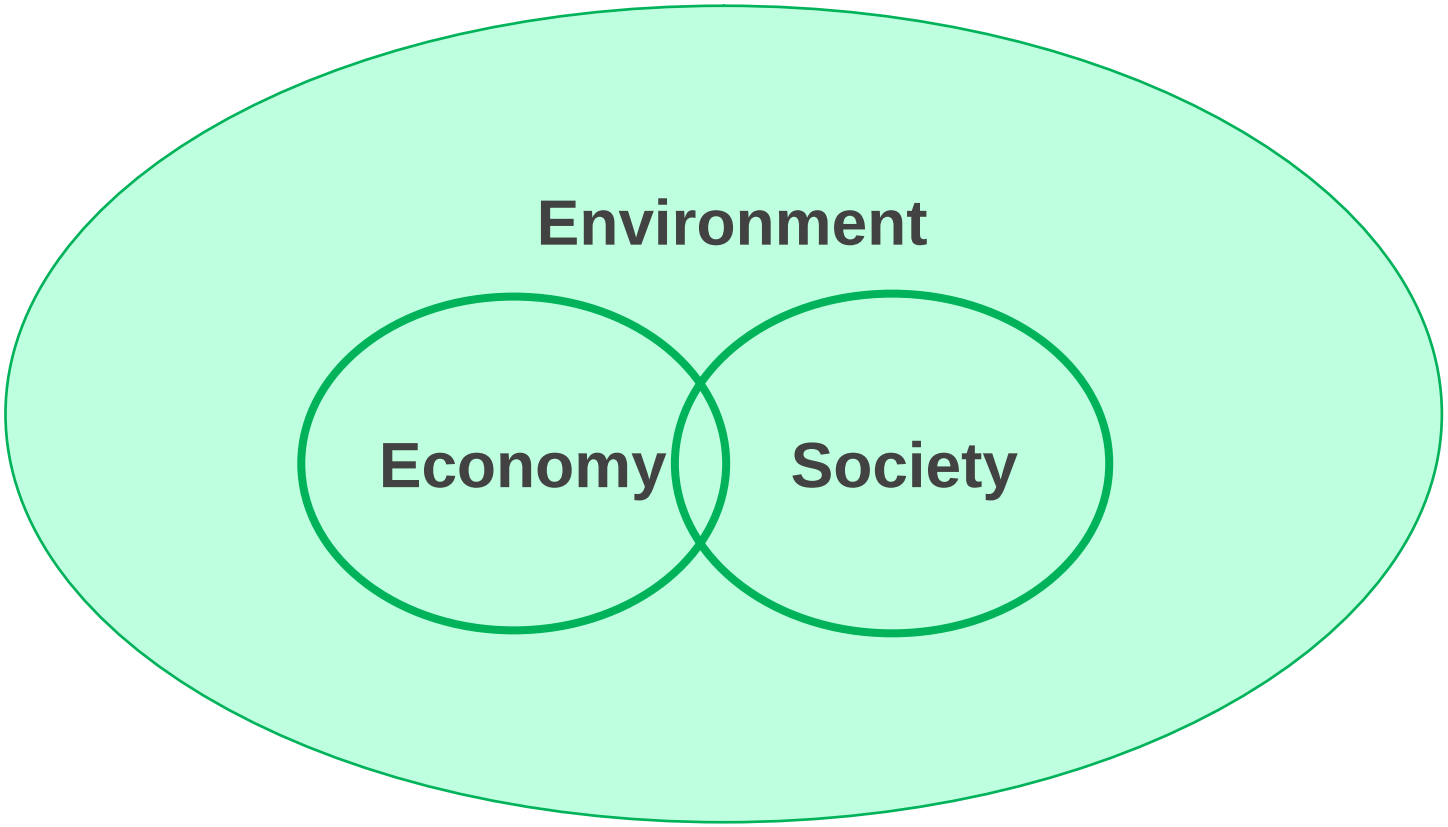
Where does Module 2 sit within the broader training available?



Module 1 – Recap [optional module re-cap]

- Understand the basics
- Drivers for change and business impacts and dependencies
- Links with sustainability
- Business case for action
- Policy and regulatory frameworks

Sustainability



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Module 2 – Objectives

By the end of the module, delegates will be able to:

- Define key terms and concepts with regard to measuring ecosystem services impact and dependency.
- Understand the business case for assessing impacts and dependencies on ecosystems.
- Apply the Ecosystem Services Review (ESR) framework/methodology to understand impact and dependency on ecosystem service change.
- Conduct an initial assessment of their company's impacts following the application of the ESR in a case study and the action planning to identify relevant and applicable tools.

Module 2 – Objectives summary

- Understand the basics
- Policy and regulatory frameworks
- The business case for action
- Introduction to the Ecosystem Services Review (ESR)
- Introduction to tools, frameworks and methodologies

BET Module 2: Measuring and assessing impacts and dependencies

Timetable

Time	Duration (mins)	Session	Trainer
	15-45	Session1: Icebreaker and Introduction/Introduction	
	30	Session 2: Measuring change in ecosystem services provision – the basic concepts	
	10	Session 3: Introduction to policy trends	
	15	Session 4: The business case for action	
	10	Session 5: Knowledge check	
	10-25	Session 6: Brainstorming the business case	
	30	Coffee break	
	30	Session 7: Identifying ecosystem impacts and dependence	
	15	Session 8: Knowledge share	
	50	Session 9: Introduction to ecosystem services review (ESR)	
	40-55	Session 10: Introduction to tools, frameworks and methodologies	
	15	Session 11: Wrap up	

Key: Presentation
Exercise

How are companies addressing this issue?

Different ways to address the issue internationally (1/2)

ArcelorMittal

Extensive ecological impact assessment in Liberian wet-zone forest prior to new mining site

PepsiCo

Worked to reduce water use in rice plantations to achieve positive water balance in operations (India).

Volkswagen

Link between deforestation and water availability as a result of ecosystem service survey

GDF SUEZ / SITA France

Biodiversity Quality Index to objectively assess and follow up biodiversity quality of landfill sites

Source: WBCSD, Responding to the Biodiversity Challenge

How are companies addressing this issue? (cont.)

Different ways to address the issue internationally (2/2)

Unilever

"*By 2020 we will source 100% of our agricultural raw materials sustainably*"

Source: http://www.unilever.com/sustainability/environment/ agriculture/index.aspx

Puma

"*By 2015, 25% reduction of CO2, energy, water and waste in Puma offices, stores, warehouses and direct supplier factories*"

Source: http://ir2.flife.de/data/puma/igb_html/index.php?bericht_ id=1000004&index=&lang=ENG

Sony

"*Sony strives to achieve a zero environmental footprint throughout the lifecycle of our products and business activities by 2050*"

Source: http://www.sony.net/SonyInfo/csr/environment/management/gm2015 /index.html

How are companies addressing this issue?

Different ways to address the issue in India

Tata Steel

"Biodiversity is assessed during the preparation of Environmental Impact Assessment Reports and forms part of the Environmental Clearance Process."

Source: http://ecocitizen.tatasteelindia.com/eco-management/bio-diversity.asp

ITC

"By augmenting water resources and forest cover and fostering organic soil management, ITC has enhanced farm productivity."

Source: http://www.itcportal.com/sustainability/lets-put-india-first/critical-problems-vital-solutions.aspx

Repro India Limited

"At Repro we give due regard to conservation of the environment. We have been working to minimize our carbon and energy footprint".

Source: http://www.reproindialtd.com/about-us/environmental-responsibility

Session 2
Measuring change in Ecosystem Service provision – basic concepts

Module 2: Measuring and assessing impacts and dependencies

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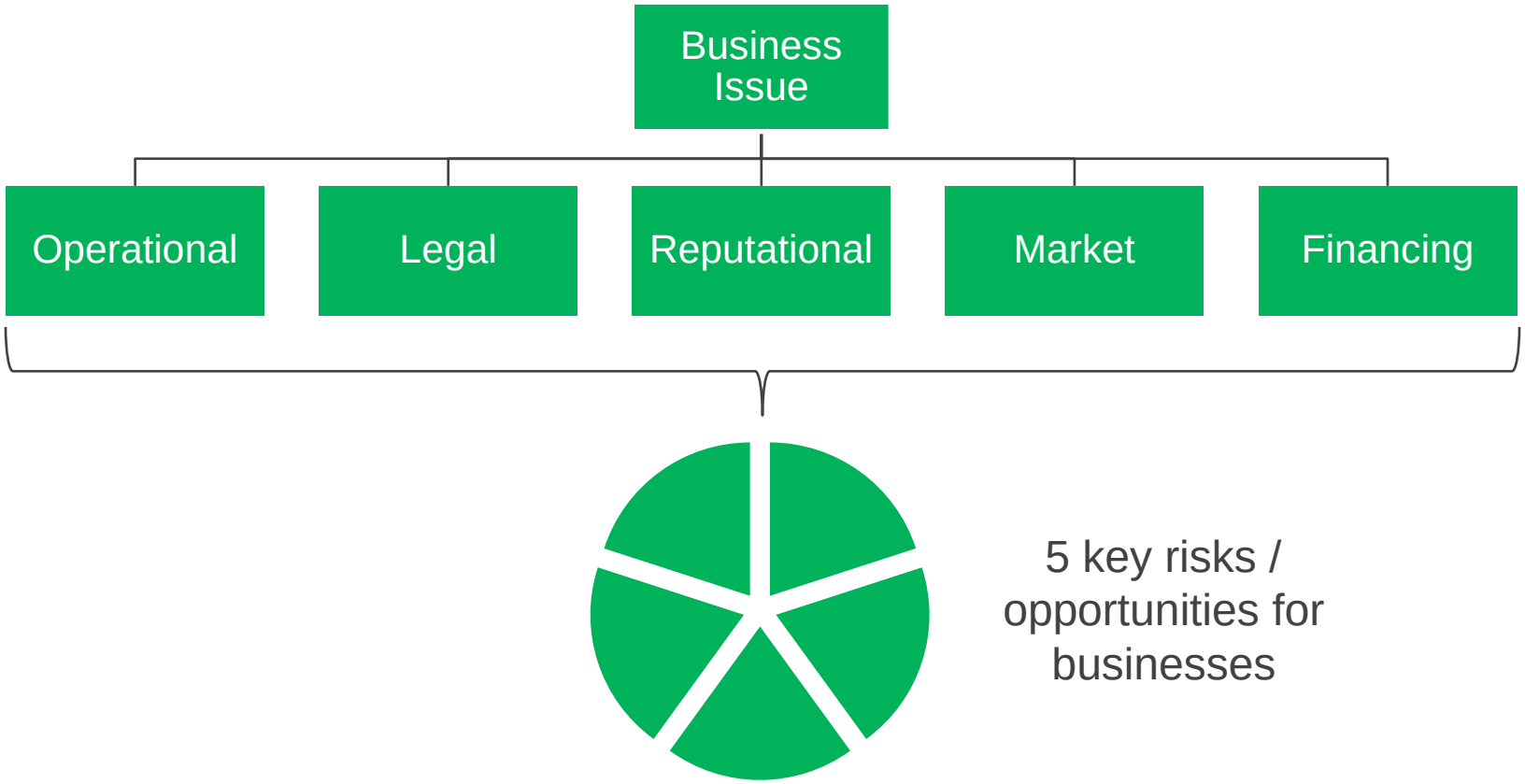
Re-cap: the business case for action



5 key risks / opportunities for businesses

Re-cap: the business case for action (cont.)

Can anyone describe the 5 key business risks / opportunities?

Operational

- Relate to a company's day-to-day activities, expenditures and processes. Risks may be having to pay more for ecosystem dependencies such as water, and for environmental externalities.

Legal / Regulatory

- Includes government policies and measures such as compliance laws, national targets, taxes and subsidies etc.

Reputational

- Effects on a company's brand, image, "goodwill" and relationships with their customers and other stakeholders.

Market and product

- Relate to product and service offerings, consumer preferences, and other market factors that affect corporate performance.

Financing

- Affect the cost and availability of capital to companies.

Footprinting

Carbon footprint:

"Overall amount of carbon dioxide (CO_2) and other greenhouse gas (GHG) emissions"

Source: EU Commission, Joint Research Centre, Institute for Environment and Sustainability

Water footprint:

"Is an empirical indicator of how much water is consumed, when and where, measured over the whole supply chain of the product"

Source: Water Footprint Network

Ecological footprint:

"Measures the land and sea area people require to produce resources that we consume"

Source: Worldwide Fund for Nature (WWF)

Footprinting (cont.)

How many people have experience with environmental footprints?

Carbon footprint	Water footprint	Ecological footprint

Ecosystem services – recap

Provisioning
Goods or products produced by ecosystems

Regulating
Natural processes regulated by ecosystems

Cultural
Intangible benefits obtained from ecosystems







Supporting
Functions that maintain all other services

As described in the *Millennium Ecosystem Assessment*, 2005.

Basic concepts

Recap:

- **Dependence**

A company depends on an ecosystem service if that service functions as an input or if it enables, enhances, or influences environmental conditions required for successful corporate performance.

- **Impacts** (direct vs. indirect)

A company impacts an ecosystem service if the company affects the quantity or quality of the service.

- **Priority ecosystem services**

A company's priority ecosystem services are those services on which the company has a high dependence and/or impact and thereby are the most likely sources of business risk or opportunity to the company.

- **Drivers**

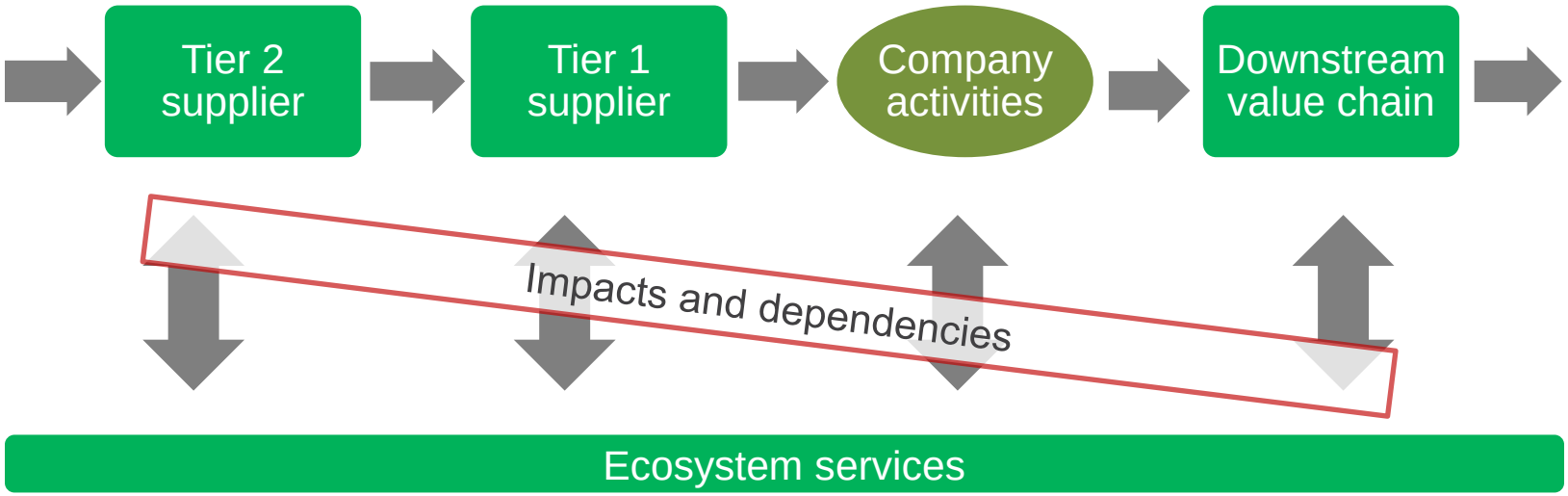
Drivers are factors—natural or man-made—that cause changes in an ecosystem and its ability to supply ecosystem services.

Source: Connecting the dots (slide 9) and WBCSD. 2008. Corporate Ecosystem Services Review [online].

Basic concepts (cont.) – supply / value chains

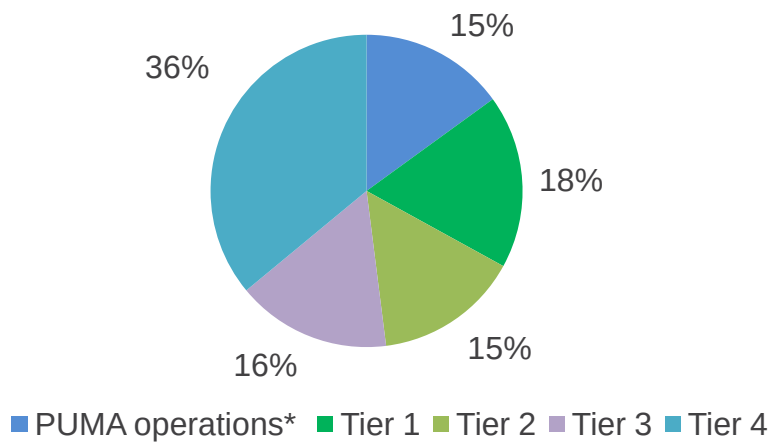
Value chain: all of the upstream and downstream activities associated with the operations of the company

Supply chain: the network of organizations (e.g. manufacturers, wholesalers, distributors and retailers) involved in the production, delivery, and sale of a product to the consumer. Suppliers can be separated into **Tiers**, each of which has different ecosystem impacts / dependencies

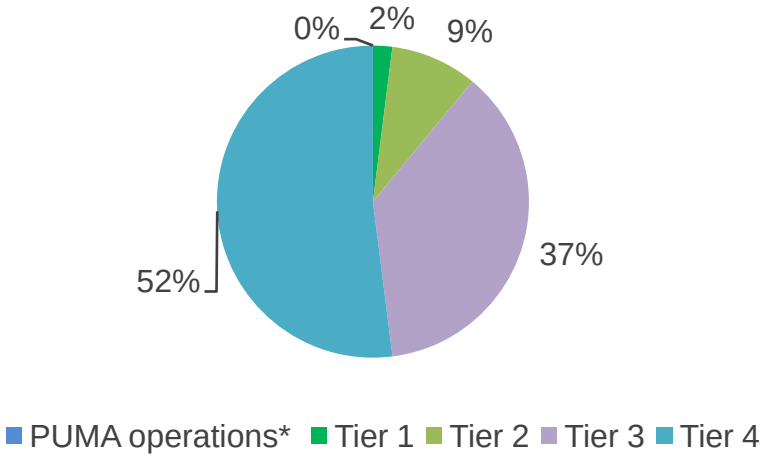


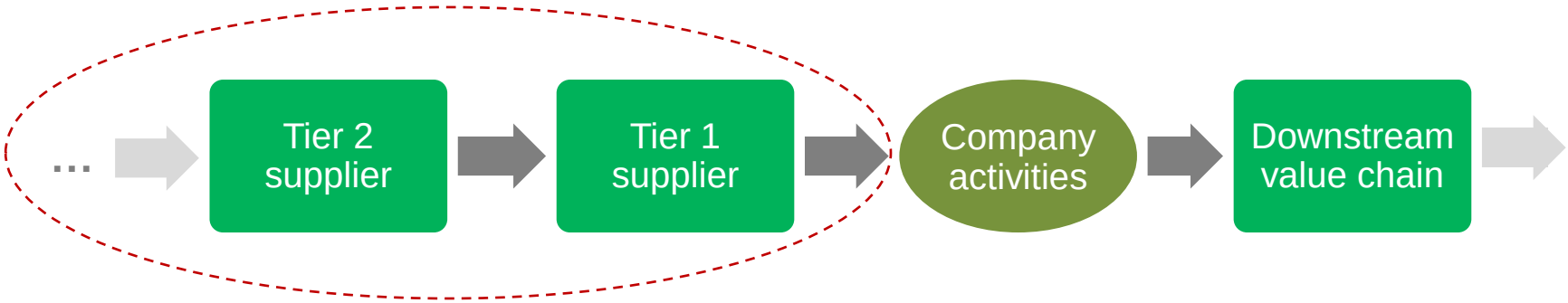
Value chain footprints – Puma

2010 GHG emissions by value chain source



2010 Water use by Value Chain Source





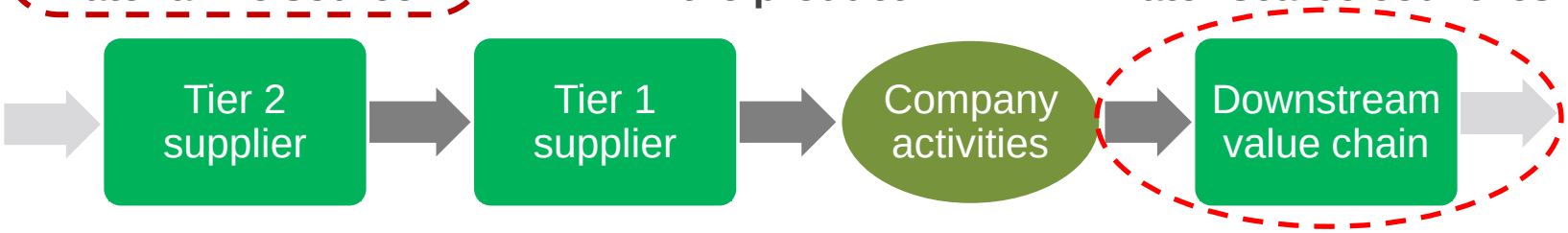
Value chain footprints – Unilever

GHG emissions

26%		3%		2%		68%		1%
	+		+		+		+	
Raw materials		Manufacture		Transport		Consumer use		Disposal

Water footprint

approx 50%	<0.1%	50%
		
Water used in the raw material we source	Water we add to the product	Water used by consumers in water-scarce countries



Basic concepts (cont.) – stakeholder engagement – recap

- Stakeholders are groups or individuals:
  a) that can reasonably be expected to be significantly affected by the organization's activities, products, and/or services; or
  b) whose actions can reasonably be expected to affect the ability of the organization to successfully implement its strategies and achieve its objectives.
- Stakeholder engagement
- Stakeholder mapping

Module 2 – Objectives summary

- Understand the basics 
- Policy and regulatory frameworks
- The business case for action
- Introduction to the Ecosystem Services Review (ESR)
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Session 3
Introduction to policy trends

[Optional session]

Module 2: Measuring and assessing impacts and dependencies

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Background to ecosystem policy

Long history of environmental regulation

a) 1388 UK water pollution measures

b) 1973 EU Action Programme on the Environment / Water

The limits to growth (1972)

Modelled world population, industrialization, pollution, food production and resource depletion

Brundtland Report (1987)

Defined sustainable development

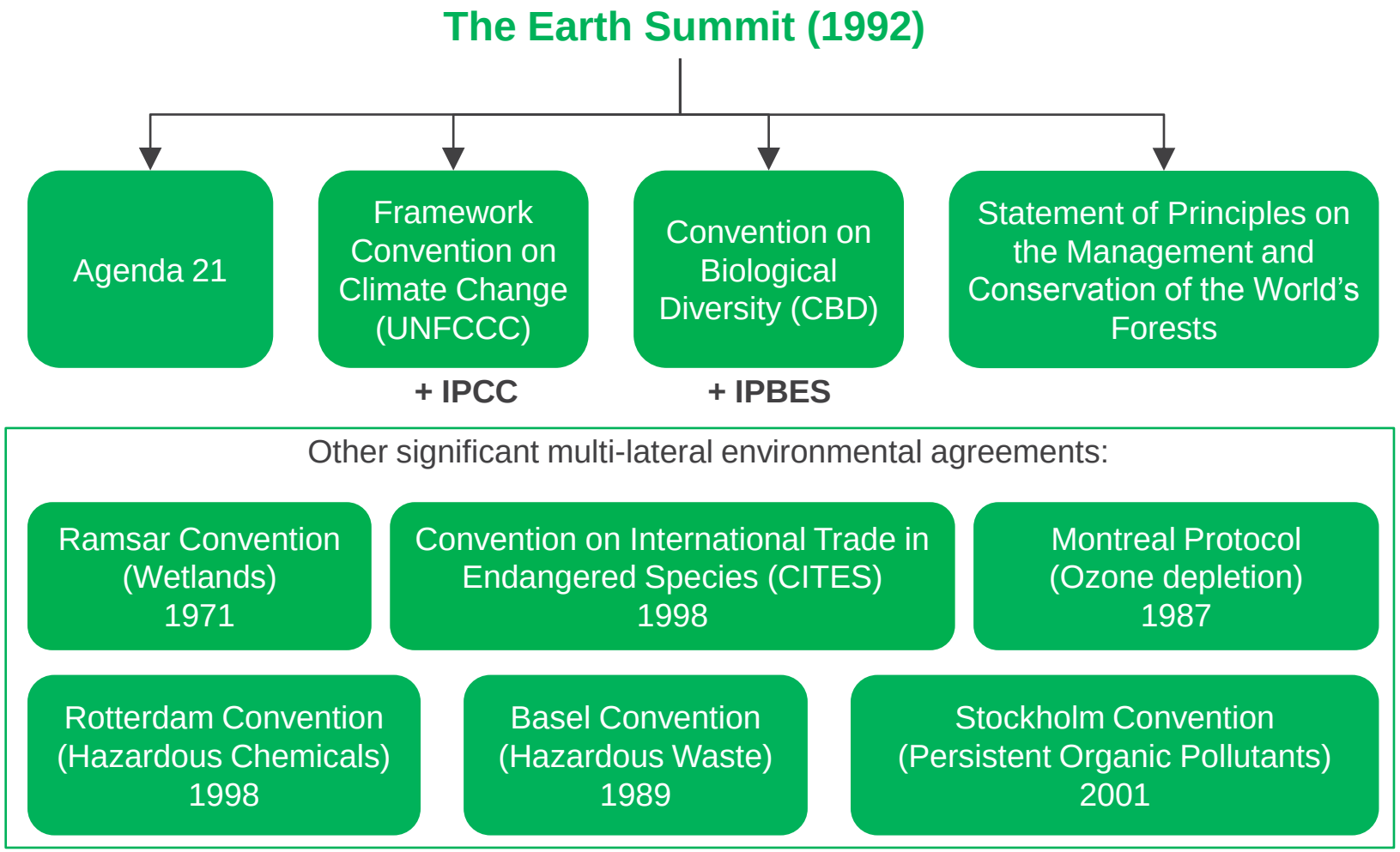
Called for increased international cooperation

Conventions, treaties, protocols, agreements…

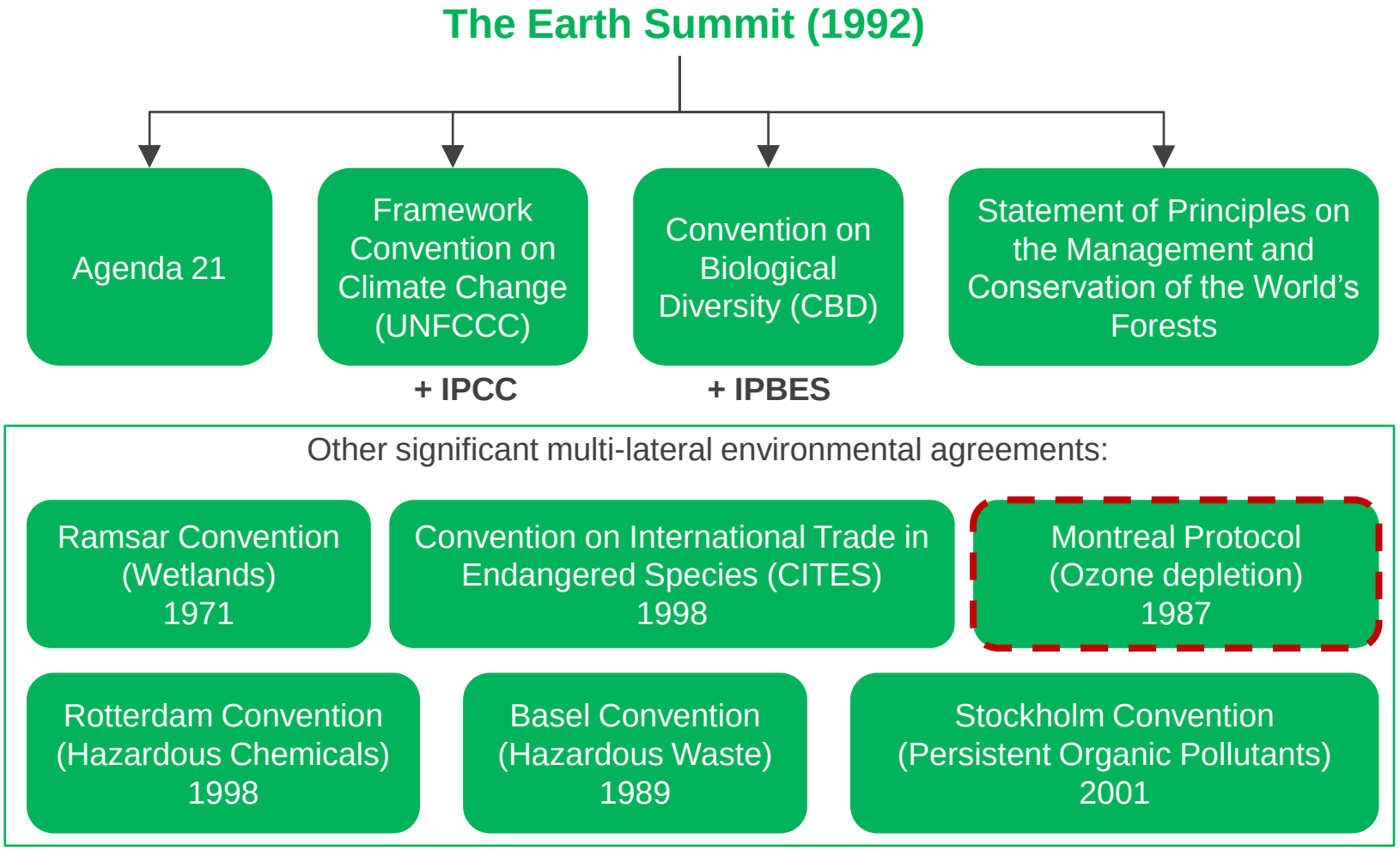
- Over 250 multilateral environmental agreements exist

The Earth Summit (1992) – start of 'The Rio Process'

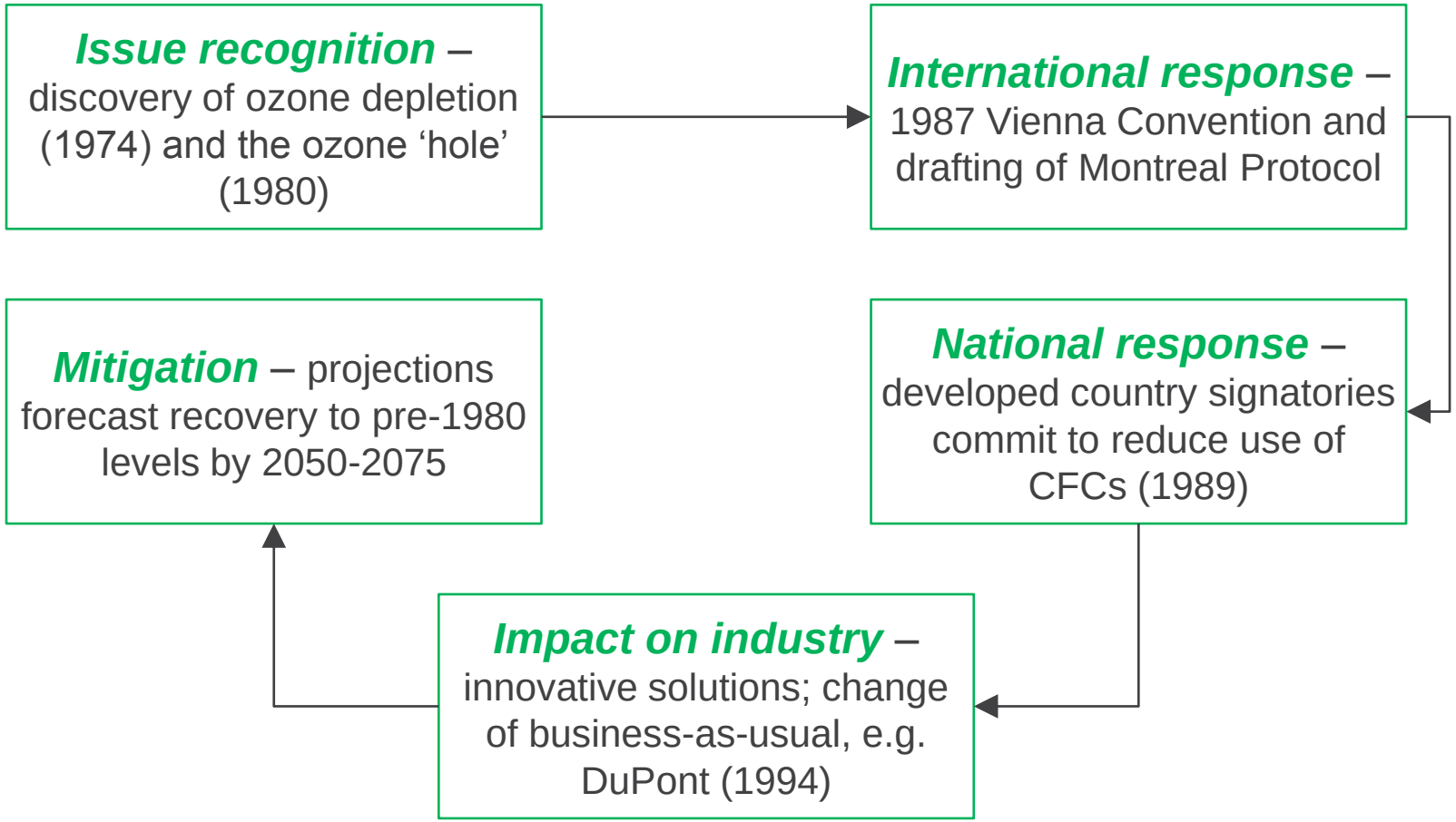
Background to ecosystem policy (cont.)



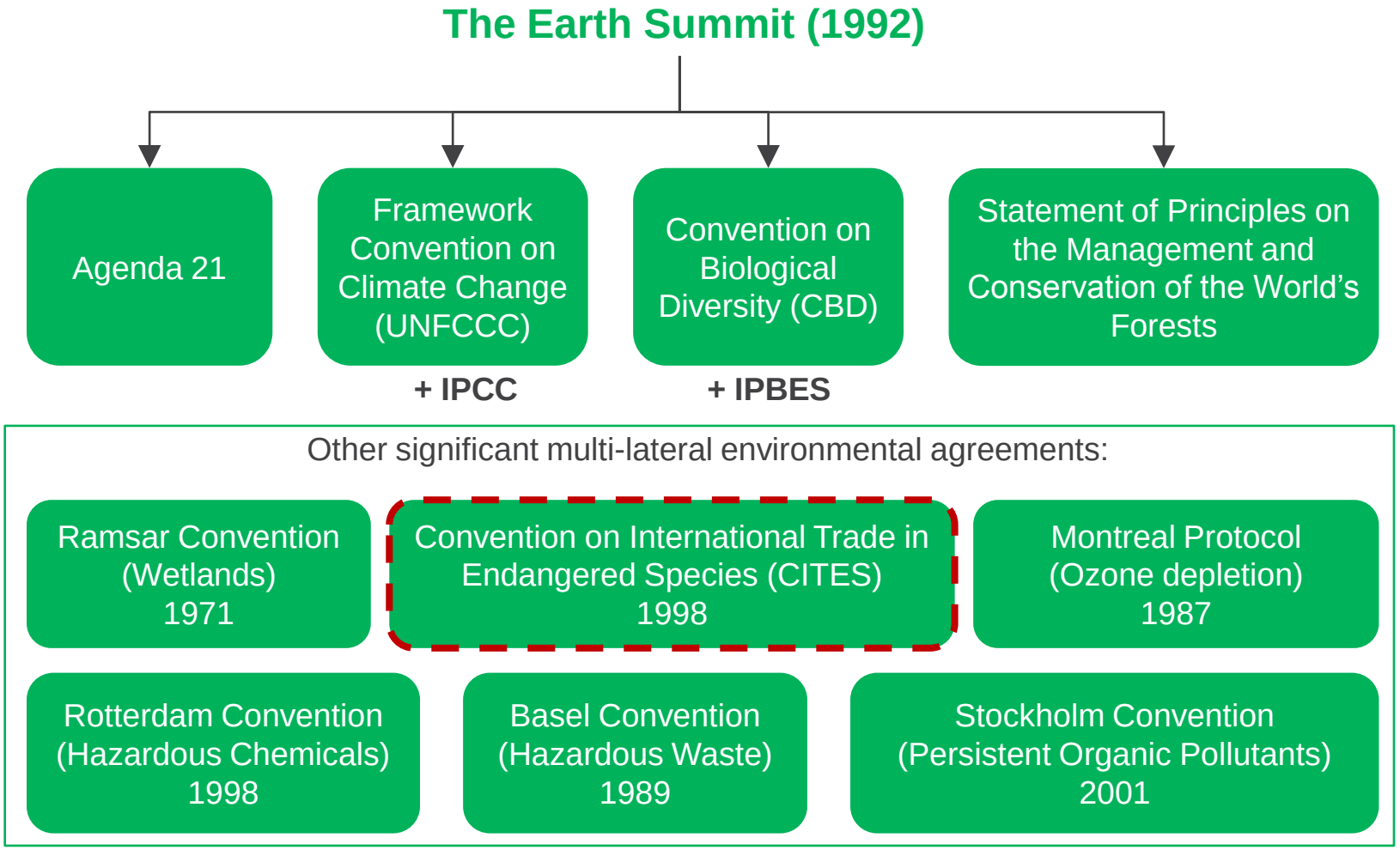
Background to ecosystem policy (cont.)



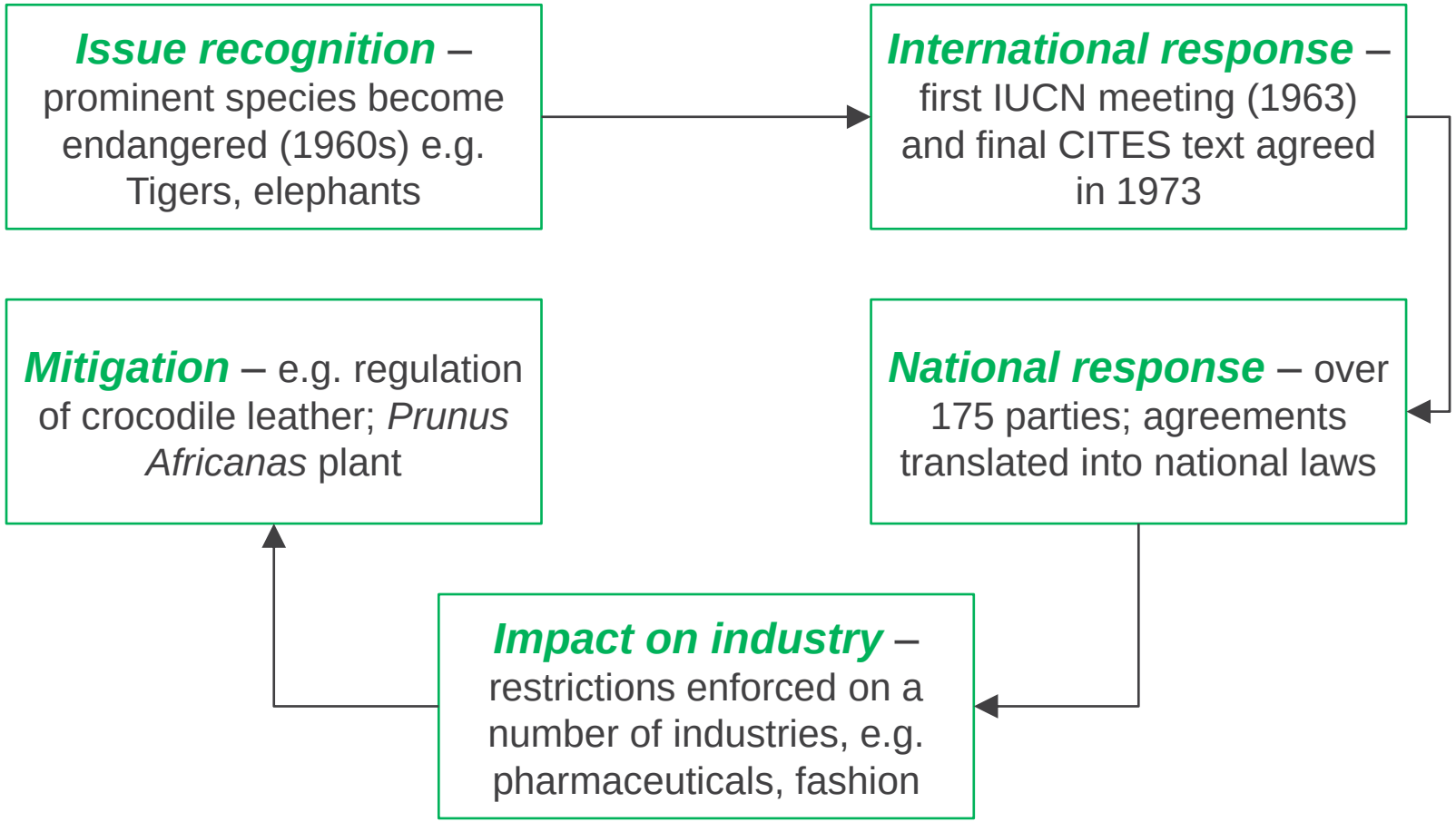
International policy trends – ozone example



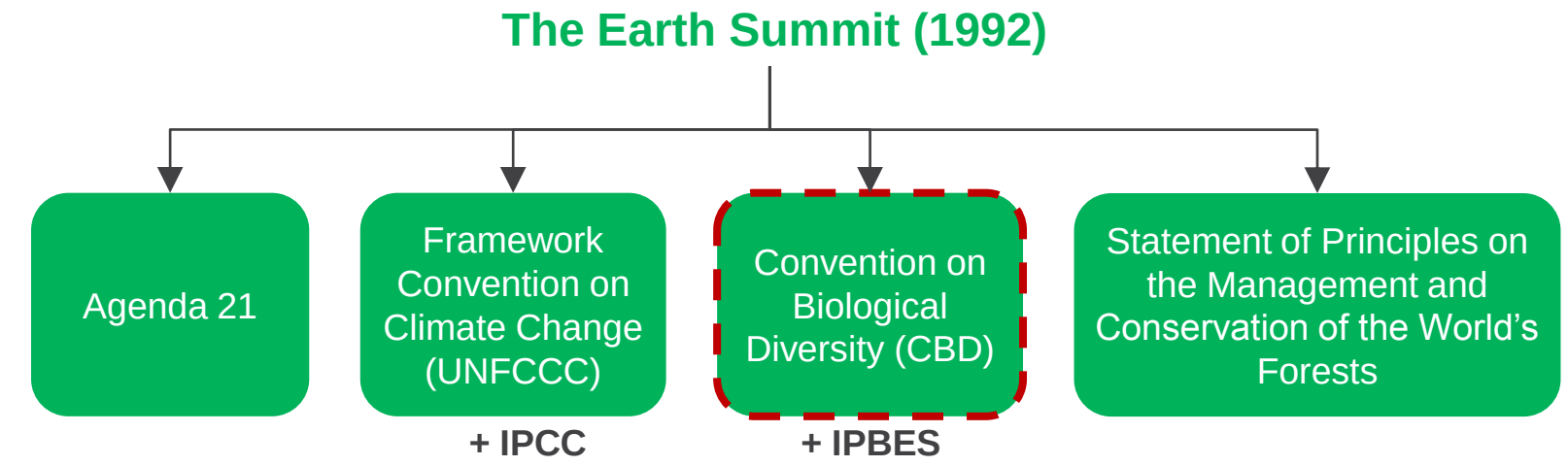
Background to ecosystem policy (cont.)



International policy trends – CITES example



Background to ecosystem policy (cont.)



Other significant multi-lateral environmental agreements:

- Ramsar Convention (Wetlands) 1971
- Convention on International Trade in Endangered Species (CITES) 1998
- Montreal Protocol (Ozone depletion) 1987
- Rotterdam Convention (Hazardous Chemicals) 1998
- Basel Convention (Hazardous Waste) 1989
- Stockholm Convention (Persistent Organic Pollutants) 2001

International policy trends – Introduction to the CBD

Issue recognition – heightened concern over damage / loss of species and ecosystems (1970s)

International response – **Strategic Goal B – headline target 4: impacts and dependencies**

National response – signatories and national laws
e.g. India National Biodiversity Action Plan and National Targets for Biodiversity 2012-2020

n industry – olutions; change ess of usual

Aichi Target 4:

"By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits."

Module 2 – Objectives summary

- Understand the basics ✓
- Policy and regulatory frameworks ✓
- The business case for action
- Introduction to the Ecosystem Services Review (ESR)
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Session 4
The business case for action

Module 2: Measuring and assessing impacts and dependencies

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Consider whether your:

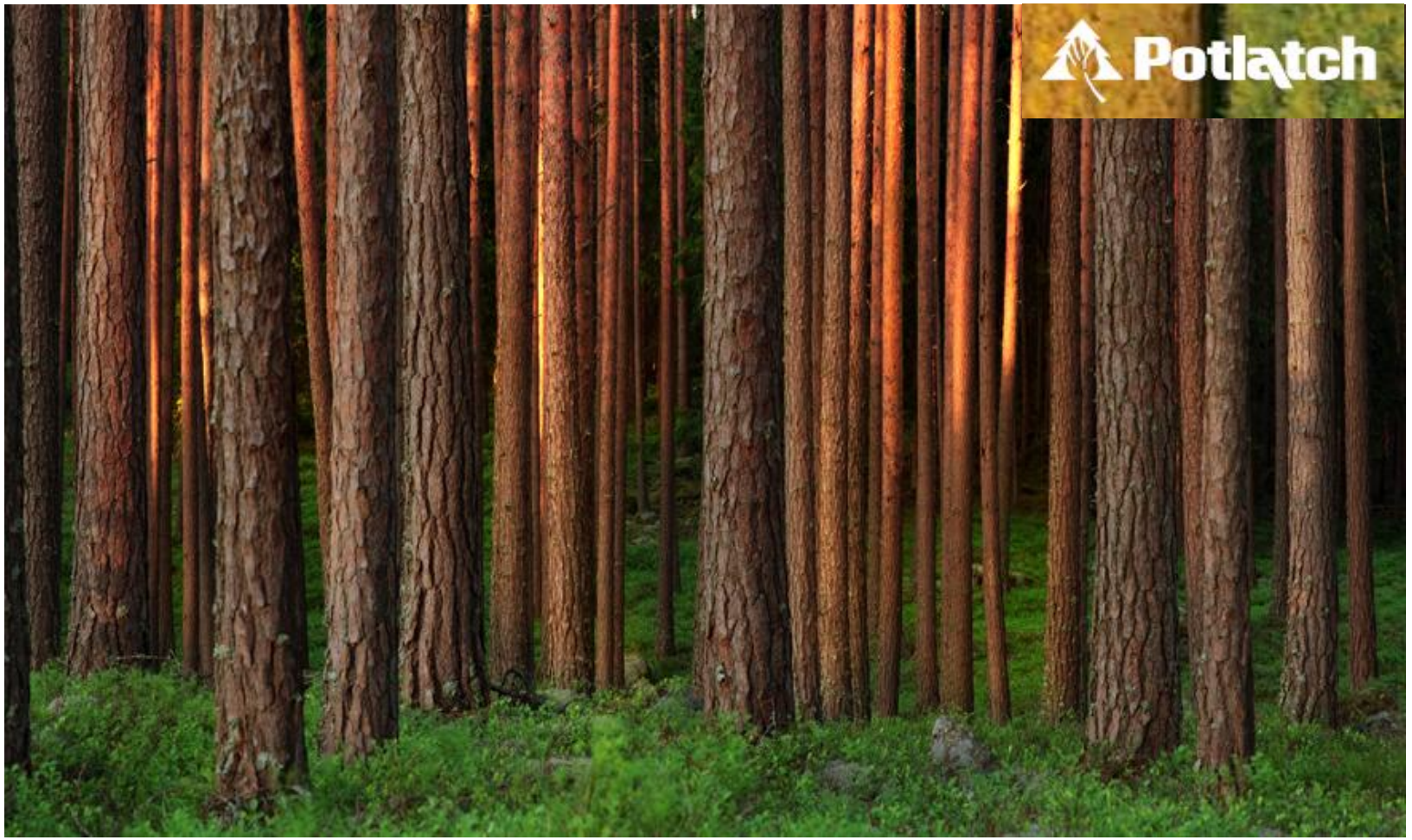
- Company operations are vulnerable to changes in the quality and quantity of ecosystem service inputs – e.g. water
- Company license to operate is challenged by new stricter environmental policies and legislation – e.g. GHG emissions
- Company reputation, brand or image is sensitive to public opinion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

Vittel

Photo Credit: Nestlé Waters

Energia Global (now Enel Latin America)

Potlatch

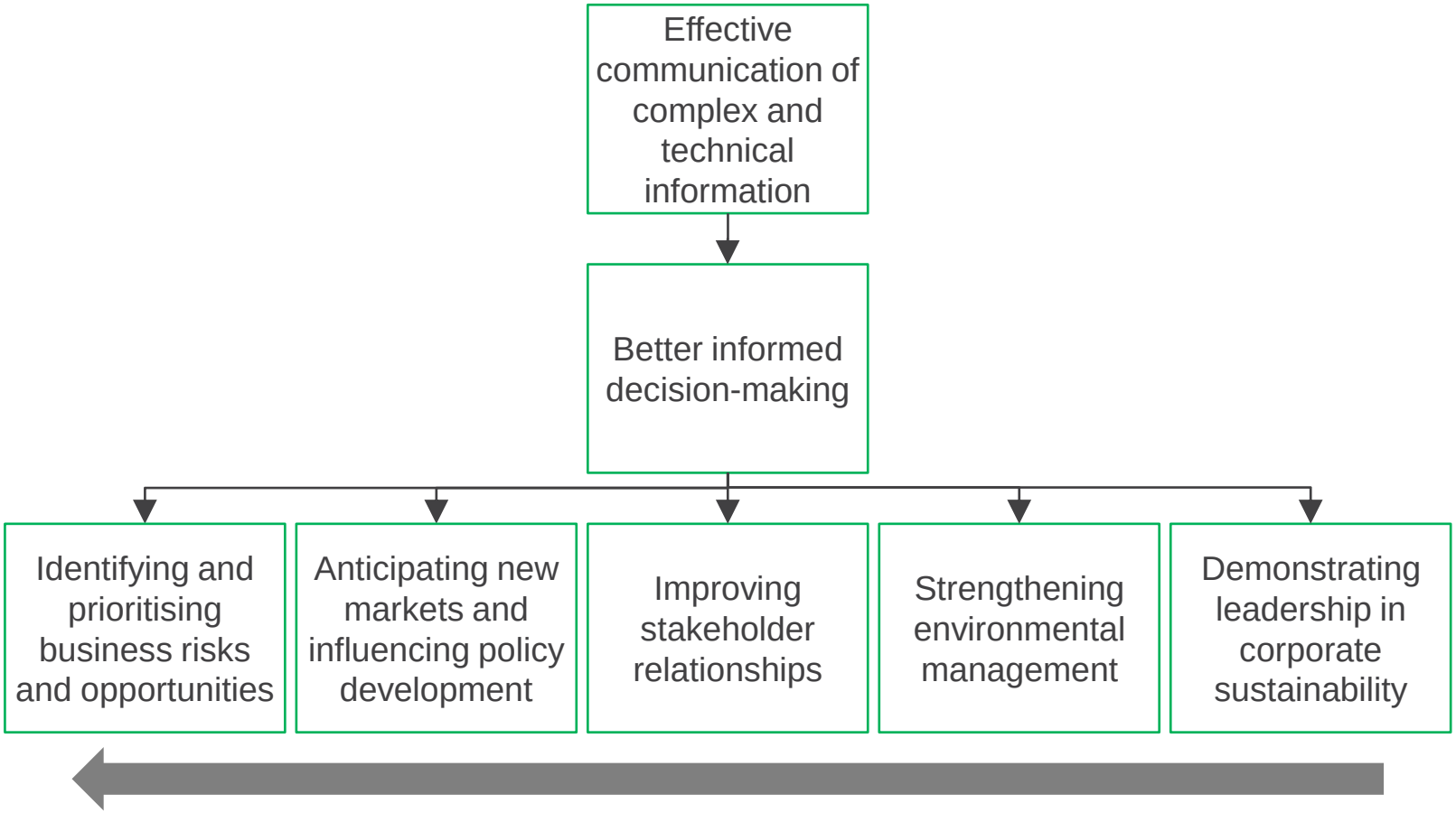


Allegheny Energy

What do these stories have in common?

- Companies facing unexpected risks or novel opportunities arising from their dependence and impact on ecosystems
  - *Vittel and Energia* – ***Risk***
  - *Potlatch and Allegheny* – ***Opportunity***

How can ecosystem service assessments help?



Source: WRI, Ecosystem Services Review Standard Presentation

Session 5
Knowledge check

Module 2: Measuring and assessing impacts and dependencies

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So far we have…

- Reviewed theoretical concepts and key terminology around measuring impacts and dependency on ecosystems
- Explored the business case for companies to assess ecosystem service impacts and dependencies, with real case study examples

Interactive

- Key concepts
- Do you know...

Session 6
Brainstorming the business case (exercise)

Module 2: Measuring and assessing impacts and dependencies

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Discussion questions

Business Ecosystems Training Score Card

My company has been affected by the following challenges:			
Water scarcity	☐ Yes	☐ No	☐ Don't know
Climate change	☐ Yes	☐ No	☐ Don't know
Habitat change	☐ Yes	☐ No	☐ Don't know
Biodiversity loss	☐ Yes	☐ No	☐ Don't know
Overexploitations of oceans	☐ Yes	☐ No	☐ Don't know
Nutrient overloading	☐ Yes	☐ No	☐ Don't know
Other: ……..			
My company benefits upon or impacts on the following ecosystem services:			
Provisioning *The goods or products obtained from ecosystems such as food, freshwater, timber, and fiber*	☐ Benefits	☐ Impacts	☐ Don't know
Regulating *The benefits obtained from an ecosystem's control of natural processes such as climate, disease, erosion, water flows and pollination, as well as protection from natural hazards*	☐ Benefits	☐ Impacts	☐ Don't know

Discussion questions (cont.)

Business Ecosystems Training Score Card

My company has been affected by the following challenges:			
Cultural *The non material benefits obtained from ecosystems such as recreation, spiritual values and aesthetic enjoyment*	☐ Benefits	☐ Impacts	☐ Don't know
Note: we are not asking this specific question regarding supporting services as these services are underlying the above 3 categories (Supporting services: the natural processes such as nutrient cycling and primary production that maintain the other services)			
My company has taken the lead on addressing ecosystems:			
To manage risks	☐ Yes	☐ No	☐ How? ……
To improve operational efficiencies	☐ Yes	☐ No	☐ How? ……
To gain business opportunities	☐ Yes	☐ No	☐ How? ……
Additional actions: ……			
My company has considered the long term consequences of ecosystem degradation in its strategy:			
	☐ Yes	☐ No	☐ How? ……

Feedback...

Module 2 – Objectives summary

- Understand the basics ✓
- Policy and regulatory frameworks ✓
- The business case for action ✓
- Introduction to the Ecosystem Services Review (ESR)
- Introduction to tools, frameworks and methodologies

Coffee break

30 minutes

Session 7
Identifying ecosystem impacts and dependencies

[Optional]

Module 2: Measuring and assessing impacts and dependencies

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Identifying ecosystem impacts and dependencies – group exercise

Materials available

- Each group has been given the following information
  - The business context for a case study (i.e. the issue faced by a particular company)
  - A1 wall chart of trends in the world's ecosystem services over the last 50 years

Basic concepts – recap

- Ecological balance
- Supply / Value chains
- Direct / indirect impacts and dependencies
- Policy frameworks

Links between business sectors and ecosystem service values

Links between business sectors and ecosystem service values								
	Company 1		Company 2		Company 3		Company 4	
Key Ecosystem Services	**DEPEND**	**IMPACT**	**DEPEND**	**IMPACT**	**DEPEND**	**IMPACT**	**DEPEND**	**IMPACT**
Provisioning								
Food	●	●	●	●	●	●	●	●
Timber and fibres	●	●	●	●	●	●	●	●
Freshwater	●	●	●	●	●	●	●	●
Genetic / Pharmaceutical resources	●	●	●	●	●	●	●	●
Regulating								
Climate & air quality regulation	●	●	●	●	●	●	●	●
Water regulation & purification	●	●	●	●	●	●	●	●
Pollination	●	●	●	●	●	●	●	●
Natural hazard regulation	●	●	●	●	●	●	●	●
Cultural								
Recreation & tourism	●	●	●	●	●	●	●	●
Aesthetic / non-use values	●	●	●	●	●	●	●	●
Spiritual values	●	●	●	●	●	●	●	●

● Moderate to Major relevance ● Minor relevance ● No relevance

Note: “Supporting services” are not included in this table as they are already captured within provisioning, regulating and cultural services.

Identifying ecosystem impacts and dependence – group exercise

Instructions

- In your groups, please discuss:
  - Which ecosystem services influenced the environmental conditions required for successful corporate performance?
- You will shortly be asked to report back on which ecosystem services you reviewed and whether:
  - The company affected the quantity or quality of the ecosystem service? If so, how?
  - The company's impact was positive or negative([a]), providing examples to support answer.

Note ([a]): Positive impact: The company increased the quantity or quality of this ecosystem service.
Negative impact: The company decreased the quantity or quality of this ecosystem service.

Trends in the world's ecosystem services over past 50 years

	Degraded	Mixed	Enhanced
Provisioning	Capture fisheries Wild foods Biomass fuel Freshwater Genetic resources Biochemicals, natural medicines, and pharmaceuticals	Timber and other wood fiber Other fibers (e.g., cotton, hemp, silk)	Crops Livestock Aquaculture
Regulating	Air quality regulation Regional and local climate regulation Erosion regulation Water purification and waste treatment Pest regulation Pollination Natural hazard regulation	Water regulation Disease regulation	Global climate regulation (carbon sequestration)
Cultural	Ethical values (spiritual, religious) Aesthetic values	Recreation and ecotourism	

Source: Adapted from the Millennium Ecosystem Assessment. 2005. Ecosystems and Human Well-being: Synthesis. Washington, DC: Island Press.

Case study 1: ArcelorMittal

The issue

Mining in Liberia – an environmental and social challenge

- ArcelorMittal, the world's leading steel company, started new iron ore mining operations in Liberia at the end of 2011. Liberia has one of the richest seams of iron ore in Africa. However, some of the most accessible seams of ore are in the remote Nimba mountain range, which is one of the few remaining West African wet-zone forests, and home to many unique species and ecosystems. These forests are an important habitat for the smaller mammals that are an integral part of the diet for local people.
- Business impacts on the ecosystems can be profound if they are not managed with extreme care. ArcelorMittal's challenge, therefore, was to establish iron ore extracting operations without destroying these special habitats or fragile local livelihoods.

Photo Credit: ArcelorMittal

Case study 2: Michelin

The issue

Rubber, the basis of Michelin's business

- Michelin, a company producing and selling tires, uses natural rubber, a renewable raw material produced by hevea trees, in its tire manufacturing process.
- At the end of 2001, Michelin was confronted with a combination of crucial issues surrounding its hevea tree plantation in the state of Bahia, on the north-eastern coast of Brazil.
  - Productivity had been decreasing, due to structural factors: topography of the area, decline of the yield due to the age of the trees and the Mycrocyclus Ulei leaf disease.
  - The price of natural rubber had also been decreasing. Michelin was thus forced to decide how to cope with these broad issues.

Photo Credit: Michelin

Case study 3: OHL Development

The issue

Mayakoba Ecotourism Complex

- OHL Development is creating an ecotourism complex on the Mayan Riviera of the Mexican Caribbean. The financial viability of the overall complex and of each hotel depends directly on the quality, structure and functioning of the ecosystems existing on the property, adding to their value and guaranteeing the respect and protection that are necessary.
- The vision for this complex is to establish a new model for tourism development that differs from the traditional; one in which the search for compatibility between business and environmental conservation prevails. It is a question of rationally, intelligently and sustainably making the most of the environmental goods and services of the ecosystems involved in order to meet the demands of financially powerful tourists with the sensitivity to appreciate ecological quality.
- In the region where Mayakoba Tourism Complex is located, an area of 650 hectares to be developed in two phases, there are highly valuable, excellently preserved ecosystems: reefs, sea grasslands, dunes, mangrove swamps and jungle.

Identifying ecosystem impacts and dependence – group exercise

- What impacts and dependencies did you find?

Case study 1: ArcelorMittal (cont.)

The response

- The first step was to build a solid basis for decision making, which meant carrying out a large-scale, ecological study over several years in both the wet and dry seasons. Nothing like this had been possible during the civil war, so there was very little knowledge about local biodiversity.
- ArcelorMittal assembled a large team of specialists and partners from Liberia and other neighboring countries, including the Liberian Forestry Development Authority, the NGOs Conservation International and Fauna and Flora International, Afrique Nature, Sylvatrop, Wild Chimpanzee Foundation and Action pour la Conservation de la Biodiversité en Côte d'Ivoire, to study the current state of biodiversity in the region.

Photo Credit: ArcelorMittal

Case study 1: ArcelorMittal (cont.)

The results

- The ecological study proved that the forests close to the proposed mine sites did indeed show high levels of biodiversity. For example, the study identified over 700 species of butterflies and moths in the forests, but also revealed that these and much other biodiversity were under threat from long-term degradation and decline, due to logging, agriculture and previous mining operations. ArcelorMittal had the opportunity not only to mitigate damage from mining, but to start reversing that trend.
- One of the positive consequences of the work was the establishment of an energetic local stakeholder group, which brought together the different agencies working in the area with the community representatives. The group has helped the government to make conservation its priority in this area, rather than commercial logging.
- It also helped ArcelorMittal to design an offset program to conserve biodiversity in compensation for the land lost to mining.

Case study 1: ArcelorMittal (cont.)

The results (cont.)

- Initial discussions and planning for forest rehabilitation and protection work took place between 2009 and 2011.
- Implementation will take approximately 15 years of growing input, and began in 2011.
- ArcelorMittal is now working to mitigate its impacts on the mining-affected ecosystems, and consequently people's livelihoods, at every stage of the development project, leveraging the multi-stakeholder consultation which it is leading.
- These actions towards biodiversity conservation helped the company to secure its license to operate among government authorities. It is also a key part of the compensation process for the local communities, who rely on the existing ecosystems.

Case study 2: Michelin (cont.)

The response

- Michelin took the decision of staying in the area, but under different circumstances. To protect the health of the rubber tree crop in Brazil, Michelin is investing in a sustainable agriculture program, which will generate strategic social, environmental and economic results.
- The basic idea was to divide the original plantation in 12 medium-sized plantations of 400 hectares each and sell them to Brazilian Michelin managers, enabling them to replant with the new varieties of rubber tree resistant to Microcyclus, and to develop other types of culture between the lines of hevea, such as cocoa and banana. At the same time, it created the supporting infrastructure, governance and systems required for the rehabilitation of the local community and the management and sale of these farms' cocoa production.
- In effect, Michelin decided to maintain 1,800 hectares of land as well as the basic infrastructure (processing units, roads, logistics, etc.), the research laboratory looking into combating the Microcyclus Ulei leaf disease, and to buy the rubber from the 12 new plantations.
- The company also created "ecological corridors" that link the three patches of Atlantic forest in order to create continuity from the ocean coast to the inland areas covering some 3,000 hectares. Michelin is working closely with the local government and biodiversity groups to develop these corridors. The rubber tree plantations that flourish in this area will be temporarily exploited, while efforts of replanting forest in the corridor will be continuous.

Case study 2: Michelin (cont.)

The response

- In addition to these actions, the company has developed family-owned rubber plantations by providing small neighboring farms (1,000 families) with resistant varieties of hevea produced by the breeding research program led by Michelin and CIRAD (Centre International pour la Recherche Agronomique et le Développement). Michelin also decided to donate 18 hectares of land for the construction of a new village, named Nova Igrapiuna, mainly for the tappers and their families. The construction was financed by a federal loan organization and is managed as a partnership by Michelin and the municipal government. The village is equipped with modern water processing units and includes green open spaces, medical facilities and schools. In the plantation, more than 200 kilometers of paths and road infrastructure were renovated or constructed.
- These investments and projects were made possible by the many partnerships forged by Michelin with local officials, non-governmental organizations, regional associations, unions, banks and public authorities, such as the State of Bahia and Banco Nordeste do Brasil for the loans granted to the new owners to buy the land and invest in replanting.
- After a survey of the territory and its species, a re-forestation program was also initiated. The project has also reintroduced animals and encouraged eco-tourism in the area surrounding the waterfall to better protect the environment.

Case study 2: Michelin (cont.)

The results

- The 12 medium-sized plantations are in operation, there are 500 hectares of cocoa plantation, the original 600 employees are still working, and 150 new jobs have been created. Moreover, natural rubber production has increased by 11%.
- The plantation had a total turnover of US$ 3.1 million in 2006, beating the forecasted US$ 2.5 million. It aims to increase that to US$ 10 million in 2023, with US$ 8 million of that coming from rubber and the rest from cocoa. The project aims to bring in about US$ 40,000 a year for a medium-sized landowner.
- Michelin is continuing its research into Microcyclus ulei with CIRAD, which is now part of a research program led by the International Rubber Research and Development Board (IRRDB). Several Asian institutes are to receive 14 resistant varieties of rubber tree selected for testing on experimental plots of land in 2008. The station, which is still on site, continues to develop family-run rubber cultivation by supplying neighboring small-scale farmers with resistant young rubber trees. After having donated 20,000 plants in 2005, 200,000 plants per year have been supplied at cost since 2006.
- By empowering the people who depend on it for their livelihoods, the plantation is now in better condition than when Michelin was in charge. And with prices climbing along with other commodities, the local community sees that it makes sense to be a producer, giving a guaranteed source of supply.

Case study 2: Michelin (cont.)

The results

- Michelin expects to buy the rubber from the mid-sized plantations, but the project is under no obligation to sell its output back to the company.
- As well as helping to secure its future rubber requirements, the project serves to enhance its reputation with consumers and environmental stakeholders.

Michelin Plantation in Bahia, Brazil

Case study 3: OHL Development (cont.)

The response

- The multidisciplinary work team, which has a markedly innovative character, bases its decisions on solid scientific grounds, and respects environmental legislation at all times.
- Mayakoba's management master plan is based on the maintenance of the ecosystems and the existing ecological processes in the field of action. It consists of different subprograms that allow for the integral management of vegetation, fauna, channels and lakes, waste, and environmental emergency security and support.
- The complex's innovative distribution, which has been technically reviewed, maintains the balance of the environmental units. Heavy infrastructure, lodging, services, commerce, etc. are located more than 500 meters from the coastline, removed from the most critical ecosystems, such as the mangrove swamp, dune and beach, thus protecting their natural functioning. In turn, light infrastructure located in the mangrove swamp facilitates the movement of water, tides and surface flows by means of pipes, bridges and overpasses.
- It has 20 hectares of channels and lagoons, which make up the main routes of transport within the complex, with more than 10 km that are Navigable. An 11-ha system of wetlands has been also been incorporated into the landscape of the golf course as a complement to the water treatment plant, in order to recover water quality and decrease the risk of polluting the water table and the adjacent marine area.

Case study 3: OHL Development (cont.)

The results

- The Mayakoba Ecotourism Complex is an environmentally innovative project, the first in Mexico's Caribbean coastal region to:
  - Fully meet the criteria for conserving the previously existing ecosystems (jungle and mangrove swamp).
  - Implement its largest infrastructure behind the mangrove swamp zone and an average of 500 m. away from the beach.
  - Create, before construction, an ecological structure on which hotels can later be built, incorporating these ecosystems into their design.
  - Plan and create a new ecosystem (lakes and channels), with environmental ends, in order to complete the aforementioned structure.
- It is an interdisciplinary project with highly complex implementation. Different stages of the project are currently ongoing simultaneously, which is challenging due to the logistics required. This includes the design and management of several hotels alongside the running of the Rosewood and Fairmont Hotels with 100% occupancy.

Session 8
Knowledge share – measuring ecosystem impacts and dependencies

Module 2: Measuring and assessing impacts and dependencies

wbcsd business ecosystems training

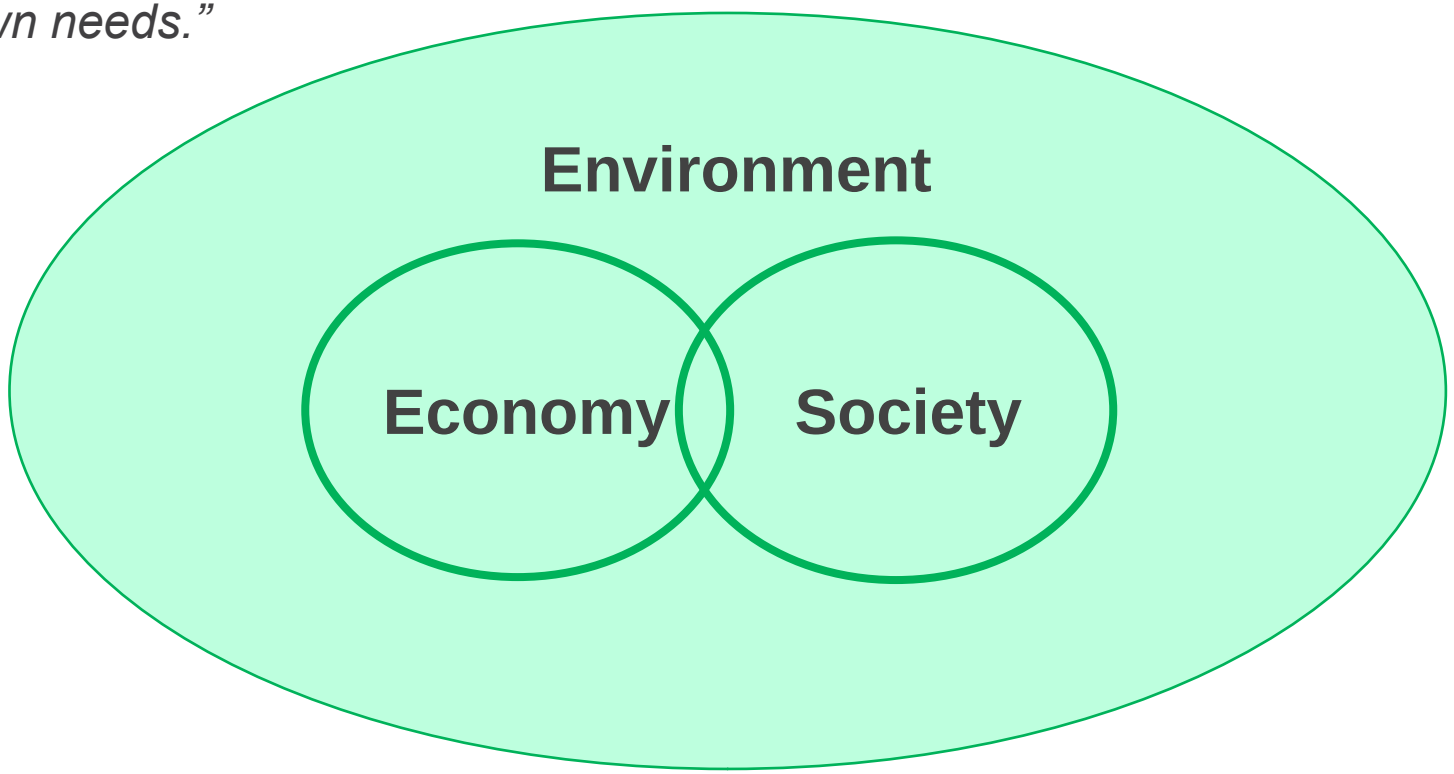
Knowledge share – measuring ecosystem impacts and dependencies

<table>
<tr><th>Risks</th><th>Opportunities</th></tr>
<tr><td>Corporate, business unit, or market strategy development</td><td>Identification of new markets</td></tr>
<tr><td>Planning processes for corporate infrastructure projects</td><td>Identification of new revenue streams from corporate landholdings</td></tr>
<tr><td>Environmental impact assessments</td><td rowspan="2">Policy maker engagement strategies</td></tr>
<tr><td>Environmental reporting</td></tr>
<tr><td colspan="2">Supply / value chains</td></tr>
</table>

Sustainability

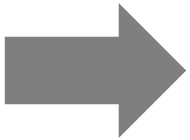
Brundtland definition, from Our Common Future (WCED 1987)

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."



Group exercise: flipchart layout

What are the barriers to measuring ecosystem impacts?



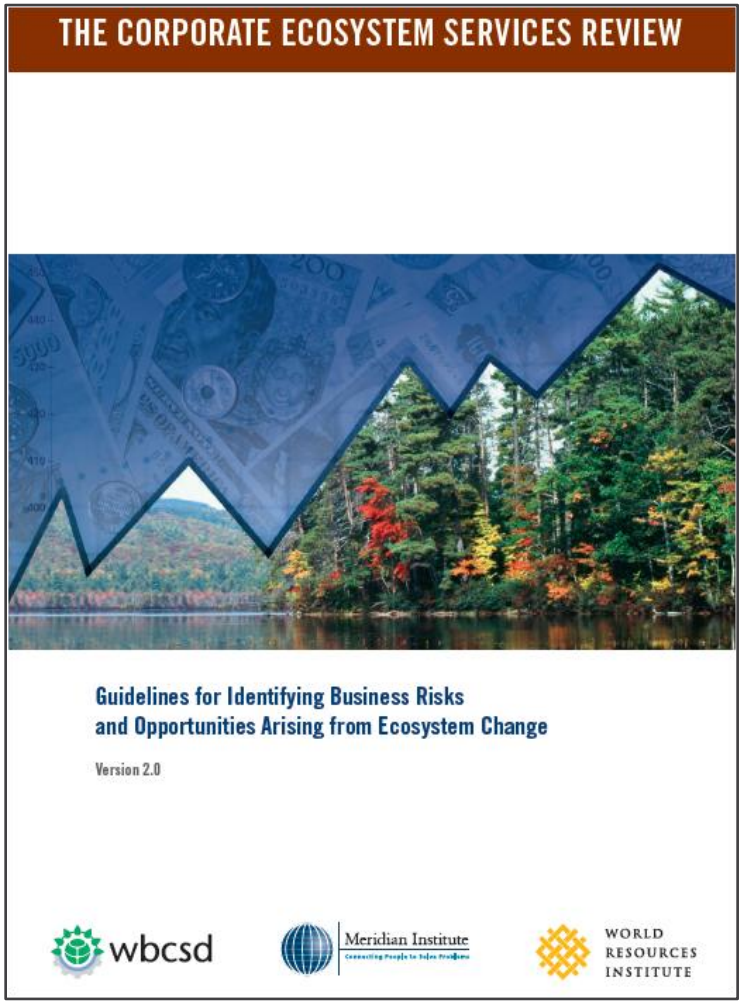
Why is it useful to engage with stakeholders?

Session 9
Introduction to the Ecosystem Services Review

Module 2: Measuring and assessing impacts and dependencies

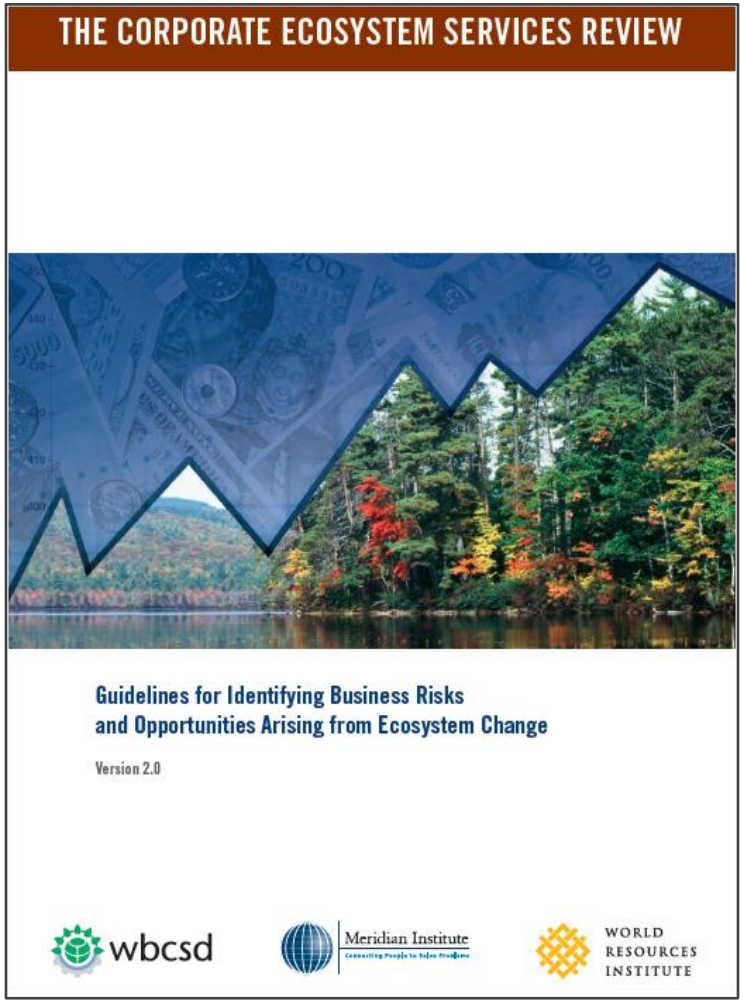
wbcsd business ecosystems training

Introduction to the Ecosystem Services Review



What is the ESR?

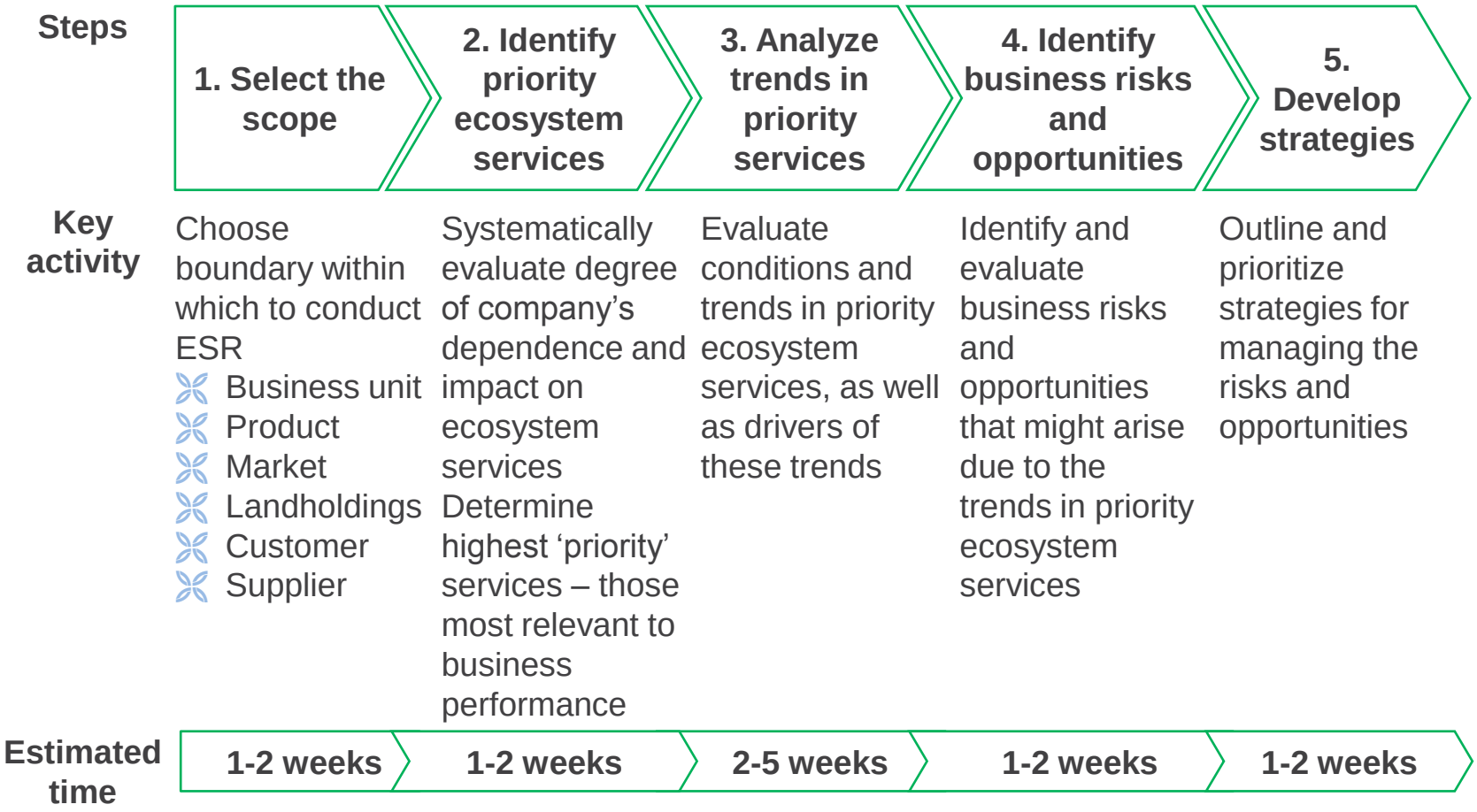
A **structured methodology** that helps managers proactively develop strategies to **manage business risks** and **opportunities** arising from their company's **dependence** and **impact** on ecosystems.



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, multiyear analysis

Steps in a corporate ecosystem services review



Source: WRI, Ecosystem Services Review Standard Presentation

Step 1. Considerations when selecting the scope

1. Which stage of the value chain?

2. Who and where specifically?

- Which supplier(s)?
- In which geographic market(s)?

- What aspect of the company?
  - Business unit
  - Product line
  - Facility
  - Project
  - Landholdings

- Which customer(s)?
- In which geographic market(s)?

3. Is it strategic, ti mely, and supported?

Source: WRI, Ecosystem Services Review Standard Presentation

Step 2. Identifying priority ecosystem services

	Suppliers		Company operations		Customers	
Ecosystem service	**Dependence**	**Impact**	**Dependence**	**Impact**	**Dependence**	**Impact**
Provisioning						
Crops				○ –		
Livestock				● –		
Capture fisheries						
Aquaculture						
Wild foods				○ +		
Timber and other wood fiber				● +		
Other fibers (e.g., cotton, hemp, silk)						
Biomass fuel			○	● +		
Freshwater			●	● –		
Genetic resources			○	○ ?		
Biochemicals, natural medicines, and pharmaceuticals				○ +		

Key: ● High ○ Medium Low + Positive impact – Negative impact ? Don't know

Source: WRI, Ecosystem Services Review Standard Presentation

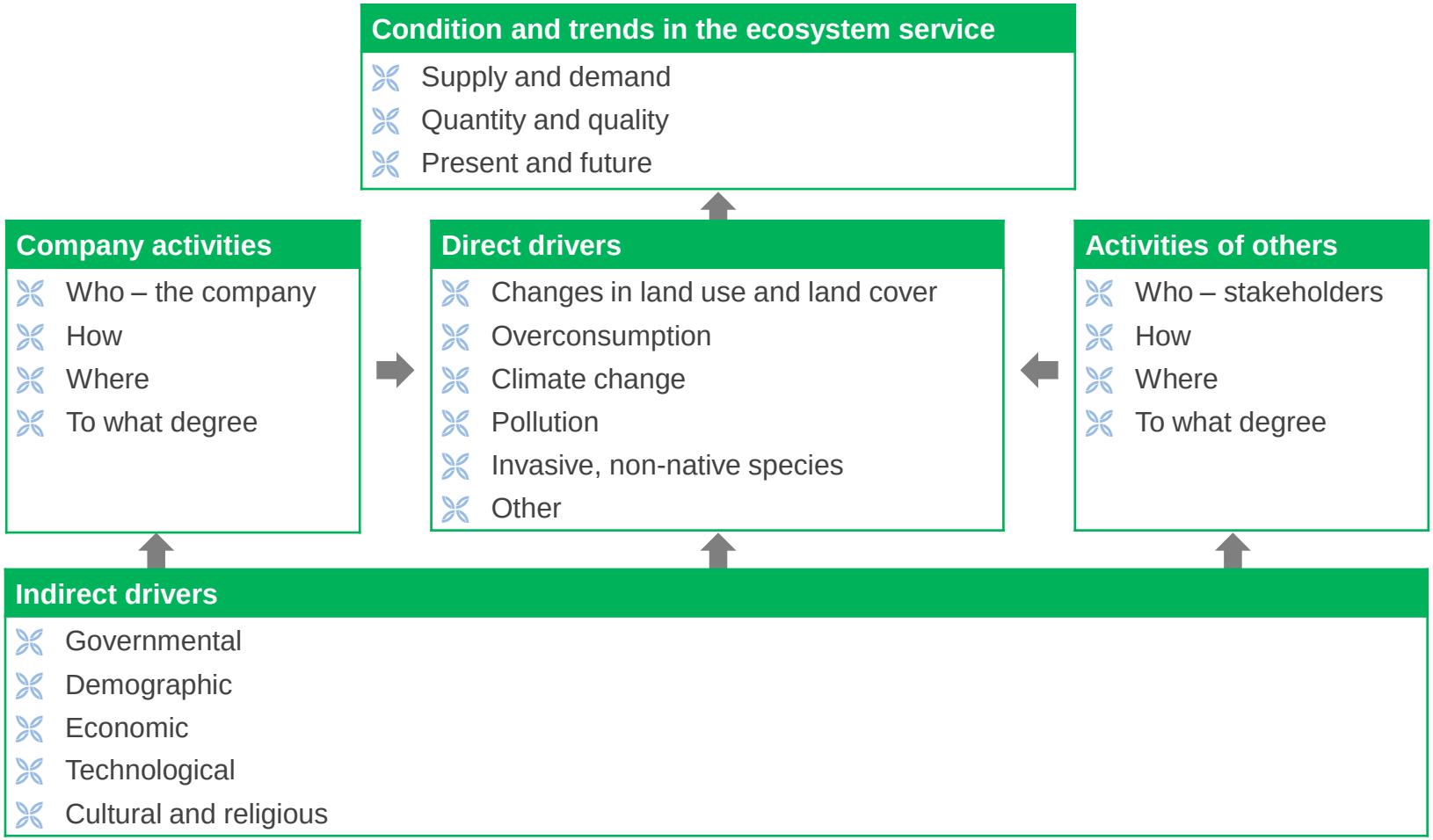
Step 2. Identifying priority ecosystem services (cont.)

	Suppliers		Company operations		Customers	
Ecosystem service	**Dependence**	**Impact**	**Dependence**	**Impact**	**Dependence**	**Impact**
Regulating						
Air quality regulation				? ?		
Global climate regulation			○	● +		
Regional/local climate regulation			○	○ +		
Water regulation			●	● –		
Erosion regulation			○	○ –		
Water purification and waste treatment				○ –		
Disease regulation						
Pest regulation						
Pollination						
Natural hazard regulation						
Cultural						
Recreation and ecotourism				● +		
Ethical values				○ +		

Key: ● High ○ Medium Low + Positive impact – Negative impact ? Don't know

Source: WRI, Ecosystem Services Review Standard Presentation

Step 3. Ecosystem service trends and drivers framework



Source: WRI, Ecosystem Services Review Standard Presentation

Step 4. Types of risks and opportunities arising from trends in ecosystem services

Not Exhaustive

Type	Risk	Opportunity
Operational	Increased scarcity or cost of inputs Reduced output or productivity Disruption to business operations	Increased efficiency Low-impact industrial processes
Regulatory and legal	Extraction moratoria Lower quotas Fines User fees Permit or license suspension Permit denial Lawsuits	Formal license to expand operations New products to meet new regulations Opportunity to shape government policy

Source: WRI, Ecosystem Services Review Standard Presentation

Step 4. Types of risks and opportunities arising from trends in ecosystem services (cont.)

Not Exhaustive

Type	Risk	Opportunity
Reputational	Damage to brand or image Challenge to social 'license to operate'	Improved or differentiated brand
Market and product	Changes in customer preferences (public sector, private sector)	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	Increased investment by progressive lenders and socially responsible investment funds

Source: WRI, Ecosystem Services Review Standard Presentation

Step 5. Categories of strategies

Internal changes	Sector or stakeholder engagement	Policy-maker engagement
Operations	Industry peer collaboration	Tax incentives
Product strategy	Cross-sector collaboration	Subsidy reforms
Market strategy	NGO collaboration	Protected areas
Procurement strategy	Transactions with stakeholders	Zoning
Land management	etc.	etc.
etc.		

Source: WRI, Ecosystem Services Review Standard Presentation

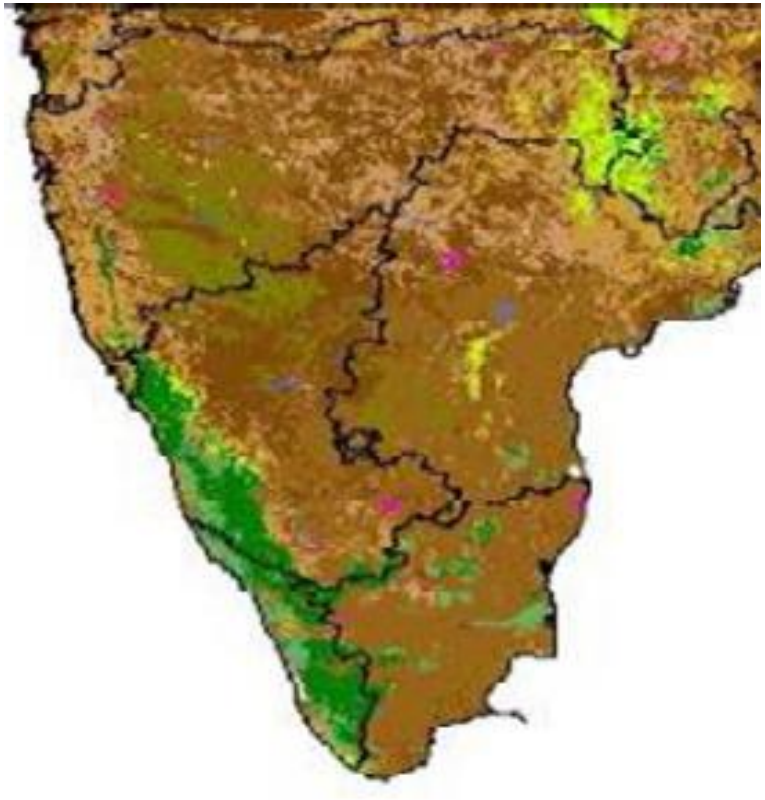
Case study: Syngenta

- Syngenta: a multinational company in the agriculture sector
- ESR conducted on a growing market of small farms in South India
- The ESR helped the company identify risks its customers face due to ecosystem degradation and, in turn, find opportunities to offer new products and services that mitigate these risks
- The ESR helped spur the company to improve its global data collection on key ecosystem service risks to better prepare for changing global conditions

Photo Credit: Syngenta

Case study step 1. Scope

- Dry Cropland and [pasture]
- Irrigated Cropland
- Cropland/Grassland
- Cropland/Woodland
- Grassland
- Shrubland
- Shrubland/Grassland
- Savanna
- Deciduous Broadleaf Forest
- Deciduous Needleleaf Forest
- Evergreen Broadleaf Forest
- Evergreen Needleleaf Forest
- Mixed Forest



Target States: Maharashtra, Andhra Pradesh, Karnataka, Kerala, Tamil Nadu

Case study step 2. Identifying priority ecosystem services

Ecosystem service	Impact/dependency
Freshwater	Rain-fed and irrigated farms depend on this service. Farmers also impact freshwater quantity and quality through agrochemical runoff.
Water regulation	Farmers depend on the ability of wetlands and forests to recharge aquifers for year-round access to water, and to mitigate harmful floods during monsoon season.
Erosion regulation	Farmers depend on vegetation to retain topsoil – poor agricultural practices have caused some localized negative effects, but other practices such as minimum tillage are improving erosion control.
Pest regulation	Farmers rely on native organisms to help control crop pests in integrated pest management systems. Monoculture, fragmentation of natural habitat, and inappropriate use of agrochemicals on farms degrade nature's ability to help regulate pests.
Pollination	Many crops require pollination services. As a result of habitat changes and ecosystem degradation, agriculture can have negative impacts on pollination.
Nutrient cycling	Crops depend on nature's processing and supply of nutrients. Poor farming practices sometimes inhibit this service, requiring more man-made nutrient inputs.

Case study – ESR Dependence and Impact Assessment Tool

Dependence and Impact Assessment Tool

	Key input suppliers		Company operations		Major customers	
Ecosystem services	**Dependence**	**Impact**	**Dependence**	**Impact**	**Dependence**	**Impact**
Provisioning						
Crops						● +
Livestock					○	● +
Capture fisheries						
Aquaculture						
Wild foods						○ -
Timber and wood fibers						○ -
Other fibers (e.g., cotton, hemp, silk)						○ +
Biomass fuel						○ +
Fresh water					●	● –
Genetic resources					●	○ -
Biochemicals, natural medicines, and pharmaceuticals						○ -

Key: ● Significant ○ Moderate insignificant + Positive impact – Negative impact ? Don't know

Case study – ESR Dependence and Impact Assessment Tool (cont.)

Dependence and Impact Assessment Tool (cont.)

	Key input suppliers		Company operations		Major customers	
Ecosystem service	**Dependence**	**Impact**	**Dependence**	**Impact**	**Dependence**	**Impact**
Regulating						
Air quality regulation						○ –
Climate regulation						○ –
Water regulation					●	○ +/–
Erosion regulation					●	○ +/–
Water purification and waste treatment						
Disease regulation						
Pest regulation					○	● -
Pollination					○	● -
Natural hazard regulation						
Cultural						
Ethical values						○ +/–
Recreation and ecotourism						○ +/–
Other services identified by company						
Nutrient cycling					○	● -
Soft formation					○	● -

Key: ● Significant ○ Moderate insignificant + Positive impact – Negative impact ? Don't know

Group exercise: impacts/dependency questionnaire

- Using the two tables provided on the wall charts, analyse how the company in the example provided impacts and depends upon different ecosystem services

Group exercise wall chart 1

Dependence on ecosystem services			
Ecosystem service	1. Does this ecosystem service serve as an input or does it enable/enhance conditions for successful company performance? If 'no' skip to question 3	2. Does this ecosystem service have cost-effective substitutes?	Comments or supporting information

Group exercise wall chart 2

Impacts on ecosystem services				
Ecosystem service	**3. Does the company affect the quantity or quality of this ecosystem service? If 'no' skip to the next ecosystem service**	**4. Is the company's impact positive or negative?([a])**	**5. Does the company's impact limit or enhance the ability of others to benefit from this ecosystem service?**	**Comments or supporting information**

Note: ([a]) Positive impact: The company increased the quantity or quality of this ecosystem service.
Negative impact: The company decreased the quantity or quality of this ecosystem service.

Case study and exercise – Mondi

Module 2: Measuring and Assessing Impacts and Dependencies

wbcsd business ecosystems training

Case study example: Mondi

The issue

A high water dependency

- Mondi
  - Integrated paper and packaging producer, owns plantations in South Africa
- South Africa
  - Fresh water, a scarce resource
  - 55% of South Africa's wetlands to date have been significantly damaged due to poorly managed agriculture; mining, urban development, etc.
- Because Mondi's commercial activities (commercial forests and processing plants) use significant volumes of water, it relies on healthy wetlands and riparian zones.
- **Mondi used the ESR to develop a corporate-wide strategy for addressing water scarcity in its South African plantations.**

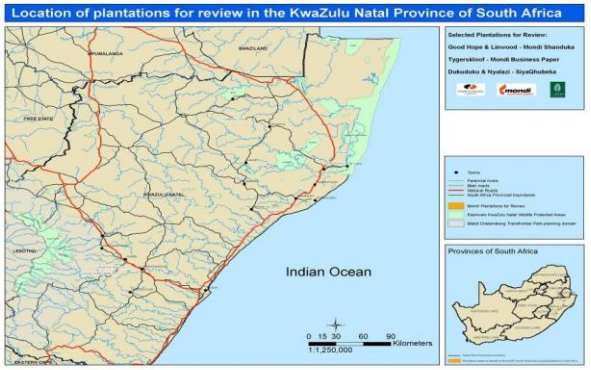
Example of wetland rehabilitation carried out by Mondi in South Africa

Feedback...

Case study example: Mondi (cont.)

The result

- ESR Scope:
  - 3 of Mondi's South African pine and eucalypt plantation areas (Shanduka, SiyaQhubeka, and Tygerskloof)
  - One plantation, SiyaQhubeka, is adjacent to a UNESCO World Heritage site, and the company wanted to explore opportunities for biodiversity enhancement and ecotourism.



- Used the **Dependence & Impact Assessment Tool** to select six priority ecosystem services:
  - Freshwater.
  - Water regulation.
  - Biomass fuel.
  - Global climate regulation.
  - Recreation and ecotourism.
  - Livestock.

Case study example: Mondi (cont.)

The result (cont.)

Priority ecosystem service	Potential risks	Potential opportunities	Type of risk/opportunity
Freshwater	Increased water scarcity due to: ▪ Invasive alien species proliferation ▪ Increasing demand among nearby, inefficient water users (farmers) ▪ Climate change	Internal efficiency improvements in freshwater use (Co)financing water efficiency improvements of nearby landowners	Operational
Water regulation	See above		
Biomass fuel		New biomass-to-energy markets for plantation residues	Market and product
Global climate regulation		Emerging markets for carbon sequestration	Market and product
Recreation and ecotourism		Ecotourism or recreation-based revenue streams from company-managed wetlands/grasslands	Market and product
Livestock	Reduced plantation productivity due to increasing grazing pressures Increases scrutiny from nearby stakeholders for perceived "under-utilization" of Mondi land set aside as wetlands/grasslands		Operational Reputational

Case study example: Mondi

The result

	Suppliers		Company operations		Customers	
Ecosystem service	**Dependence**	**Impact**	**Dependence**	**Impact**	**Dependence**	**Impact**
Provisioning						
Crops				○ –		
Livestock				● –		
Capture fisheries						
Aquaculture						
Wild foods				○ +		
Timber and other wood fiber				● +		
Other fibers (e.g., cotton, hemp, silk)						
Biomass fuel			○	● +		
Freshwater			●	● –		
Genetic resources			○	○ ?		
Biochemicals, natural medicines, and pharmaceuticals				○ +		

Key: ● High ○ Medium Low + Positive impact – Negative impact ? Don't know

Case study example: Mondi (cont.)

The result (cont.)

	Suppliers		Company operations		Customers	
Ecosystem service	**Dependence**	**Impact**	**Dependence**	**Impact**	**Dependence**	**Impact**
Regulating						
Air quality regulation				? ?		
Global climate regulation			○	● +		
Regional/local climate regulation			○	○ +		
Water regulation			●	● –		
Erosion regulation			○	○ –		
Water purification and waste treatment				○ –		
Disease regulation						
Pest regulation						
Pollination						
Natural hazard regulation						
Cultural						
Recreation and ecotourism				● +		
Ethical values				○ +		

Key: ● High ○ Medium Low + Positive impact – Negative impact ? Don't know

Case study example: Mondi (cont.)

The result (cont.)

- The ESR:
  - Highlighted the relationship among many of the known drivers of water scarcity (e.g., invasive species, climate change, poor irrigation by upstream users).
  - Expanded the analysis beyond the scope of the existing environmental management systems to include systematic reviews of more ecosystem services such as biomass fuel and ecotourism.
  - This uncovered new solutions and a platform for building a freshwater strategy stretching from the plantation management to community engagement, and even to their government relations divisions.

Case study and exercise – Nissan

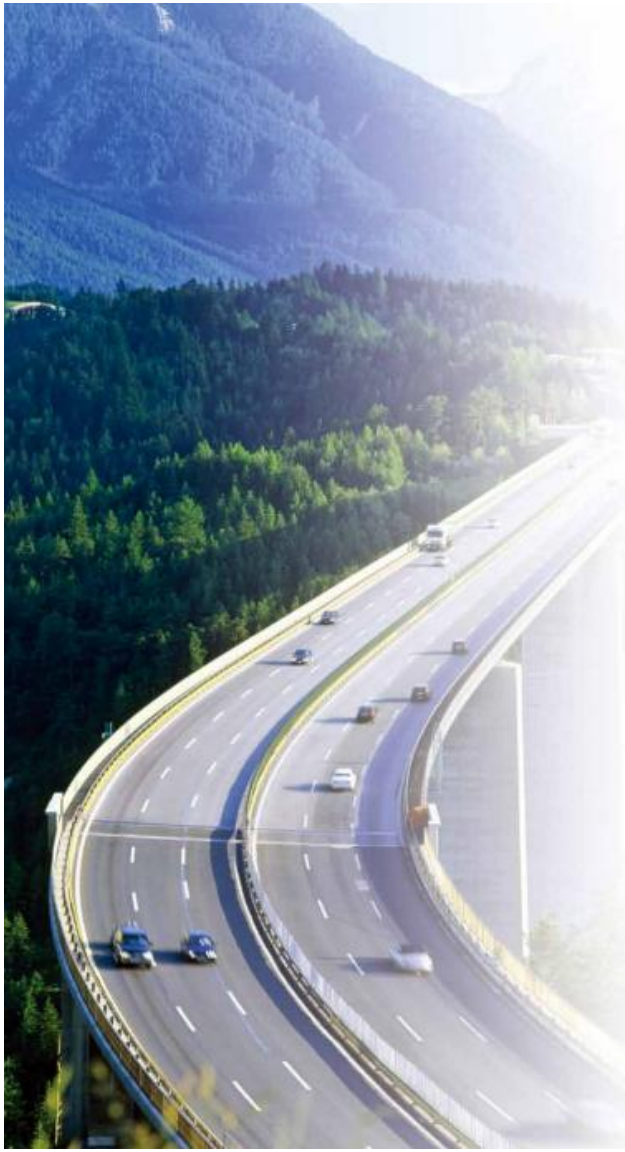
Module 2: Measuring and Assessing Impacts and Dependencies

wbcsd business ecosystems training

Case Study: Nissan Automobile

Context

- Since 2007 Nissan has been conducting joint research with the UN University Institute of Advanced Studies on the impact automobiles have on the ecosystem and biodiversity.
- Decided to carry out and ESR.Objectives:
  - To explore factors that contribute to sustainable mobility and the relationship between and interactions among ecosystem services and the automotive sector.
  - To evaluate the automotive sector's activities and performance with regard to ecosystem services, rather than focusing on standard issues, such as carbon emissions.
  - In the future to use the ESR as a strategic planning tool for corporations to become better stewards of the environment through analysis of its opportunities and threats.



Source: Nissan, Ecosystem services and the automotive sector

Case Study: Nissan Automobile

Step 1 - Scope of the ESR

- The scope of the Nissan ESR covered 10 areas of the value chain, including upstream and downstream aspects of business operations.
- The implications of ecosystem service trends for key suppliers were highlighted in the upstream analysis, while the downstream study sought insights into the implications of ecosystem service trends for Nissan's customers.

Upstream: Suppliers	Nissan Operations	Downstream: Customers
• Mineral mining • Materials sourcing (metals, chemicals) • Parts production • Logistics	• Manufacturing (fabrication, painting, thin-coating, assembly) • Logistics (ground and ocean transportation) • Office usage • Sales	• Customer use (driving) • Fuel consumption • Road construction and maintenance • Recycling, disposal, and exports of scrapped cars

Source: Nissan, Ecosystem services and the automotive sector

Feedback...

Case Study: Nissan Automobile

Step 2 Identifying Priority Ecosystem Services

- This step was a screening exercise to evaluate, in a structured yet rapid manner, the company's dependence and impact on more than 20 ecosystem services to help identify priority services.

		Upstream : Suppliers		Nissan Operations		Downstream : Customers	
Ecosystem Services		Dependence	Impact	Dependence	Impact	Dependence	Impact
Provisioning	Food		●				
	Fiber		●				
	Biomass fuel		●			●	
	Freshwater	●	●	●	●	●	●
	Genetic resources		●				
	Biochemicals, natural medicines and pharmaceuticals		●				
Regulating	Air quality regulation		●		●		●
	Climate regulation		●		●		●
	Water regulation		●				
	Erosion regulation		●			●	
	Water purification and waste treatment	●	●		●	●	●
	Disease regulation		●				●
	Pest regulation		●				●
	Pollination		●				
	Natural hazard regulation				●		●
Cultural	Recreation and Ecotourism		●		●		●
	Ethical values		●		●		●
Supporting	Nutrient cycling		●				
	Primary production						
	Water cycling						

Source: Compiled based on WBCSD, Meridian Institute, WRI, The Corporate Ecosystem Service Review, 2008.

Case Study: Nissan Automobile

Priority ecosystem services identified

Based on this assessment, 7 ecosystem services were selected as priorities for consideration for Nissan and the broader automotive sector:

- Freshwater
- Air quality regulation
- Climate regulation
- Water regulation
- Erosion regulation
- Water purification and treatment
- Natural hazard regulation

To understand the full implications of these seven priority ecosystem services for the sector, the following 3 business areas were analysed.

1) Energy sourcing
2) Mineral and material sourcing
3) Water usage

Case Study: Nissan Automobile

1. Energy sourcing

- The world's consumption of primary energy is 12 gigatons per year (oil equivalent), with the transport sector using about 20% of this total.
- The mass consumption of petroleum raises concerns about its impact on the ecosystem through the emission of greenhouse gases, which many scientists believe cause climate change, and the contamination of the soil and water in excavating and transporting oil.
- Ways to check this impact include enhancing energy efficiency and shifting to non-fossil-fuel alternatives, such as biofuel, hydrogen, and electricity.

- **Nissan's response:**
  - Research development efforts directed toward the successful development of fuel cell vehicles (hydrogen) that perform on a par with gasoline ones.

Case Study: Nissan Automobile

2. Mineral and Material Sourcing

- 10% of the mines now operating and 20% of the mines being explored are located in areas classified as having ecosystems that are worth preserving (WRI).
- Metals account for approximately 80% by weight of the materials used to build a vehicle, making automobiles highly dependent on mineral resources.
- The development of a mine requires enormous quantities of water, and large amounts of wastewater are returned to the watershed.
- Reducing the consumption of virgin materials through the conservation and recycling of resources should be considered among the first approaches for minimizing the impact on ecosystems caused by the use of mineral resources.

- **Nissan's response** - efforts on recycling activities to reduce the volume of mineral's extraction:
  - Nissan has introduced designs for new models that facilitate recycling and to properly dispose of end-oflife vehicles (ELVs).
  - The ultimate goal of resource recycling is 100% recovery of ELVs.
  - Nissan is shifting the focus of its activities to maximize the use of ELV materials.

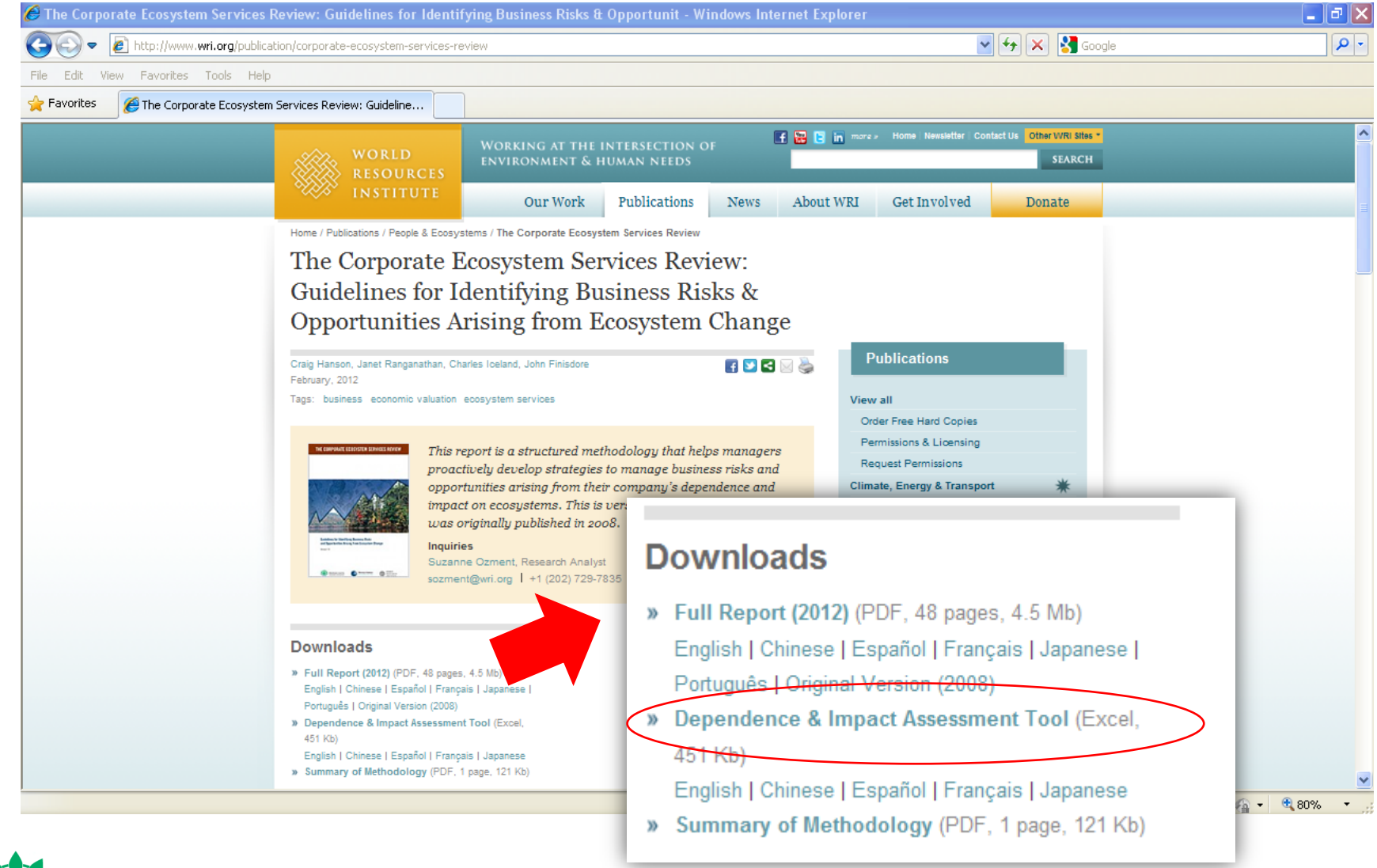
Case Study: Nissan Automobile

3. Water Usage

- Water usage is growing due to global population growth and economic development, and climate change has resulted in changes in precipitation volumes.
- The Nissan ESR revealed that the company was dependent on water throughout the value chain, so greater consideration to water consumption must be given in a wide range of processes.

- **Nissan's response:**
  - There are over **40 plants in 18 different countries** building Nissan-branded vehicles and parts, and they all use water as part of the production process.
  - The highest-risk plants were placed at **Level A**, defined as a plant that either already has a water related problem or is expected to face one in the near future. Water reduction targets have been independently set for each of these plants, which will undertake activities to reach those targets.
  - **Level B** plants are those with the potential for water problems; they will regularly monitor water risks, in addition to undertaking the voluntary water-reduction activities they have been pursuing to date.
  - **Level C** plants are at low water risk, and they will continue their voluntary water-reduction initiatives.

Downloading the ESR tool

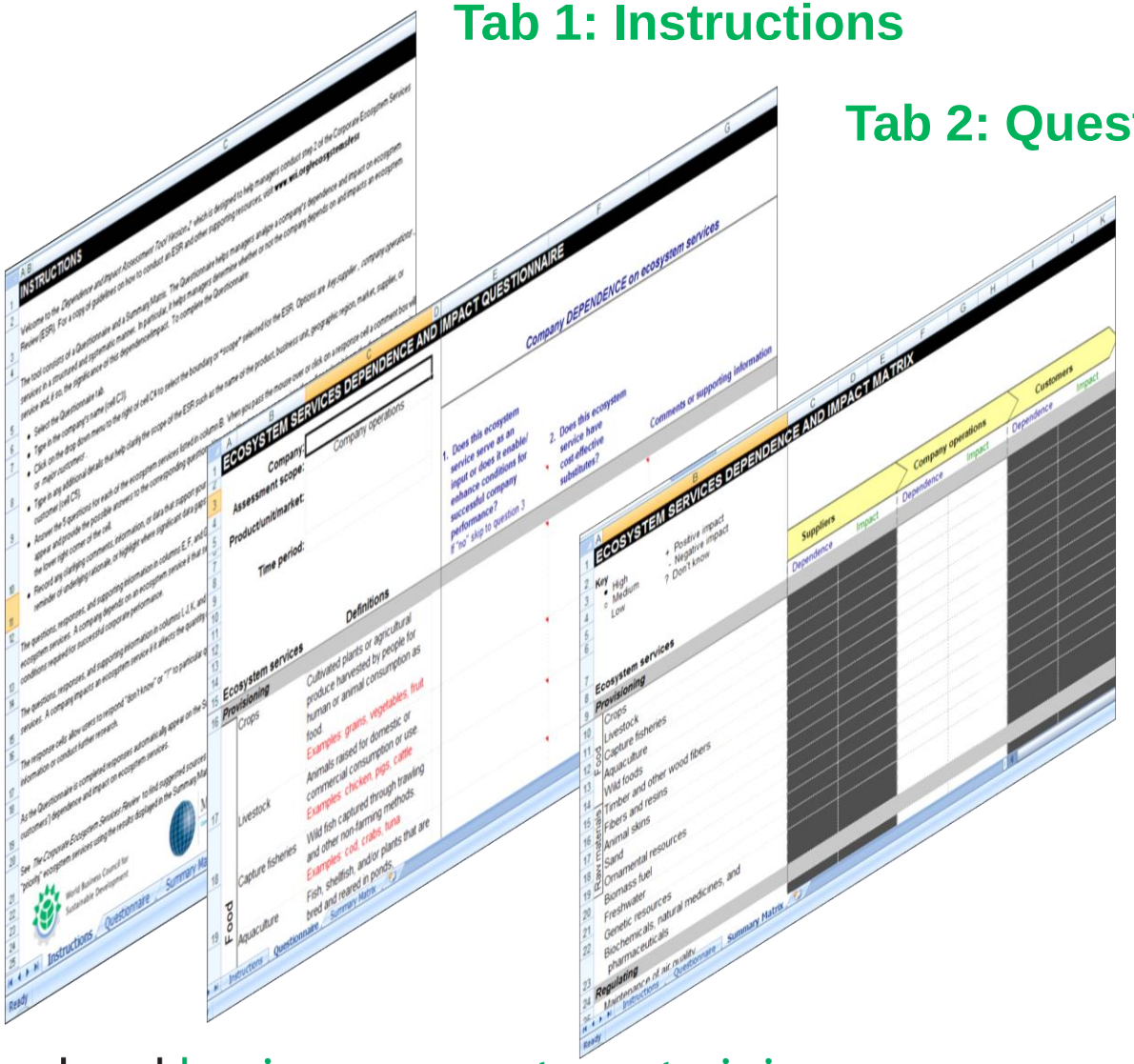


Downloading the ESR tool

Tab 1: Instructions

Tab 2: Questionnaire

Tab 3: Summary



Module 2 – Objectives summary

- Understand the basics ✓
- Policy and regulatory frameworks ✓
- The business case for action ✓
- Introduction to the Ecosystem Services Review (ESR) ✓
- Introduction to tools, frameworks and methodologies

Session 10
Introduction to Tools, Frameworks and Methodologies

Module 2: Measuring and assessing impacts and dependencies

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Measuring ecosystem services change

- Strategic tools e.g. Life cycle assessment, risk assessment and so on..
- Global Water tool
- GHG protocol
- Measuring Impact framework
- Measuring social impacts
- Equator principles
- Other tools

Brief introduction

Measuring ecosystem services change (cont.)

Business analytical approaches: Monetary

- Corporate Ecosystem Valuation
- Natural resource damage assessments
- Other tools, that help place monetary values on ecosystems

Covered in Module 3

Measuring ecosystem services change (cont.)

Business analytical approaches: Sustainability non-monetary

- Environmental and Social Impact Assessment (ESIA)
- Strategic Impact Assessment
- Multi-criteria analysis
- Sustainability appraisals
- Risk Assessment
- Life Cycle Analysis

Global Water Tool

A free and easy-to-use tool
for companies and organizations
to map their water use and assess risks
relative to their global operations and supply chains.

- Customized versions released to meet the needs of specific sectors, i.e. oil and gas; power and utilities.

What does it do?

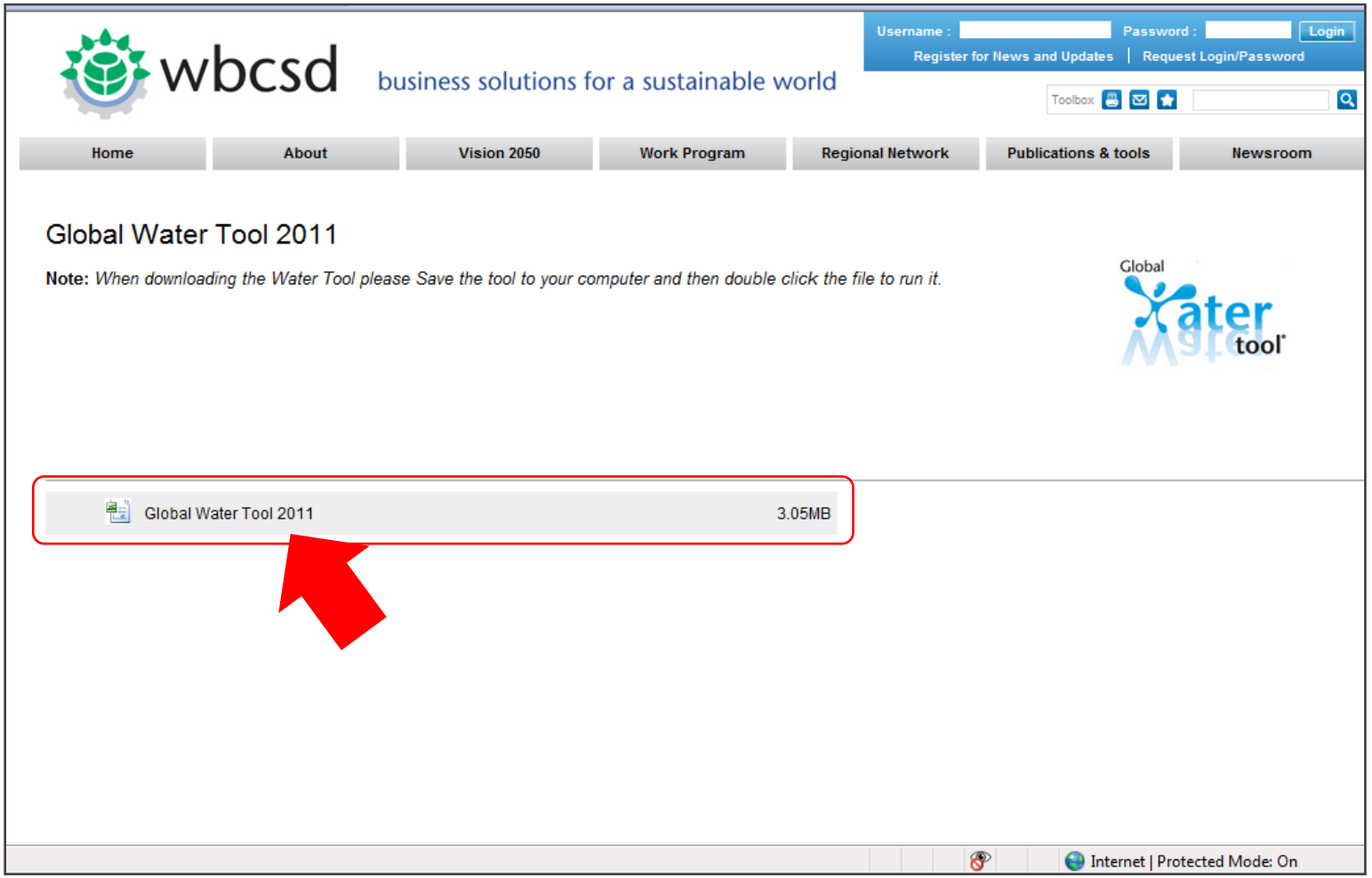
- Compares your company's water use with validated water, sanitation, population and biodiversity information
- Establishes relative water risks in a company's portfolio in order to prioritize action
- Creates key water reporting indicators in addition to inventories, risk and performance metrics (GRI, Dow Jones Sustainability Indexes, Bloomberg, Carbon Disclosure Project Water)
- Enables effective communication with internal and external stakeholders
- Identifies biodiversity hotspots with relation to water

What does it do? (cont.)

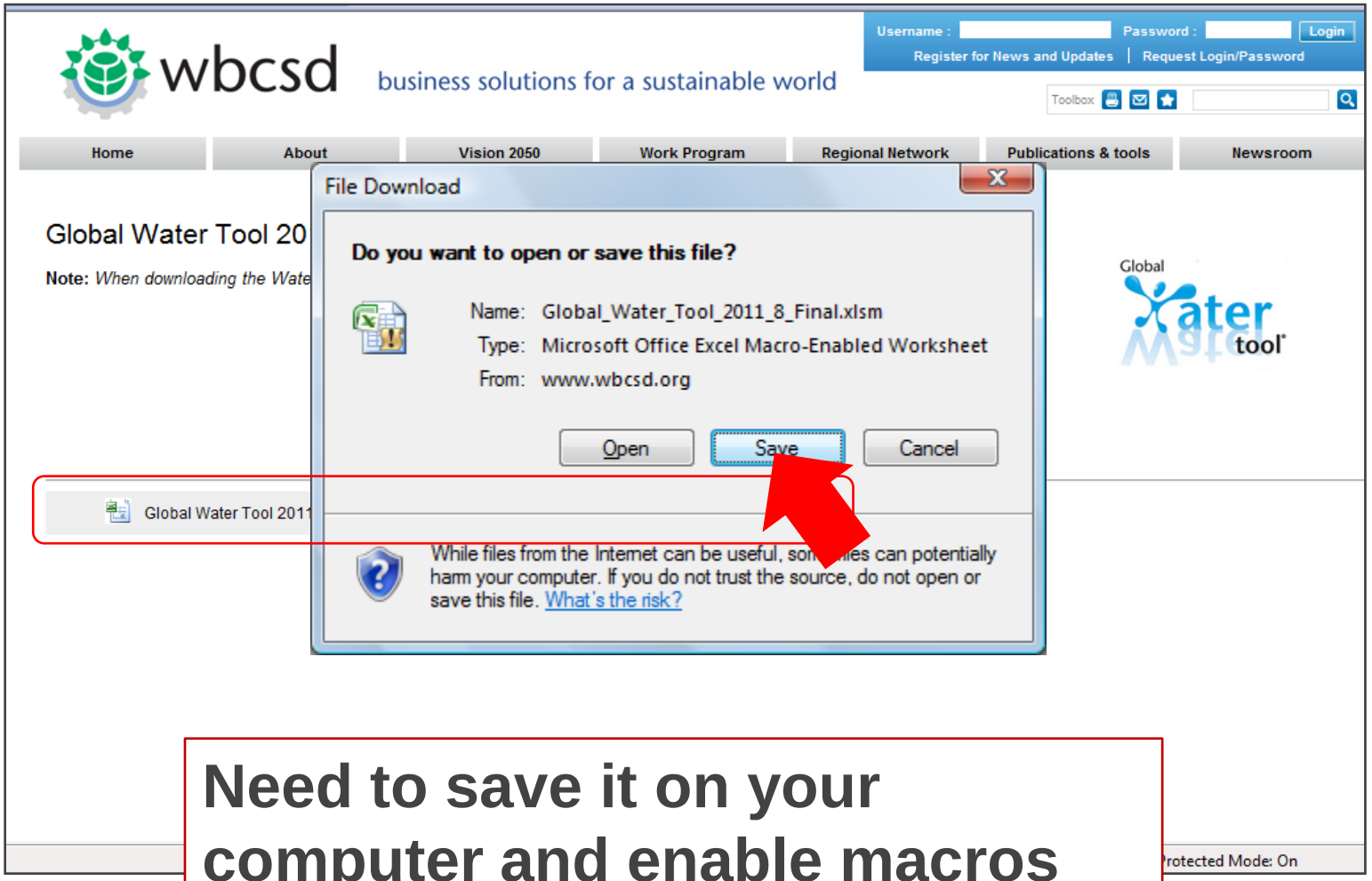
Generates maps, charts and tables summarizing results

Generated from an Excel Workbook for the company to fill in (http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=13741&nosearchcontextkey=true)

Downloading the Global Water Tool

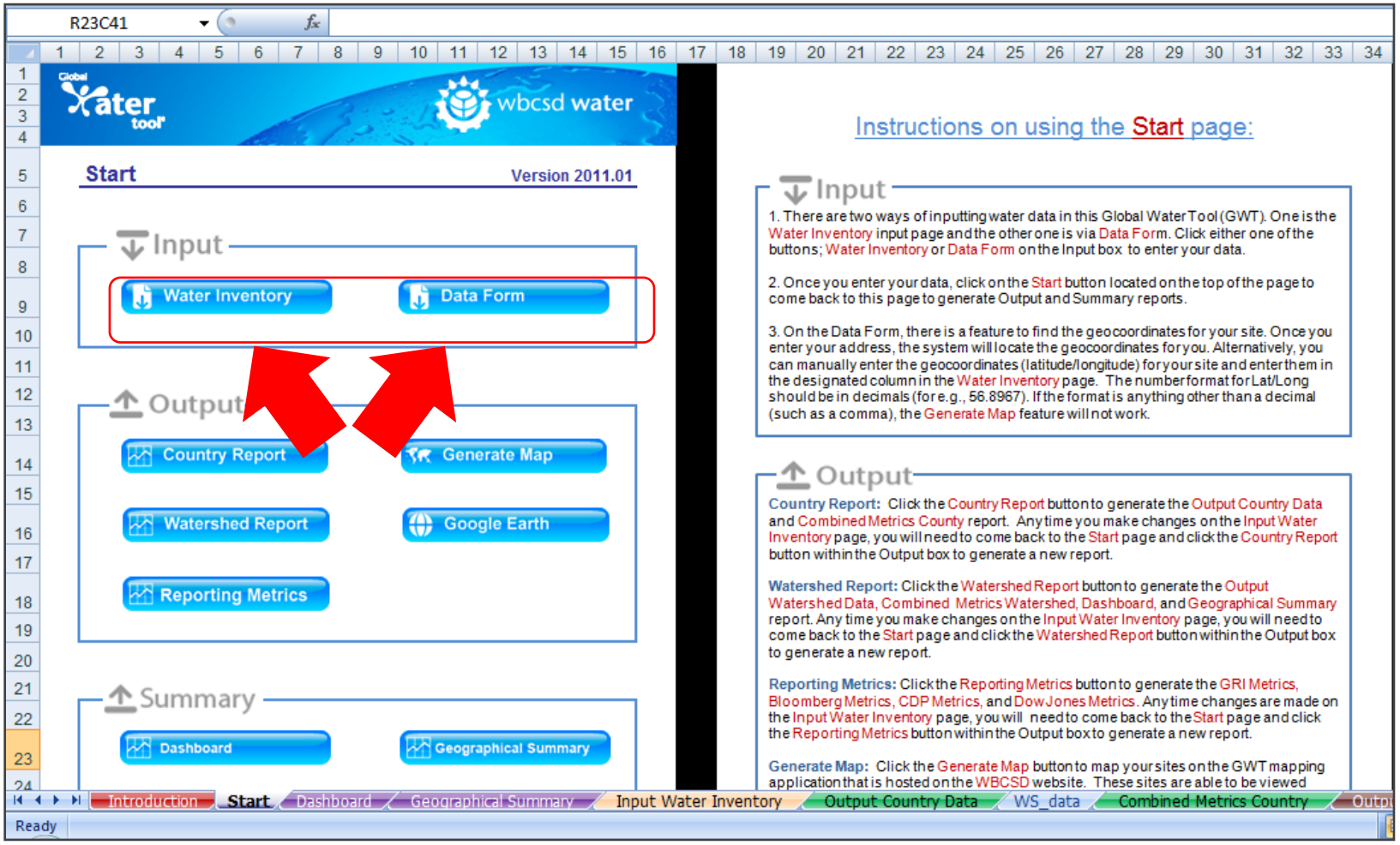


Downloading the Global Water Tool



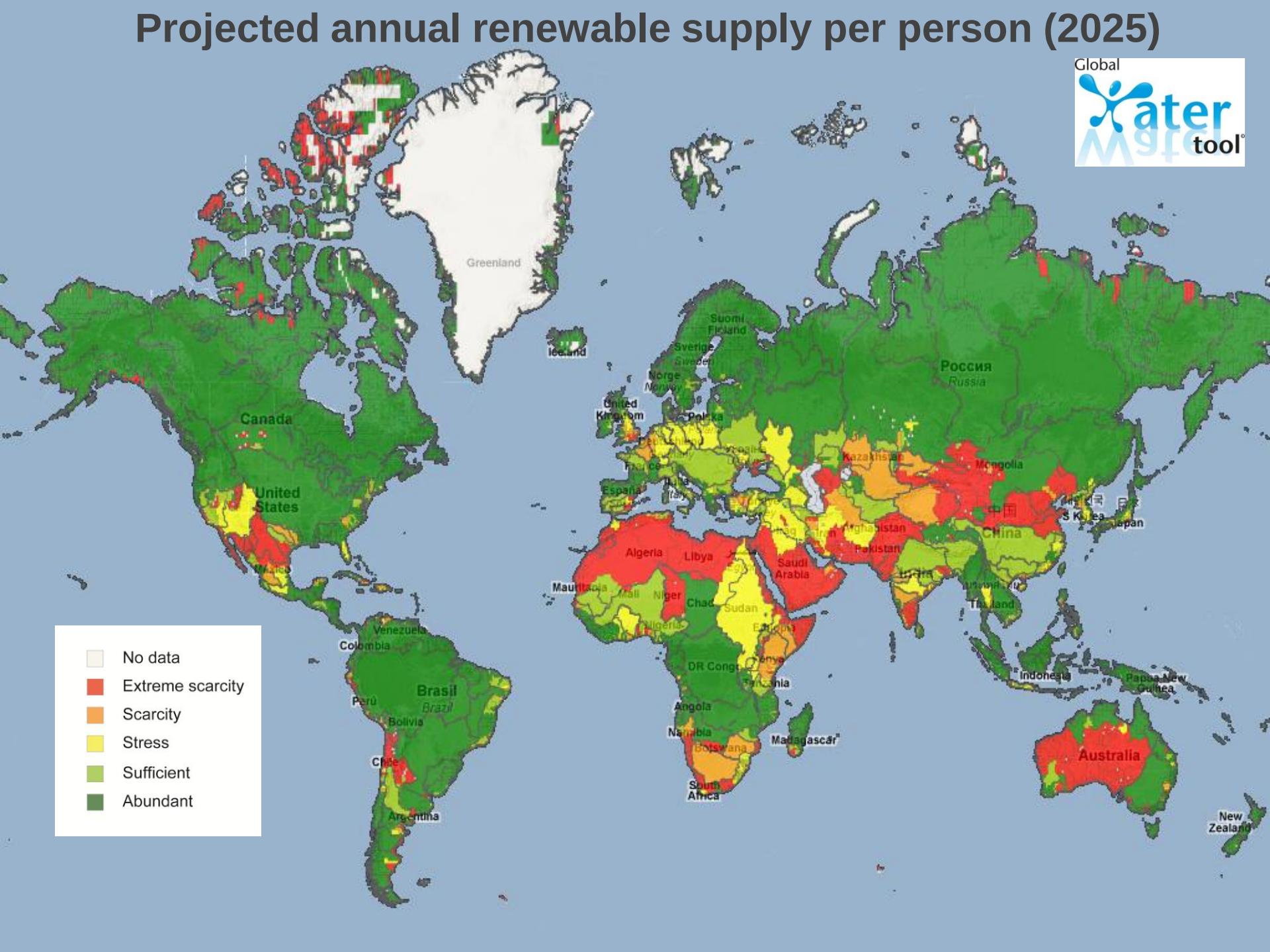
Need to save it on your computer and enable macros

Downloading the Global Water Tool

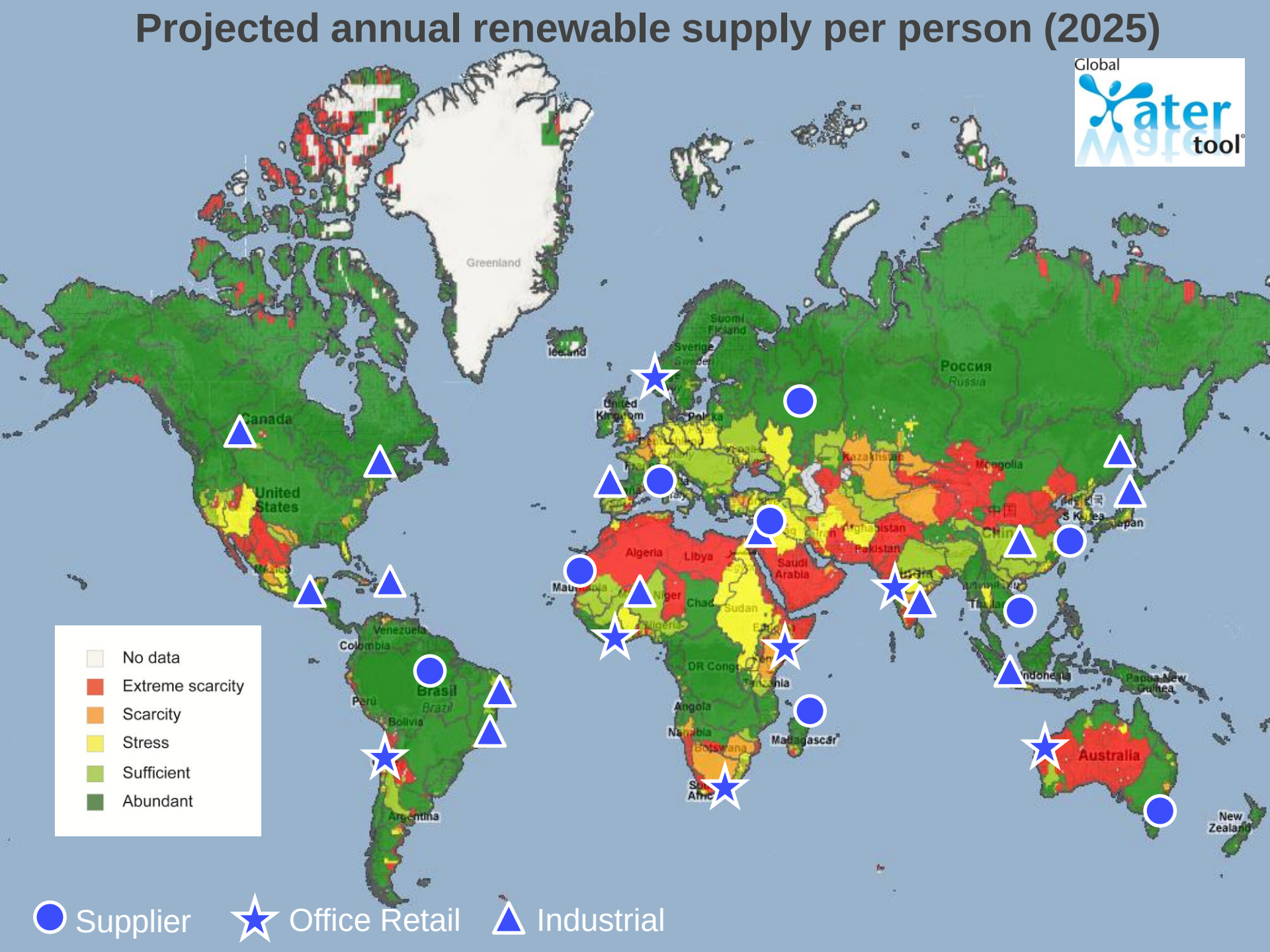


Example of maps

Projected annual renewable supply per person (2025)



Projected annual renewable supply per person (2025)



Water risks in India

- Climate change will exacerbate water availability risks
  - Changing precipitation patterns
  - Reduced glaciation eg in Himalayas
  - Salination of aquifers
- 29% of India's groundwater blocks' = semi-critical, critical, or overexploited. By 2050 this will be 60%
- India's water needs to double by 2030 (McKinsey), and will be 7x greater by 2050 (Central Water Commission)
- Increased demand from other sectors (esp urban development)

"India's water crisis is more serious than its energy crisis"

Montek Singh Ahluwalia, Deputy Chairman, Government Planning Commission

WBCSD India Water Tool

Coming soon: an India-specific water tool developed by and for Indian companies to map their water use and assess risks relative to their national operations and supply chains

- More accurate data to screen water-related risks in India
- Indian industry relevant maps and graphs
- Indian companies define parameters and specific outputs
- Led by ACC, Bayer and Infosys
- Broad consultations with the creation of an Advisory Group
- Free and easy to use building on the successful Global Water Tool

Get involved: contact indiawatertool@gmail.com or boffi@wbcsd.org

GEMI Local Water Tool™

Objectives

- Help companies assess impacts, risks, opportunities and manage water-related issues at specific sites.
- Provide a common and consistent “visualization platform” for internal and external communication.
- Provide interconnectivity between global and local water risk assessments and a uniform approach between site assessments.
- Create a central repository of information to create reports for multiple water questionnaires.

GEMI Local Water Tool™

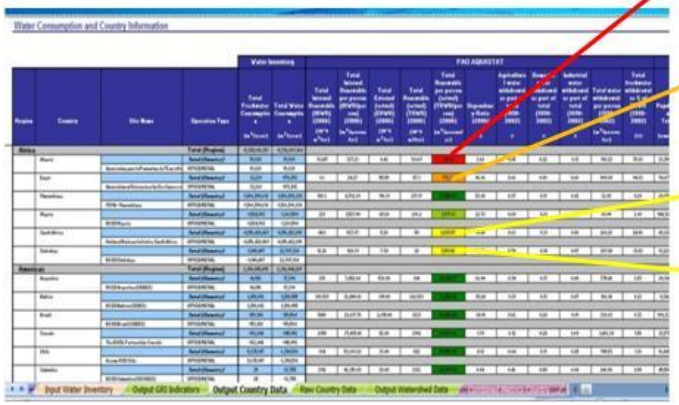
Synergy and Compatibility of Tools

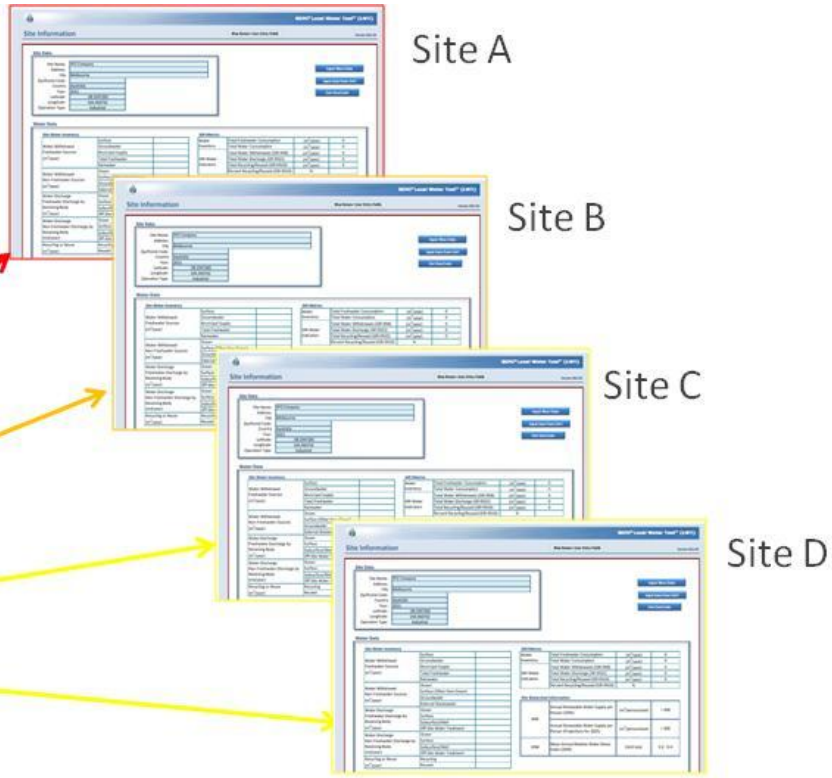
- The GEMI LWT™ was developed in cooperation with the WBCSD and its Global Water Tool.
- The tools are mutually compatible and a provider of best practices for sustainable water management at the global, regional, national and local levels.
- The GEMI and WBCSD water tools are intended for free use by the public and are posted in the public domain.

GEMI Local Water Tool™

When a Company has a global portfolio risk assessment – what happens next?

Specific site internal & external data is transferred to the new *GEMI Local Water Tool*™ MS Excel files for detailed assessment





WBCSD Global Water Tool:
One MS Excel File for Portfolio

GEMI Local Water Tool™:
One MS Excel File per Site

Tool Outcomes - Overall

Identify and rank:

Specific Impacts

Specific Risks

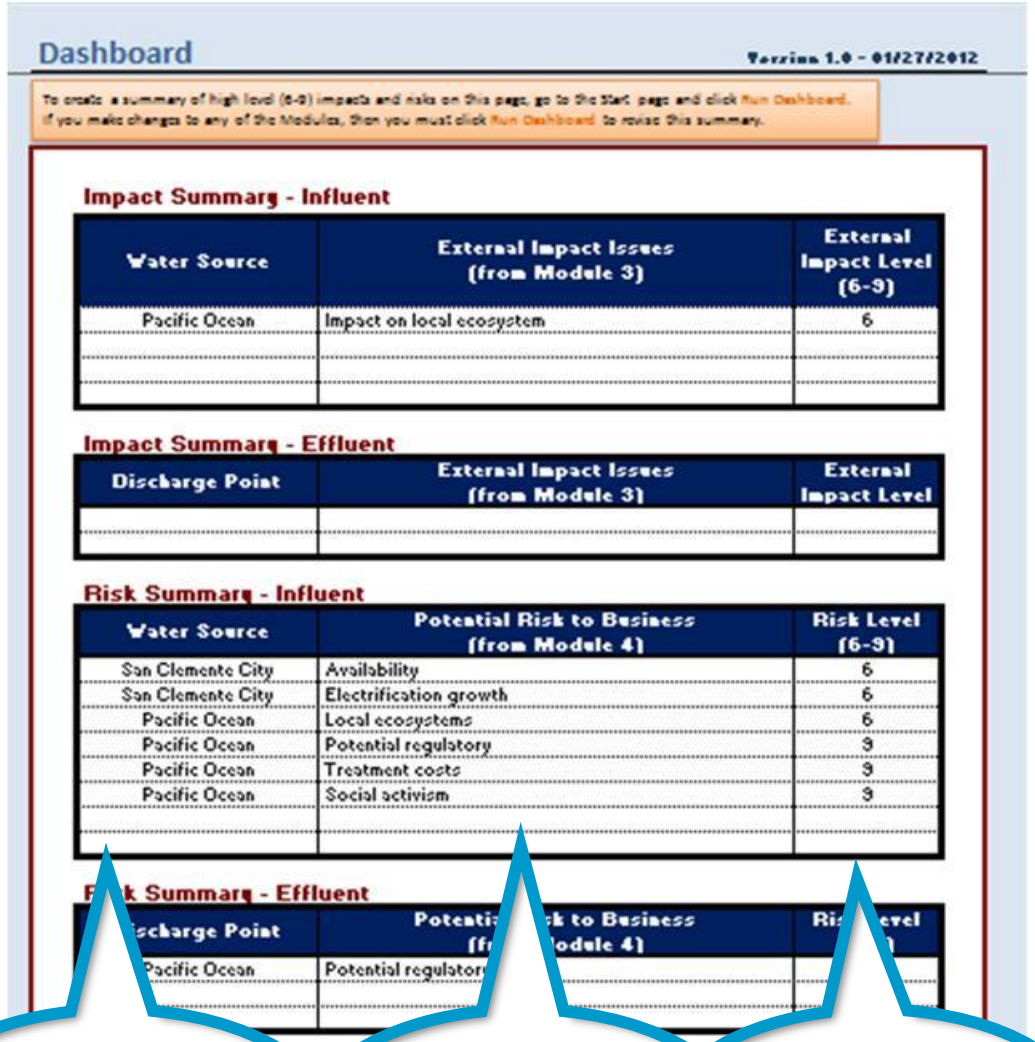
Calculate:

Site-Level Metrics

Document:

Management Plans

Opportunities



Dashboard

Versima 1.0 - 01/27/2012

To create a summary of high level (6-9) impacts and risks on this page, go to the Start page and click Run Dashboard.
If you make changes to any of the Modules, then you must click Run Dashboard to revise this summary.

Impact Summary - Influent

Water Source	External Impact Issues (from Module 3)	External Impact Level (6-9)
Pacific Ocean	Impact on local ecosystem	6

Impact Summary - Effluent

Discharge Point	External Impact Issues (from Module 3)	External Impact Level

Risk Summary - Influent

Water Source	Potential Risk to Business (from Module 4)	Risk Level (6-9)
San Clemente City	Availability	6
San Clemente City	Electrification growth	6
Pacific Ocean	Local ecosystems	6
Pacific Ocean	Potential regulatory	9
Pacific Ocean	Treatment costs	9
Pacific Ocean	Social activism	9

k Summary - Effluent

scharge Point	Potenti k to Business (fr odule 4)	Ris evel
Pacific Ocean	Potential regulator	

For each Water Source or Discharge Point

Specific Impact or Risk Issue

Impacts and Risks with Levels 0-9

wbcsd business ecosy

The Aqua Gauge

A resource for companies for:

- Self-assessment & strategy development
- Investor engagement & communication
- Supplier & industry engagement

The Framework adds to, and builds on, the tools and initiatives already available to companies and investors

In collaboration with:

wbcsd

IRRC Institute

IRBARIS

wbcsd business ecosystems training

Table 1: **Summary of Key Areas of Corporate Water Management Identified in the Aqua Gauge**

Category	Subcategory	Description *The Company:*	Activity	
MEASUREMENT	Data Gathering	*Collects and monitors data related to:*	1.1	Its own regulatory compliance, water use, and discharge
			1.2	Its own environmental and social impacts on direct water sources
			1.3	External factors affecting direct water sources
			1.4	Stakeholder perceptions and concerns related to water issues
			1.5	Effectiveness of suppliers' water management practices
	Risk Assessment	*Identifies and quantifies water-related risks for its:*	1.6	Direct operations
			1.7	Supply chain
MANAGEMENT	Governance	*Sets accountabilities for water through:*	2.1	Board of directors
			2.2	Senior management
			2.3	Public policy and lobbying positions
	Policies & Standards	*Sets performance standards and goals through:*	2.4	Publicly available water policy/statement
			2.5	Standards and goals on water withdrawals/consumption for direct operations
			2.6	Standards and goals on wastewater discharge for direct operations
			2.7	Plans to address local watershed risks
			2.8	Supplier standards and codes, procurement and contracting practices
	Business Planning	*Integrates water in decision-making related to:*	2.9	Business planning and capital allocation
			2.10	Product design and development
			2.11	Opportunity identification
ENGAGEMENT	*Engages with internal and external stakeholders on water-related issues:*		3.1	Local communities
			3.2	Employees
			3.3	Suppliers
			3.4	Governments and regulators
			3.5	NGOs and community groups
			3.6	Other industries/companies/water users
			3.7	Customers
DISCLOSURE	*Discloses:*		4.1	Water-related information
			4.2	Data and analysis related to water in financial filings / reports
			4.3	Audited /assured water-related data

What users say …

"*The Aqua Gauge helped us reconfirm our strengths, and identify areas where we need to do more. For investors and stakeholders, it helps us provide accurate information so they can better assess and understand our water risks.*"

— Prit Kotecha, Manager, Water Strategy & Solutions, Suncor Energy

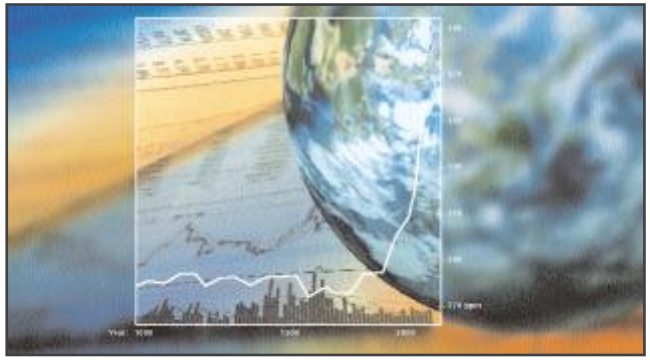
"*The Aqua Gauge is a powerful tool that helps us prioritize and informs our dialogues with companies.*"

— Lara Yacob, Senior Engagement Specialist, Robeco Investment Management

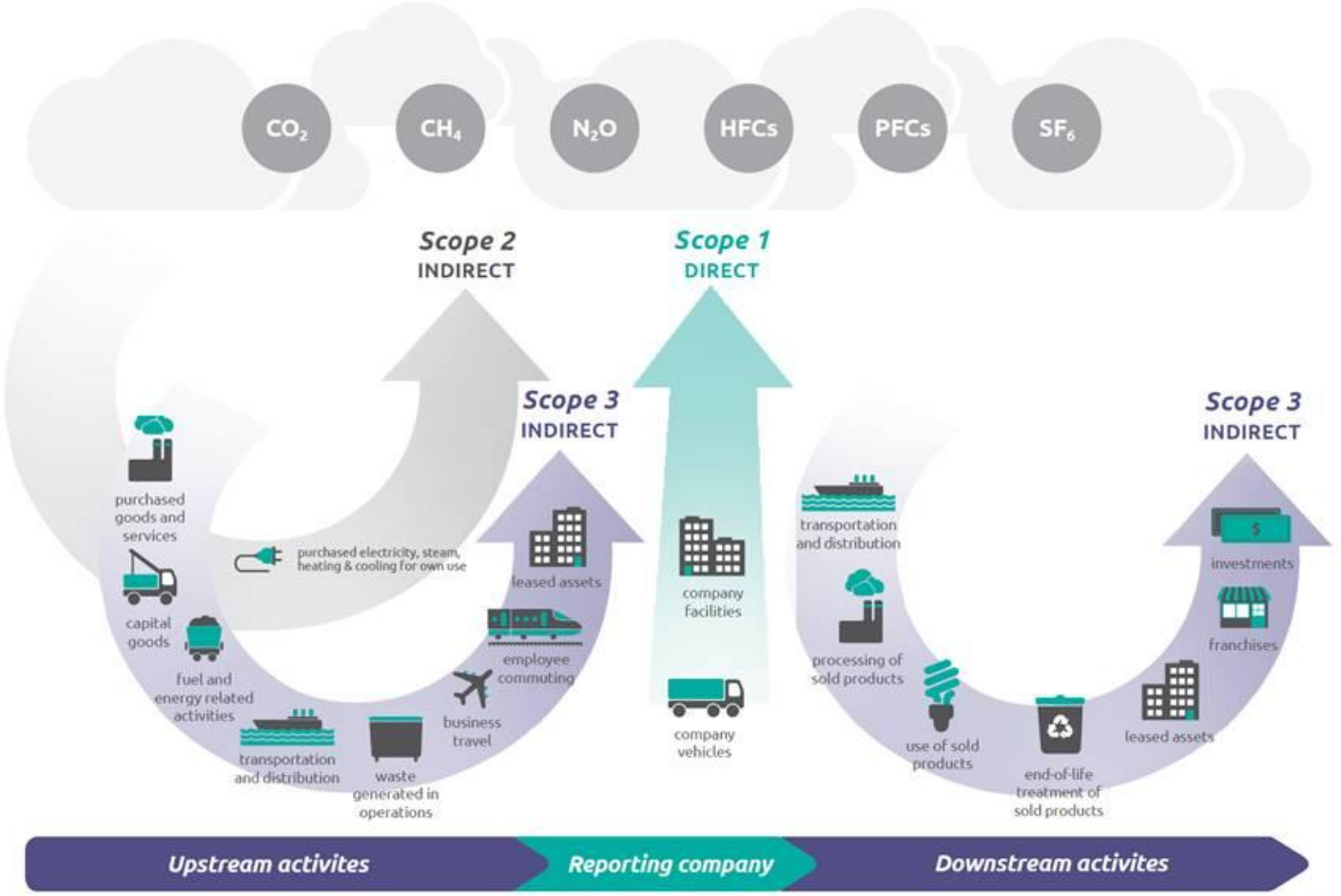
Download free from: www.wbcsd.org/work-program/sector-projects/water.aspx

GHG protocol

- Developed by WBCSD and World Resource Institute.
- Protocol for quantifying and reporting the greenhouse gas (GHG) emissions benefits of climate change mitigation initiatives.
- Corporate Standard adopted by International Organization for Standardization (ISO) and The Climate Registry.
- Specific protocols and calculation tools for various industries.
- Updates include Corporate Value Chain Accounting and Reporting Standard and product lifecycle standard.



GHG protocol (cont.)



Measuring social change

What are social impacts?

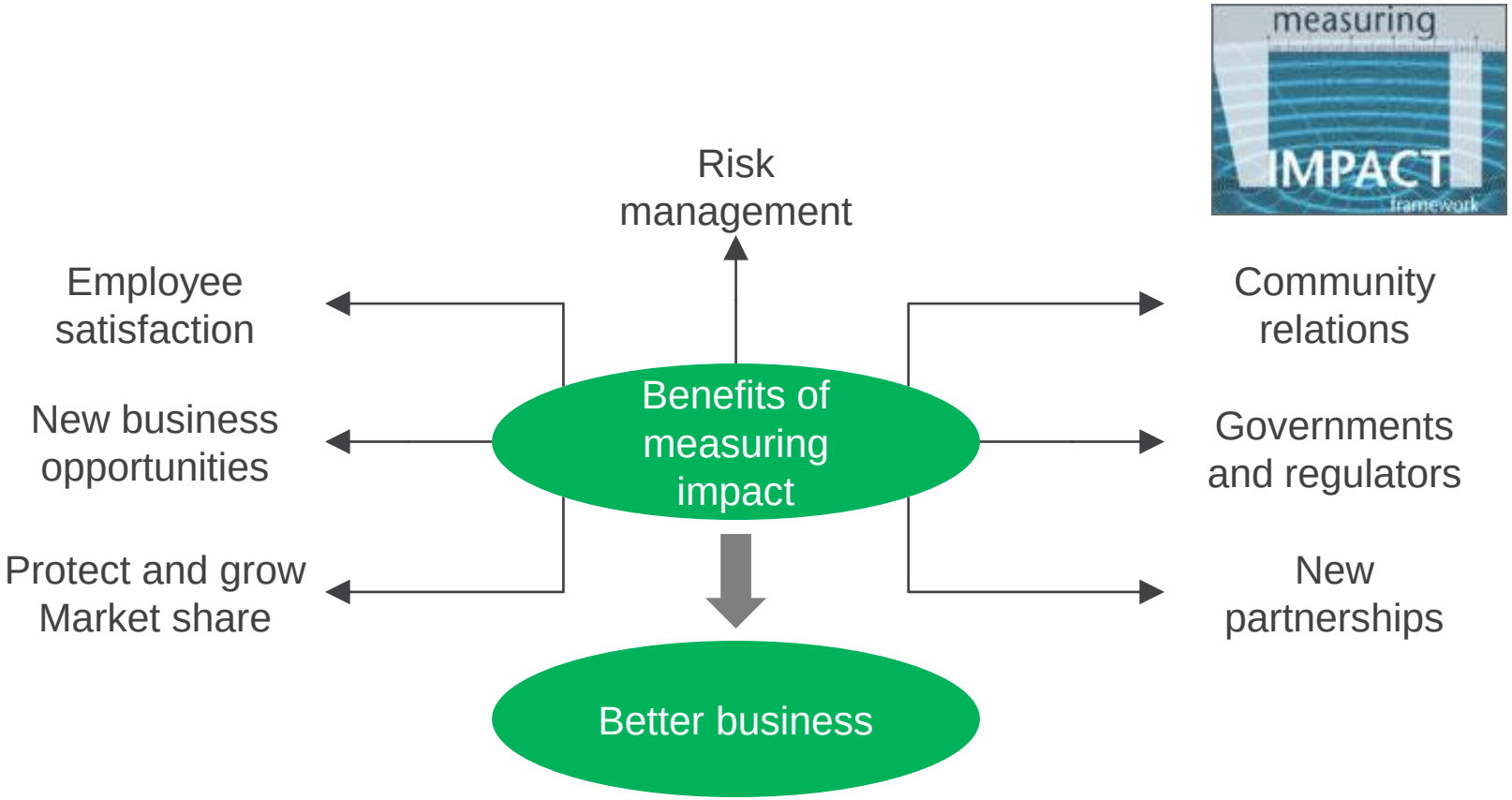
- Social impacts are much broader than the limited issues often considered in environmental impact assessments
  - Social impacts are the consequences to human populations of any public or private actions
  - The term also includes cultural impacts involving changes to the norms, values, and beliefs that guide and rationalize their cognition of themselves and their society
- Social Impact Assessment (SIA) – approach that consists in analysing, monitoring and managing the social consequences of development
- Social Analysis Tools by the World Bank – focus more on the impact of polices and social risk assessment

Measuring Impact Framework

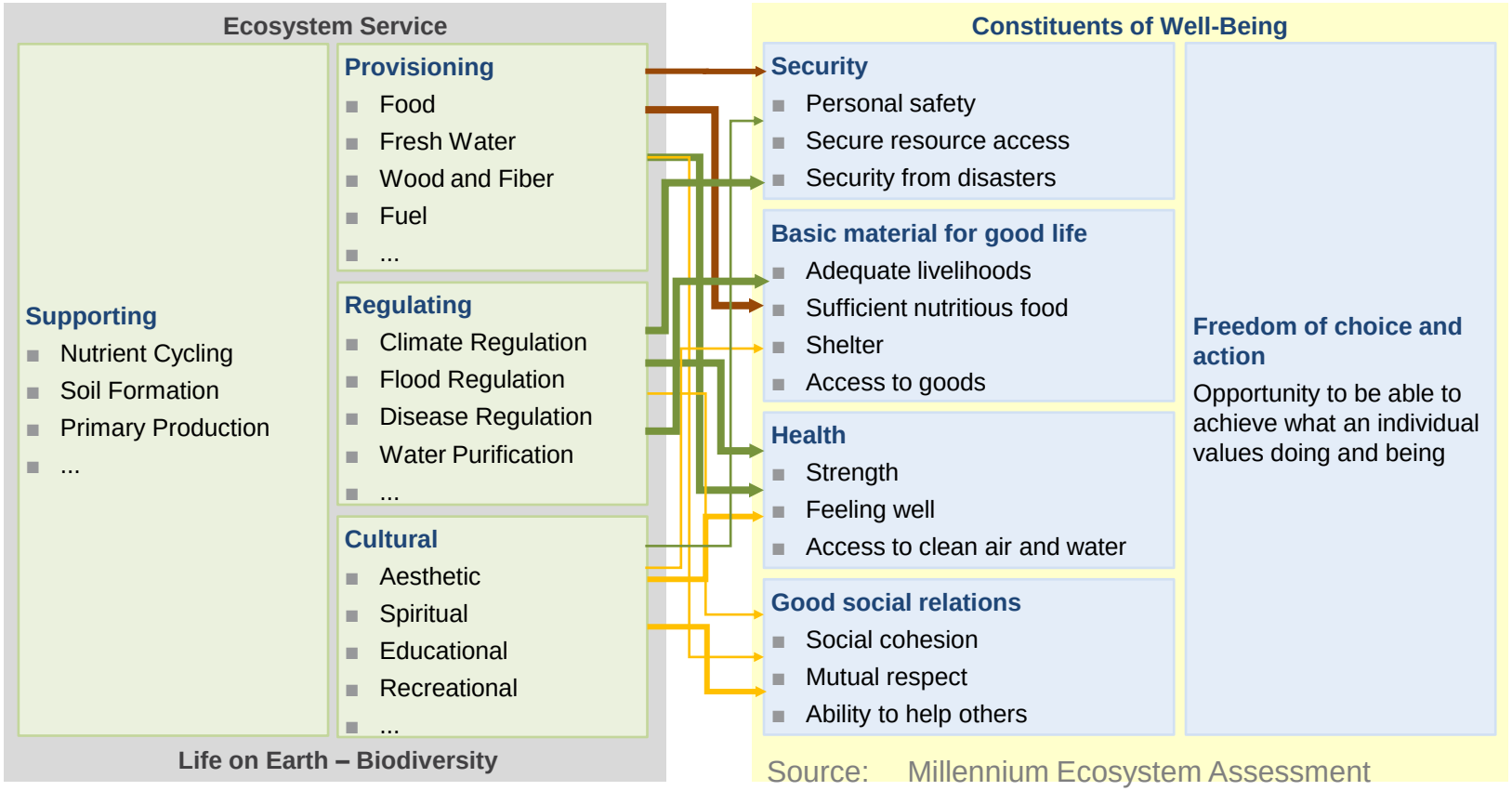
- 'Beyond the bottom line' – why measuring impacts on society makes business sense, and how to do this.
- Framework adopts a 4-step methodology:
  - Step 1: Set boundaries
  - Step 2: Measure direct and indirect impacts
  - Step 3: Assess contribution to development
  - Step 4: Prioritize management response

Measuring Impact Framework – Business case: why measure?

‘Beyond the bottom line’ – why measuring impacts on society makes business sense



Link between ecosystem services and human well-being



Arrow's Color Potential for mediation by socioeconomic factors

Key: Low Medium High

Arrow's Width Intensity of linkages between ecosystem services and human well-being

Key: Week Medium Strong

Source: Millennium Ecosystem Assessment, Synthesis

Measuring Impact Framework –case study 1 Nestlé

Nestlé Peru's 'BEC' programme:

- Distribution model aimed at reaching new markets while improving livelihood of women entrepreneurs and the health and wellbeing of families in urban areas in Lima.

Applied the MIF to:

- Understand the impacts generated by the first phase of the program
- Particular focus on impacts on the 300 wellness advisors, consumers and the Nestlé logistical operator
- Identify key success factors and proposed adjustments
- Select indicators to track progress over time.

Measuring Impact Framework – case study 2 EcoSecurities

EcoSecurities:

- Specializes in sourcing, developing and commercializing carbon credits under the Kyoto Protocol and through voluntary markets internationally
- Applied the MIF to better understand how to measure socio-economic impacts of a landfill-gas-to-flare project

Findings

- Eye-opener on the potential of the Clean Development Mechanism to incentivize and inform better decisions
- Can lead to impacts beyond the intended environmental benefits to include long-term social and economic development

The Equator Principles

History

- Developed in 2002, and launched in 2003, by 9 international banks working in project financing sector, together with World Bank Group and International Finance Corporation (IFC)

What are they?

- Based on IFC Performance Standards and World Bank Guidelines
- Equator Principles Financial Institutions (EPFIs) commit to not providing loans to projects where the borrower will not or is unable to comply with their respective social and environmental policies and procedures
- Adopted voluntarily by financial institutions and are applied where total project capital costs exceed US $10 million
- Provide a minimum standard for due diligence to support responsible risk decision-making

IFC Performance Standard 6

Background

- IFC Performance Standards define their clients' roles and responsibilities for managing projects and the requirements attached to IFC support.
- The standards also include requirements to disclose information.

Objectives of Performance Standard 6: Biodiversity Conservation and Sustainable Natural Resource Management

- *"To protect and conserve biodiversity.*
- *To maintain the benefits from ecosystem services*
- *To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities."*

Source: IFC Performance Standard 6, January 2012.

IFC Performance Standard 6 (cont.)

Scope of PS6

- The applicability of PS6 is established during the Social and Environmental Assessment process.
- Based on the risks and impacts identification process, the requirements of PS6 are applied to projects

  (i) located in modified, natural, and critical habitats;

  (ii) that potentially impact on or are dependent on ecosystem services over which the client has direct management control or significant influence; or

  (iii) that include the production of living natural resources (e.g., agriculture, animal husbandry, fisheries, forestry)"

Requirements

- *"As a matter of priority, the client should seek to avoid impacts on biodiversity and ecosystem services. When avoidance of impacts is not possible, measures to minimize impacts and restore biodiversity and ecosystem services should be implemented. "*

Other tools / frameworks / methodologies

- EcoAIM
- EcoMetrix
- IBAT
- HydroSHEDS
- Living Planet Report
- InVEST
- IUCN Redlist
- IPIECA Ecosystems Services Guidance
- Risk and Opportunities Analysis within the pharmaceuticals sector (KPMG)
- Rivers for Tomorrow Toolkit
- More in development...

Case study 1: ArcelorMittal

The issue

Mining in Liberia – an environmental and social challenge

- ArcelorMittal, the world's leading steel company, started new iron ore mining operations in Liberia at the end of 2011. Liberia has one of the richest seams of iron ore in Africa. However, some of the most accessible seams of ore are in the remote Nimba mountain range, which is one of the few remaining West African wet-zone forests, and home to many unique species and ecosystems. These forests are an important habitat for the smaller mammals that are an integral part of the diet for local people.
- Business impacts on the ecosystems can be profound if they are not managed with extreme care. ArcelorMittal's challenge, therefore, was to establish iron ore extracting operations without destroying these special habitats or fragile local livelihoods.

Photo Credit: ArcelorMittal

Case Study 1: ArcelorMittal (cont.)

Possible tools / frameworks

Tool / framework	Yes / No	Justification
Global Water Tool		
Ecosystem Service Review		
Measuring Impacts Framework		
Social Impact Assessment		
IBAT		
IUCN Redlist		
Other		

Case study 2: Michelin

The issue

Rubber, the basis of Michelin's business

- Michelin, a company producing and selling tires, uses natural rubber, a renewable raw material produced by hevea trees, in its tire manufacturing process.
- At the end of 2001, Michelin was confronted with a combination of crucial issues surrounding its hevea tree plantation in the state of Bahia, on the north-eastern coast of Brazil.
  - Productivity had been decreasing, due to structural factors: topography of the area, decline of the yield due to the age of the trees and the Mycrocyclus Ulei leaf disease.
  - The price of natural rubber had also been decreasing. Michelin was thus forced to decide how to cope with these broad issues.

Photo Credit: Michelin

Case Study: Michelin (cont.)

Possible tools / frameworks

Tool / framework	Yes / No	Justification
Global Water Tool		
Ecosystem Service Review		
Measuring Impacts Framework		
Social Impact Assessment		
IBAT		
IUCN Redlist		
Other		

Case study 3: OHL Development

The issue

Mayakoba Ecotourism Complex

- OHL Development is creating an ecotourism complex on the Mayan Riviera of the Mexican Caribbean. The financial viability of the overall complex and of each hotel depends directly on the quality, structure and functioning of the ecosystems existing on the property, adding to their value and guaranteeing the respect and protection that are necessary.
- The vision for this complex is to establish a new model for tourism development that differs from the traditional; one in which the search for compatibility between business and environmental conservation prevails. It is a question of rationally, intelligently and sustainably making the most of the environmental goods and services of the ecosystems involved in order to meet the demands of financially powerful tourists with the sensitivity to appreciate ecological quality.
- In the region where Mayakoba Tourism Complex is located, an area of 650 hectares to be developed in two phases, there are highly valuable, excellently preserved ecosystems: reefs, sea grasslands, dunes, mangrove swamps and jungle.

Case Study: OHL Development (cont.)

Possible tools / frameworks

Tool / framework	Yes / No	Justification
Global Water Tool		
Ecosystem Service Review		
Measuring Impacts Framework		
Social Impact Assessment		
IBAT		
IUCN Redlist		
Other		

Feedback...

Wrap up

Module 2: Measuring and assessing impacts and dependencies

wbcsd business ecosystems training

Module 2 – Objectives summary

- Understand the basics ✓
- Policy and regulatory frameworks ✓
- The business case for action ✓
- Introduction to the Ecosystem Services Review (ESR) ✓
- Introduction to tools, frameworks and methodologies ✓

Module 2 – Objectives

By the end of the module, trainees will be able to:

- Define key terms and concepts with regard to measuring ecosystem services impact and dependency.
- Understand the business case for assessing impacts and dependencies on ecosystems.
- Apply the Ecosystem Services Review framework/methodology to understand impact and dependency on ecosystem service change.
- Conduct an initial assessment of their company's impacts following the application of the ESR in a case study and the action planning to identify relevant and applicable tools.

Review...

Have we achieved our objectives?

Action planning

Identify how ecosystem services relate to your own company's situation.

Action Planning

- **Step 1: Build awareness**

Consider the use of BET either within your company or as an industry initiative in partnership with other companies

- **Step 2: Use other publicly available resources**

Review WBCSD case study examples and publications, which include:

- Case studies: more than 50 examples, from 16 different countries and 15 sectors complemented by specific Corporate Ecosystem Valuation Road testers
- Publications: *Guide to Corporate Ecosystem Valuation*, *Corporate Ecosystem Valuation: Building the Business Case*, *The Corporate ESR*, *Responding to the Biodiversity Challenge*, *Biodiversity and ecosystem services scaling up business solutions*.

Other key resources: The Economics of Ecosystems and Biodiversity (TEEB) reports (specifically TEEB for business), The Millennium Ecosystem Assessment and the UK National Ecosystem Assessment

Action Planning

- **Step 3: Join networks and contact experts**

Consider joining the WBCSD Ecosystems Focus Area (http://www.wbcsd.org/work-program/ecosystems.aspx)

Make use of the WRI's Ecosystem Services Experts Directory (http://projects.wri.org/ecosystems/experts)

- **Step 4: Piloting**

Pilot biodiversity risk and opportunity assessments internally

Pilot the Corporate Ecosystem Valuation or Ecosystem Services Review for a selected project, site or stage of your supply chain

- **Step 5: Implementation**

Contact the WBCSD Ecosystem Focus Area team (overleaf) and plan a full implementation strategy with the assistance of international experts

Main References - Weblinks

- BSR, 2011, 'Tools for Identifying, Assessing, and Valuing Ecosystem Services'
- Interorganizational Committee on Principles and Guidelines for Social Impact Assessment (2003).
- JRC EU Commission
- Vanclay, F., 2003. SIA principles: International Principles for Social Impact Assessment. Impact Assessment and Project Appraisal.
- Water Footprint Org
- WBCSD. Guide to Corporate Ecosystem Valuation PPT presentation (long and detailed)
- WBCSD. Connecting the Dots presentation
- WBCSD. Corporate Ecosystem Services Review
- WBCSD. Responding to the Biodiversity Challenge: Business contributions to the Convention on Biological Diversity
- WBCSD. Biodiversity and ecosystem services: scaling up business solutions
- WBCSD. Vision 2050
- WBCSD and IFC (2008), Measuring Impact Framework Methodology
- WBCSD and WRI. GHG protocol website
- World Bank online resources
- WRI, Ecosystem Services Review - Case studies
- WWF. Ecological Footprint

Main References - Weblinks (cont.)

Tools and frameworks chapter:

- https://www.ibatforbusiness.org/
- http://www.worldwildlife.org/science/projects/freshwater/item1991.html
- http://wwf.panda.org/about_our_earth/all_publications/living_planet_report/
- http://www.iucnredlist.org/about
- http://www.ipieca.org/news/20110603/new-ecosystem-services-guidance-released
- http://www.riversfortomorrow.org/wft/
- http://www.naturalcapitalproject.org/pubs/Web_BusinessBrochure.pdf

Policy trends:

- http://www.environmentlaw.org.uk/rte.asp?id=108
- http://www.st-andrews.ac.uk/~dib2/atmos/control.html
- http://www.clubofrome.org/?p=326
- http://www.un.org/esa/sustdev/csd/csd15/media/backgrounder_brundtland.pdf
- http://www.un.org/geninfo/bp/enviro.html
- http://www.un.org.geninfo/bp/envirp2/html
- http://ozone.unep.org/Publications/MP_Acheivements-E.pdf
- http://www.cites.org/
- http://www.cites.org/common/prog/african-cherry/11-CUNNINGHAM.pdf
- http://www.doc.govt.nz/upload/documents/about- doc/role/international/cites-crocs.pdf

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December 2012

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