



wbcd business ecosystems training

BET India Module 1

**Understanding the Links between
Ecosystem Services and Business**

Facilitator Notes

December 2012



Business Ecosystems Training – Contributors

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

BET curriculum and structure was designed by 

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.



BET Module 1: Understanding the Links between Ecosystem Services and business

Facilitators' guide: how it works

This Facilitators' guide is set up to provide all the information needed to present the BET course – **Module 1: Understanding the Links Between Ecosystem Services and Business** to a group of delegates

The contents of the guide are:

- ✧ Introduction to the course and course timetable
- ✧ Facilitators' notes

Within the Facilitators' notes, there are three different types of information provided.

1) Session overview and timeline

Overview of each section and suggested times for delivering the session

2) Facilitators' notes

Facilitators' notes – shown on left hand side of each page, these include:

- ✧ Detailed notes as to how to run the session, including how long to spend on each slide
- ✧ Background notes
- ✧ Crib notes for the facilitator to present from



BET Module 1: Understanding the Links between Ecosystem Services and business

Facilitators' guide: how it works (cont.)

3) Media/activity/handout guidance

Media/activity/handout guidance – shown on the right hand side of each page, these include:

- ✧ A copy of the PowerPoint slide the delegates are seeing as you present
- ✧ Guidelines as to how to run group sessions and exercises

Further information

For more information about BET, please refer to the BET Implementation Guide

- ✧ A separate glossary document is provided for this course
- ✧ A separate Frequently Asked Questions (FAQs) document is also provided for this course



Introduction to the course

Audience

The maximum recommended number of delegates is 20. All those attending are assumed to have no technical background in ecosystems. The audience may include:

- ✦ Any business units / functions
- ✦ Front line employees
- ✦ Middle management
- ✦ New joiners

The course may be conducted as internal training or an external course for delegates from a number of companies. This initial module will be an opportunity for delegates to understand how different companies or departments consider/account for biodiversity and ecosystem services currently.

Key Topics

Key topics for Module 1 include:

- ✦ An introduction to the concepts of ecosystems, ecosystem services and managing ecosystem services



BET Module 1: Understanding the Links between Ecosystem Services and business

Introduction to the course (cont.)

Key topics (cont.)

- ✧ The global ecosystems challenge and the drivers of change, and
- ✧ Case studies to illustrate concepts and the business case

Learning Objectives

The course is designed to enable delegates to:

- ✧ Demonstrate an understanding of the key terms and concepts around biodiversity, ecosystems, ecosystem services, environment and sustainability
- ✧ Identify the direct and indirect drivers and causes for biodiversity and ecosystem changes and impacts, and the impacts and dependency of companies on ecosystems services
- ✧ Understand the link between wider sustainability issues and ecosystems services
- ✧ Describe the business case for managing ecosystems and identify the specific business case for their own company from the perspective of both risk and opportunity
- ✧ Understand some of the basic regulatory and policy frameworks currently in place as a key driver of change (Module 4 will cover this topic in detail)
- ✧ Help participants gain knowledge that will help them add value to their organization



BET Module 1: Understanding the Links between Ecosystem Services and business

Introduction to the course (cont.)

Delegate binders distributed on arrival at the course

- ✧ All delegates should be given the links to course material and references for further research
- ✧ Additional handouts should be provided throughout the module and these are located in the annex of this pack
- ✧ The Facilitators Notes should NOT be made available to the delegates in soft copy

Facilitators

- ✧ Two facilitators will be used throughout the training. These should include one specialist with a background in environment or sustainability and a member of the training department
- ✧ Presenting and facilitating will be shared between both facilitators



BET Module 1: Understanding the Links between Ecosystem Services and business

Timetable

	Time	Duration (mins)	Session	Facilitator
➡ ➡		45	Session 1: Icebreaker and introduction	
➡ ➡		30-35	Session 2: Biodiversity, ecosystems and ecosystem services – the basics	
➡		15	Session 3: Introduction to policy trends	
➡		10-25	Session 4: Identifying key ecosystem services – activity	
		30	Coffee break	
➡ ➡		25-30	Session 5: The global ecosystem challenge	
➡		25	Session 6: Case study and exercise	
➡		10	Session 7: Knowledge check	
➡		10	Session 8 a: Re-cap – the business case for action	
➡		5	Session 8 b: How can business respond?	
➡ ➡		25	Session 9: Brainstorming the business case – activity	
➡ ➡		20	Session 10: Wrap up	

Key: ➡ Presentation
➡ Exercise



Session 1: Icebreaker and Introduction

Time guidelines

Time guidelines	Time
Icebreaker – activity	45 mins
Introduction – presentation and activity	

Session objective

To allow the delegates to be introduced to each other.

To establish delegates' level of knowledge, skills to be acquired, and identify learners' needs.

Session format

This session will be run by the two course facilitators – it is your opportunity to make the delegates feel welcome and at ease and to start interactions with other course delegates.

Handouts

Delegates course material desk pack – hardcopies will be laid out on delegate desks in advance of their arrival at the course. This pack contains copies of all of the slides used throughout this course together with relevant handout materials required for each session.

Glossary of terms for Module 1.

Session overview

This primary focus of this session should be giving delegates a warm welcome and ensuring that they feel at ease.

This session allows the course facilitators to introduce themselves and give delegates an overview of their career history.

Delegates can also introduce themselves to each other as part of an icebreaker exercise.

It also explains the structure, content and objectives of the course.



Session 1:

Icebreaker and Introduction

Facilitators' notes

Slide 1: <1 minute

Welcome delegates to the BET course

Slide 2: 1 minute

Tell delegates that the course has been developed by the WBCSD in collaboration with KPMG and an advisory committee made up of several WBCSD member companies, Regional Network partners, academic and UN institutions and NGOs.

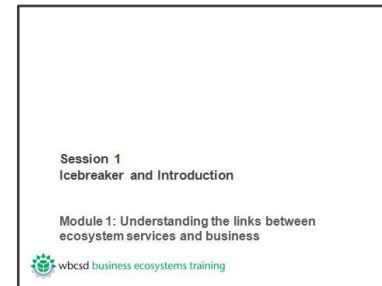
Slide 3: 1 minute

Instructions:

Welcome delegates to the course. Tell delegates that, since you will be working together closely over the next few hours, you would like to start the course by providing them with an opportunity to quickly learn more about each other.

This session is to be run by both facilitators, with both taking part in the icebreaker and introducing themselves.

Media/activity/handout guidance



Session 1:

Icebreaker and Introduction

Facilitators' notes

Time Slide 4/5: 10-20 minutes (depending on number of delegates)

Icebreaker (Facilitator to vary the use of these activities in accordance with the mix of delegates)

[Option 1 slide 4: Interactive]

Module facilitator will put delegates into pairs, who are then given 5 minutes to discuss the following three questions:

- ✧ Current scope of work
- ✧ Knowledge of ecosystems and biodiversity; and
- ✧ What they want out of the course

Delegates then report back to the group, introducing their partner using the information they have learned.

[Option 2 slide 5: Catch the Ball]

Throw a soft ball to one of the delegates who then introduces themselves by answering the three questions below:

- ✧ Current scope of work
- ✧ Knowledge of ecosystems and biodiversity; and
- ✧ What they want out of the course

The delegate then throws the ball to someone else (who has not yet answered).

Instructions:

The facilitator will take notes of expectations and specific learning objectives, including indicators/measures on a flip chart. This will be referenced throughout the day and items checked off. It could also be referred back to at the end of the day ensuring that the training has addressed the expectations and needs of the delegates.

Media/activity/handout guidance

Icebreaker and Introduction

- a) Your current role and scope of work
- b) Your knowledge of ecosystems
- c) What you want to learn from the course and Module 1

 **5 minutes**

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Catch the ball!!!!



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Session 1:

Icebreaker and Introduction

Facilitators' notes

Slide 6: 1 minute

Instructions:

- ✧ Explain where module 1 sits within the broader training available,
- ✧ Facilitator to talk through this slide, introduce the later topics, i.e., modules 2, 3 and 4.

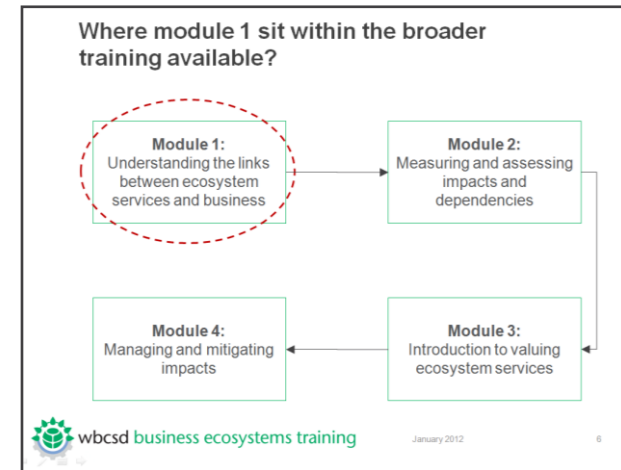
Module 1 of this course is the first of four modules covering specific topics related to business and ecosystems. Module 1 provides an introduction to the links between ecosystem services and business, the remaining modules include:

- ✧ Module 2: Measuring and assessing impacts and dependencies
- ✧ Module 3: An introduction to valuing ecosystem services; and
- ✧ Module 4: Managing and mitigating impacts

The modules are independent of each other and can be taken independently or in succession. This training is designed to be facilitator led but the material is available on the WBCSD website, and is therefore accessible to individual learners. This module does not include any other module recaps.

This module is a primer to help introduce delegates to the links between ecosystem services and business.

Media/activity/handout guidance



Session 1:

Icebreaker and Introduction

Facilitators' notes

Slide 7 & 8: 2 minutes

Instructions:

The facilitator will briefly go through the objectives and the summary objectives for the session and the sections that will be covered in this training module.

Facilitator to provide the linkage between the learning objectives (reported by the delegates in the icebreaker) and the objectives for the course.

Facilitator to offer delegates opportunity to ask questions if wanting to check whether a particular topic is covered.

Slide 9: 1 minute

The facilitator will briefly go through the agenda for the session and the sections that will be covered in this training module.

The facilitator will leave the course timetable displayed throughout the course as a poster.

[Customize – company to provide a quote of specific relevance to their company]

Media/activity/handout guidance

Module 1 objectives

- ✕ Demonstrate an understanding of the key terms and concepts around biodiversity, ecosystems, ecosystem services, environment and sustainability.
- ✕ Identify the direct and indirect drivers and causes for biodiversity and ecosystem changes and impacts, and the impacts and dependency of companies on ecosystem services.
- ✕ Understand the link between ecosystem services and wider sustainability issues.
- ✕ Describe the business case for managing ecosystems and identify the specific business case for their own company from the perspective of both risk and opportunity.
- ✕ Understand some of the basic regulatory and policy frameworks currently in place as a key driver of change (expanded in module 4).
- ✕ Help participants gain knowledge that will help them add value to their organization.



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Module 1 summary – checkpoints

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



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Module 1 – Agenda

Date	Duration (min)	Session	Facilitator
45		Icebreaker and introduction	
30-35		Biodiversity, Ecosystems and Ecosystem Services – the basics	
10		Introduction to Policy Trends	
30		Coffeebreak	
10-25		Identifying key ecosystem services – activity	
20-30		The Global Ecosystem Challenge	
25		Case study and exercise	
60		Lunch	
10		Knowledge check	
10		Ra-cap – the business case for action	
5		Possible actions	
30		Brainstorming the business case – activity	
20		Wrap-up	



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Session 1:

Icebreaker and Introduction

Facilitators' notes

Slide 10: 10 minutes + 5 minute group discussion

Source: University of Minnesota, Institute on the Environment:
<https://www.youtube.com/embed/TartoYpK1yl>

Awareness material – 5 minutes

The facilitator will play a short film on the value of nature.

- ✂ Description: the film shows the different services that nature provides and gives 3 recommendations about how to factor in nature's real worth.

[Interactive - 5 minute group discussion]

Discussion of the material, delegates will be asked to provide comments on the film clip to the facilitator. Key questions to be asked by the facilitator should cover:

1. How fast are we losing natural resources?
2. Why should we be worried if we keep losing these resources at present rate?
3. How do we benefit from ecosystems? (name as many as you can)
4. How can we value nature and its ecosystems?

The facilitator will gather the main points on flip chart from the discussion that will set the context of the training.

Media/activity/handout guidance



Icebreaker and Introduction

Facilitators' notes

Slides 11 & 12: 5 minutes

Sources: United Nations

<http://www.un-documents.net/ocf-02.htm#l>

<http://www.un.org/millenniumgoals/bkgd.shtml>

Instructions:

Facilitator to talk through the definitions of sustainability, facilitator to refer to **slide 11** during the Brundtland definition.

Brundtland report definition: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- ✧ the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and
- ✧ the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs”

– WCED, 1987

Corporate Sustainability: Managing resources to ensure that a business can survive and maintains conditions under which it can produce goods and services and exist in harmony with nature. It is therefore important to ensure that a business has knowledge of its dependencies on both ecology and society. (**Source:** Adapted from Brundtland definition)

Millennium Development Goals: In September 2000, world leaders adopted the United Nations Millennium Declaration, committing to a new global partnership to reduce extreme poverty and setting out a series of time-bound targets – with a deadline of 2015 – that have become known as the Millennium Development Goals.

Media/activity/handout guidance

Introduction to Sustainable Development

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.”

Corporate sustainability

“Managing resources to ensure that a business can survive and maintains conditions under which it can produce goods and services and exist in harmony with nature. It is therefore important to ensure that a business has knowledge of its dependencies on both ecology and society.”

Millennium Development Goals

Eradicate Extreme Poverty and Hunger; Achieve Universal Primary Education; Promote Gender Equality and Empower Women; Reduce Child Mortality; Improve Maternal Health; Combat HIV/AIDS, Malaria and Other Diseases; Ensure Environmental Sustainability; and Develop a Global Partnership for Development.

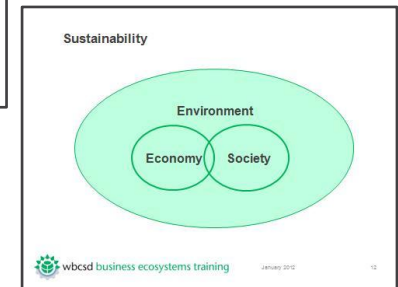
Sources: <http://www.un-documents.net/ocf-02.htm#l>
<http://www.un.org/millenniumgoals/bkgd.shtml>



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- ✧ Goal 1: Eradicate extreme poverty and hunger,
- ✧ Goal 2: Achieve universal primary education,
- ✧ Goal 3: Promote gender equality and empower women,
- ✧ Goal 4: Reduce child mortality,
- ✧ Goal 5: Improve maternal health,
- ✧ Goal 6: Combat HIV/AIDS, malaria and other diseases,
- ✧ Goal 7: Ensure environmental sustainability,
- ✧ Goal 8: Develop a Global Partnership for Development

Source: United Nations Development Programme

<http://www.undp.org/mdg/basics.shtml>

[Customize slide by adding own definitions of sustainability and general sustainability policies]



Session 1:

Icebreaker and Introduction

Facilitators' notes

Slide 13: >1 minute

Instructions:

Facilitator to talk through these company quotes as examples of how companies are responding to sustainability issues internationally.

Unilever:

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

Source: Unilever,

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

In November 2010 Unilever announced its commitment to source 100% of its agricultural raw materials sustainably by 2020. It also committed to link more than 500 000 smallholder farmers and small-scale distributors into its supply chain.

Sourcing sustainably means that farmers and farm workers can improve their living conditions and earn an income they can live on. It also helps to maintain and improve soil fertility, enhance water quality and availability and protect biodiversity. The approach is to work closely with our suppliers to help them improve their farming practices and minimise their environmental impacts.

Holcim:

"Our commitment is to continuously improve our environmental performance and provide positive contributions to our business and to society."

Source: Holcim, <http://www.holcim.com/fileadmin/templates/CORP/doc/SD/envPolicywebversion.pdf>

"There are four main pillars of our Environmental Policy, for which Holcim has assigned principles to guide its progress: Management systems, Resources Utilization, Environmental Impacts, Stakeholder relations"

Media/activity/handout guidance



Kimberly-Clark:

"25 percent reduction in manufacturing water use by 2015"

Source: Kimberly-Clark, http://www.cms.kimberly-clark.com/Umbraco/Images/UmbracoFileMedia/2010SustainabilityReport_umbracoFile.pdf

"Through Vision 2010, we implemented a number of water conservation strategies and reduced our water use by 11% between 2005 and 2010. But given the importance of this issue globally, we believe it is necessary to do much more and have therefore voluntarily adopted more stringent standards. Working with our manufacturing facilities, we have mapped out a detailed plan of process improvements and capital investments that will enable us to reach these ambitious goals. As we prepare for dealing with water scarcity risks, we're guided by the findings of a Global Water Risk Assessment conducted for us by Imperial College of London's Centre for Environmental Policy."



Session 1:

Icebreaker and Introduction

Facilitators' notes

Slides 14-15: 1 minute

Instructions:

Facilitator to talk through these company quotes as examples of how companies are responding to sustainability issues in India.

ITC:

"ITC, the only company in the world to be carbon positive, water positive & solid waste recycling positive"

Source: ITC <http://www.itcportal.com/sustainability/environmental-stewardship.aspx>

ITC's sustainability initiatives, in the area of water, focuses on:

- Conservation to achieve the lowest specific water consumption (water used per unit of production)
- Zero Effluent Discharge by treating and recycling all waste water
- Rainwater Harvesting both at the Company premises and through external watershed development projects in socially relevant areas have consolidated ITC's water positive status for a decade now. Total rainwater harvesting potential so far developed by the Company is more than 2 times the total water consumed by its operations.

ONGC (Oil and Natural Gas Corporation Ltd.):

"Our vision is to gradually work towards reducing our carbon and water footprint, innovate beyond compliance management of waste and prudent energy management and biodiversity conservation."

Source: ONGC

<http://www.ongcindia.com/download/Corp%20Sust%20Report/SD-English.pdf>

We consider that sustainable management of water, materials and energy addressing climate change through carbon management are our key broad responsibility towards environment sustainability.

Media/activity/handout guidance



Rio Tinto, India:

"Respect for the environment is central to our approach to sustainable development. Wherever possible we prevent, or otherwise minimise, mitigate and remediate, harmful effects of the Group's operations on the environment."

Source: Rio Tinto India,

http://www.riotintoindia.com/ENG/ourapproach/375_sustainable_development.asp



Session 1:

Icebreaker and Introduction

Facilitators' notes

Slides 14-15 (cont.): 1 minute

Instructions:

Facilitator to talk through these company quotes as examples of how companies are responding to sustainability issues in India.

Tata Chemicals:

"Reduce water and energy consumption in usage of products through product design and promotion of better usage practices."

Source: Tata Chemicals

http://www.tatachemicals.com/Sustainability/downloads/2008-10/sustainability_report2008-10.pdf

Tata Chemicals reviews the strategic objectives and the performance against targets and revisits the same every year as part of strategic planning process. The above goal is part of a longer list of goals that have been identified as "sustainability goals linked to material concerns"

Reliance:

"Utilize energy resources in a responsible and efficient manner so as to reduce emissions and generation of effluents and waste products."

Source: http://www.ril.com/html/aboutus/health_safety_environment.html

This goal is part of Reliance's Health, Safety and Environment Policy.

Media/activity/handout guidance



Dabur:

"At Dabur, our aim is to make our own activities more sustainable and encourage our consumers, suppliers and others to do the same"

Source: Dabur,

http://www.dabur.com/en/Investors1/Annual_reports/2011-12/Dabur-BR-Report-2012.pdf

"Small yet significant steps are being taken to not only reduce our carbon footprint but also continuously monitor waste generation and constantly improve effluent waste treatment initiatives across all our manufacturing units. Efforts are also on in full swing to conserve and maintain ground water level through a variety of measures. We are proud to announce that Dabur has achieved zero discharge of water at its units. Rain water harvesting continues to be a focused activity at our manufacturing plants. While a lot of ground still needs to be covered to emerge a Water-Positive Corporation, we are confident that these small steps would surely go a long way in fulfilling this dream."



Session 2: Biodiversity, Ecosystems and Ecosystem Services – the basics

Time guidelines

Time guidelines	Time
Biodiversity, Ecosystems and Ecosystem Services – presentation and activity.	30-35 mins

Session objective

Clarify key words and themes picked up by the film clip. Will set up the base-language for the rest of the module.

Session format

This session will be run in two phases:

1. Presentation: A course facilitator will talk through key concepts and definitions.
2. Interactive: Two course facilitators will deliver a group activity.

Handouts

Delegates course material desk pack – hardcopies will be laid out on delegate desks in advance of their arrival at the course. This pack contains copies of all of the slides used throughout this course together with relevant handout materials required for each session.

Session overview

The primary focus of this session will be to provide delegates with the base language and terminology they will use for all the modules.

It will allow delegates to clarify and strengthen previous knowledge, and will allow delegates that are new to the subject to gain basic knowledge.

It also aims to raise awareness of the importance of ecosystem services and the benefits they provide.



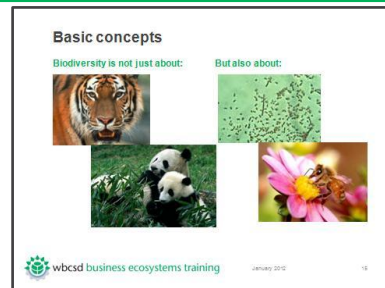
Session 2:

Biodiversity, Ecosystems and Ecosystem Services – the basics

Facilitators' notes	Media/activity/handout guidance
Slide 16: <1 minute Objective: clarify key words and themes. This session will set up the base-language for the rest of the module. Background: Total time for Session 2 presentation: 30 minutes ✂ 25 minutes presentation ✂ 5 minutes for activity This session describes key concepts and also links the themes of biodiversity, ecosystems and ecosystem services together. The session includes a discussion around the advantages of using the ecosystems approach. Instructions: Facilitators should read the content of this document to familiarize themselves with the terminology and to deliver the key messages displayed on each slide. It is strongly recommended that this section is covered by a content expert to ensure that the training is delivered in a credible manner. Where possible, examples should be prepared by the facilitator to help bring each definition to life for the audience.	Session 2 Biodiversity, Ecosystems and Ecosystem Services – the basics Module 1: Understanding the links between ecosystem services and business  wbcSD business ecosystems training



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes	Media/activity/handout guidance
Slide 17: 1 minute Sources: Slide 9 <i>Connecting the dots</i> (2005) , WBCSD http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true (link to connecting the dots at the bottom of the page). <i>Corporate Ecosystem Services Review (2008)</i> WBCSD [online]. [Accessed 2 August 2011]. Available from: http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=28&nosearchcontextkey=true Instructions: Set the context for the session before providing definitions to the group. Facilitator to show that biodiversity is not just about the animals we may recognise but also about other species including: bacteria etc.	



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 18 & 19: 3 minutes

Sources:

Slide 9 *Connecting the dots* (2005) , WBCSD

<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Corporate Ecosystem Services Review (2008) WBCSD [online]. [Accessed 2 August 2011]. Available from:

<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=28&nosearchcontextkey=true>

Instructions: Facilitator to talk through the following:

Ecosystems provide businesses—as well as people and communities—with a wide range of goods and services. For example, forests supply timber and wood fibre, regulate climate by absorbing carbon dioxide, and yield genetic resources for medicines. Coral reefs attract tourists, serve as nurseries for commercial fish species, and protect properties along coastlines from storm surges. Wetlands absorb waste, help reduce floods, and purify water. These and other benefits from nature are known as “ecosystem services”.

Facilitator to talk through the following **definitions**:

Biodiversity is the variability among living organisms within species, between species, and between ecosystems. It is this genetic variability (phenotype, genotype and environment) which gives organisms within ecosystems the ability to respond to stress. By having a range of organisms adapted to thrive in different circumstances, the ecosystem is more resilient.

An **Ecosystem** is a dynamic complex of plant, animal, and micro-organism communities and their nonliving environment interacting as a functional unit.

Media/activity/handout guidance

A few definitions

Biodiversity
The variability among living organisms within species and ecosystems.

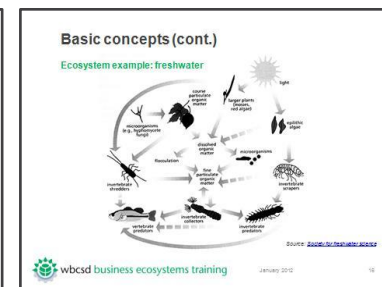
Ecosystem
A dynamic complex of plant, animal, and micro-organism communities and the non-living environment.

Ecosystem services
The benefits that people obtain from ecosystems – the goods and services of nature.



Source: *Connecting the dots* slide 9 and WB/CSD, 2005. *Corporate Ecosystem Services Review* (2008), (Accessed 2 August 2011). Available from: <http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=28&nosearchcontextkey=true>

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NOTE this is similar to the structure of a company i.e., each specific unit within a company has their own function e.g. IT, finance, sales and so on. The loss of any one of these functions may compromise the ability of a company to function, just as the loss of a species may compromise the ability of an ecosystem to function.

Examples of ecosystems include: freshwater (show slide 18) deserts, coral reefs, wetlands, rain forests, boreal forests, grasslands, urban parks, and cultivated farmlands. Ecosystems can be relatively undisturbed by people, such as virgin rain forests, or can be modified by human activity, such as farms.

Ecosystem services — The concept of an ecosystem provides a valuable framework for analyzing and acting on the linkages between people and the environment. Sometimes called “environmental services” or “ecological services”, ecosystem services are the benefits that people obtain from ecosystems. Examples include freshwater, timber, climate regulation, protection from natural hazards, erosion control, and recreation. The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 20: 2 minutes

Sources:

Connecting the dots (2005) , WBCSD

<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&searchcontextkey=true> (link to connecting the dots at the bottom of the page).

Corporate Ecosystem Services Review (2008) WBCSD [online]. [Accessed 2 August 2011]. Available from:

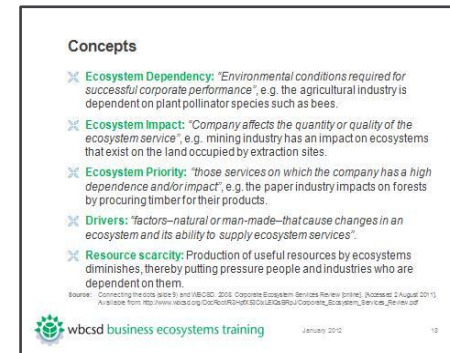
<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=28&nosearchcontextkey=true>

Instructions:

Facilitator to talk through the following **Definitions**:

- ✧ 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, for example many agricultural businesses are dependent on the biodiversity of pollinator species such as bees.
- ✧ A company **impacts** an ecosystem service if the company affects the quantity or quality of the ecosystem service. E.g. the mining industry has an impact on the ecosystems that exist on the land that is affected during extraction of minerals.
- ✧ 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. E.g. the paper and pulp industry impacts on forests by procuring timber for their products.

Media/activity/handout guidance



- ❖ **Drivers** are factors—natural or man-made—that cause changes in an ecosystem and its ability to supply ecosystem services. E.g. Changes in land use and land cover (deforestation, conversion of natural grasslands to farms, and drainage of wetlands), or overconsumption (ecosystem services such as capture fisheries, wild foods, and freshwater can be exploited beyond their capacity to replenish themselves).
- ❖ **Resource scarcity:** As resource scarcity increases, the level of management to ensure the efficient use of resources will increase, likewise legislation and policy to ensure that resources are not wasted are also likely to increase (some examples are shown on the next slide).

Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 21: 3 minutes

Sources:

Slide 10 *Connecting the dots* (2005), WBCSD
<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).
Corporate Ecosystem Services Review (2008) WBCSD [online].
[Accessed 2 August 2011]. Available from:
<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=28&nosearchcontextkey=true>

Instructions:

Facilitator to introduce the Millennium Ecosystem Assessment, which is explored in more detail in Session 6, alongside the different categories of ecosystem services. The facilitator should emphasize that not everyone agrees with Millennium Ecosystem Assessment classification and that some academics have taken the analysis further. However the WBCSD find that this approach is suitable for a business audience.

Background:

Ecosystem services are the benefits that humans obtain from ecosystems, and they are produced by interactions within the ecosystem. Ecosystems like forests, grasslands, mangroves, and urban areas provide different services to society.

Media/activity/handout guidance



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 21 (cont.): 3 minutes

The Millennium Ecosystem Assessment (MA) sheds light on the importance of ecosystem services for human well-being and business development. The Assessment was a four-year international audit of ecosystems that involved more than 1,360 scientists, economists, business professionals, and other experts from 95 countries.

Its findings provide the first state-of-the-art scientific evaluation of the condition and trends in the world's ecosystems and the services they provide, as well as the scientific basis for action to conserve and use them sustainably. The MA defined an ecosystem services framework consisting of four categories of services:

- ✧ **Provisioning services:** The goods or products obtained from ecosystems such as food, freshwater, timber, and fiber.
- ✧ **Regulating services:** 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.
- ✧ **Cultural services:** The nonmaterial benefits obtained from ecosystems such as recreation, spiritual values, and aesthetic enjoyment.
- ✧ **Supporting services:** The natural processes such as nutrient cycling and primary production that maintain the other services.

Media/activity/handout guidance



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 22: 3-5 minutes

Sources:

Slide 12 *Connecting the dots* (2005) , WBCSD
<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Corporate Ecosystem Services Review (2008) WBCSD [online].
[Accessed 2 August 2011]. Available from:

<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=28&nosearchcontextkey=true>

Instructions:

Facilitator to talk through the following: the “provisioning” services are the goods and products obtained by ecosystems. All companies depend on these services to some degree or other while many companies impact them as well. For instance, nearly every industry sector relies on freshwater. Many others use wood, genetic resources, biomass fuels, wild fish, and bio-chemicals, to name a few.

[Optional Interactive exercise]

Facilitator to ask for the delegates to shout out examples of provisioning services, collecting them on a flip chart, before revealing them on the slide. Facilitator to talk through the provisioning services listed on the slide and compare to those shouted out by the delegates.

Media/activity/handout guidance



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 22 (cont.): 3-5 minutes

Sources:

Slide 12 *Connecting the dots* (2005), WBCSD

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Corporate Ecosystem Services Review (2008) WBCSD [online].

[Accessed 2 August 2011]. Available from:

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=28&nosearchcontextkey=true>

Provide an example of one of the following:

Food Products derived from plants, animals and microbes e.g.

- ✧ Crops: grains, vegetables, fruits,
- ✧ Livestock: Animals raised for domestic or commercial consumption or use (e.g. chicken, pigs, cattle),
- ✧ Capture fisheries: Wild fish captured through trawling and other non-farming methods (e.g. cod, crabs, tuna),
- ✧ Aquaculture: Fish, shellfish, and/or plants that are bred and reared in ponds, enclosures, and other forms of freshwater or saltwater confinement for purposes of harvesting (e.g. shrimp, oysters, salmon)
- ✧ Wild foods: Edible plant and animal species gathered or captured in the wild (e.g. fruits and nuts, fungi, bushmeat).

Media/activity/handout guidance



Fiber

Materials including wood, jute, cotton, hemp, silk and wool. Products made from trees harvested from natural forest ecosystems, plantations, or non-forested lands (e.g. industrial round wood, wood pulp, paper). Other fibers (e.g. cotton, hemp, silk): Non-wood and nonfuel fibers extracted from the natural environment for a variety of uses.

Emphasize that biodiversity underpins all of these services



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 22 (cont.): 3-5 minutes

Sources:

Slide 12 *Connecting the dots* (2005), WBCSD

<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Corporate Ecosystem Services Review (2008) WBCSD [online].

[Accessed 2 August 2011]. Available from:

<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=28&nosearchcontextkey=true>

Potential examples continued

Fuel

Biological material derived from living or recently living organisms – both plant and animal – that serves as a source of energy., e.g., wood, biomass, etc.

Freshwater

Inland bodies of water, groundwater, rainwater, and surface waters for household, industrial, and agricultural uses.

Genetic resources

Genes and genetic information used for animal breeding, plant improvement, and biotechnology.

Biochemicals, natural medicines, and pharmaceuticals

Medicines, biocides, food additives, and other biological materials derived from ecosystems for commercial or domestic use.

Media/activity/handout guidance



Ornamental resources: Animal and plant products used as ornaments.

Emphasize that biodiversity underpins all of these services



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 23: 2 minutes

Sources:

Slide 13 *Connecting the dots* (2005), WBCSD
<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).
Corporate Ecosystem Services Review (2008) WBCSD [online].
 [Accessed 2 August 2011]. Available from:
<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=28&nosearchcontextkey=true>

Instructions:

Facilitator talk through the following: The “regulating” services are the benefits obtained from an ecosystem’s control of natural processes. Again, businesses both depend upon and impact these services. Agribusiness relies on natural pollination and erosion control. The insurance industry benefit from the storm protection provided by wetlands and barrier reefs. Others benefit from the carbon sequestration services that forests provide.

Provide an example of one of the following:

Air quality regulation: Ecosystems both contribute chemicals to and extract chemicals from the atmosphere, influencing many aspects of air quality.

Climate regulation: The global influence ecosystems have on global climate by emitting greenhouse gases or aerosols to the atmosphere or by absorbing greenhouse gases or aerosols from the atmosphere (CO₂ sequestration):

Media/activity/handout guidance



Climate regulation (cont.):

- ✧ Forests capture and store carbon dioxide,
- ✧ Cattle and rice paddies emit methane.

Emphasize that biodiversity underpins all of these services



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 23: 3 minutes (cont.)

Sources:

Slide 13 *Connecting the dots* (2005), WBCSD
<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Corporate Ecosystem Services Review (2008) WBCSD [online].
 [Accessed 2 August 2011]. Available from:

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=28&nosearchcontextkey=true>

Potential examples continued

Regional and local climate regulation: The influence ecosystems have on local or regional temperature, precipitation, and other climatic factors

- ✧ Forests can impact regional rainfall levels

Water purification and waste treatment: The role ecosystems play in the filtration and decomposition of organic wastes and pollutants in water; assimilation and detoxification of compounds through soil and subsoil processes:

- ✧ Wetlands remove harmful pollutants from water by trapping metals and organic materials,
- ✧ Soil microbes degrade organic waste, rendering it less harmful.

Water flow regulation: The influence ecosystems have on the timing and magnitude of water runoff, flooding, and aquifer recharge, particularly in terms of the water storage potential of the ecosystem or landscape

- ✧ Permeable soil facilitates aquifer recharge

Media/activity/handout guidance



- ✧ River floodplains and wetlands retain water – which can decrease flooding during runoff peaks – reducing the need for engineered flood control infrastructure

Emphasize that biodiversity underpins all of these services



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 23: 3 minutes (cont.)

Sources:

Slide 13 *Connecting the dots* (2005), WBCSD

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Corporate Ecosystem Services Review (2008) WBCSD. [online].

[Accessed 2 August 2011]. Available from:

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=28&nosearchcontextkey=true>

Potential examples continued

Natural hazard regulation: The capacity for ecosystems to reduce the damage caused by natural disasters such as hurricanes and to maintain natural fire frequency and intensity:

- ✧ Mangrove forests and coral reefs protect coastlines from storm surges,
- ✧ Biological decomposition processes reduce potential fuel for wildfires.

Erosion regulation: The role vegetative cover plays in soil retention

- ✧ Vegetation such as grass and trees prevents soil loss due to wind and rain and prevents siltation of water ways
- ✧ Forests on slopes hold soil in place, thereby preventing landslides

Media/activity/handout guidance



Disease regulation: The influence that ecosystems have on the incidence and abundance of human pathogens:

- ✧ Some intact forests reduce the occurrence of standing water –a breeding area for mosquitoes– which can lower the prevalence of malaria.

Pest regulation: The influence ecosystems have on the prevalence of crop and livestock pests and diseases

- ✧ Predators from nearby forests – such as bats, toads, and snakes – consume crop pests

Pollination: The role ecosystems play in transferring pollen from male to female flower parts:

- ✧ Bees from nearby forests pollinate crops.

Emphasize that biodiversity underpins all of these services



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes	Media/activity/handout guidance
Slide 24: 2 minutes Sources: Slide 13 <i>Connecting the dots</i> (2005), WBCSD http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true (link to connecting the dots at the bottom of the page). <i>Corporate Ecosystem Services Review</i> (2008) WBCSD. [online]. [Accessed 2 August 2011]. Available from: http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=28&nosearchcontextkey=true Instructions: Facilitator talk through the following: The “cultural” services are the non-material benefits obtained from ecosystems. The tourism industry, for example, relies on these services to attract vacationers. On the other hand, many companies face risks due to the impacts they have on iconic species and ecosystems on which people place high ethical or religious value. [Optional Interactive exercise] Facilitator to ask for the delegates to shout out examples of cultural services, collecting them on a flip chart, before revealing them on the slide. Facilitator to talk through the cultural services on the slide and compare to those shouted out by the delegates. Provide an example of one of the following: ✧ Recreation: Recreational pleasure people derive from natural or cultivated ecosystems (e.g. hiking, camping, bird watching, going on safari).	✧ Ecotourism: travel and tourism specifically relating to the natural environment or wildlife locations. ✧ Spiritual and religious value e.g. those derived from sacred lands and rivers, ✧ Ethical and existence values: The spiritual, religious, aesthetic, intrinsic, “existence,” or other values people attach to ecosystems, landscapes, or species. This can also include cultural heritage values, for example, many societies place high value on the maintenance of either historically important landscapes. ✧ Education values e.g. the use of ecosystems and nature for education <i>Emphasize that biodiversity underpins all of these services</i>

Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 25: 2 minutes

Sources:

Slide 14 *Connecting the dots* (2005), WBCSD
<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Corporate Ecosystem Services Review (2008) WBCSD [online].
 [Accessed 2 August 2011]. Available from:
<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=28&nosearchcontextkey=true>

Instructions:

Facilitator talk through the following: The “supporting” services are the natural processes that maintain the other ecosystem services. Some of these services are more challenging to assess and measure compared to the other three categories. However they are just as important, if not even more critical.

Provide an example of one of the following:

Nutrient cycling: The role ecosystems play in the flow and recycling of nutrients approx. 20 of which are essential for life (e.g., nitrogen, sulphur, phosphorus, carbon) through processes such as decomposition and/or absorption:

- ✧ Decomposition of organic matter contributes to soil fertility

Primary production: The formation of biological material by plants through photosynthesis and nutrient assimilation:

- ✧ Algae transform sunlight and nutrients into biomass, thereby forming the base of the food chain in aquatic ecosystems

Media/activity/handout guidance



Photosynthesis: The production of oxygen necessary for most living organisms.

Water cycling: The flow of water through ecosystems in its solid, liquid, or gaseous forms:

- ✧ Transfer of water from soil to plants, plants to air, and air to rain.

Emphasize that biodiversity underpins all of these services



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slides 26 & 27: 2 minutes

Sources:

Markets for ecosystem services: New challenges and opportunities (2007), WBCSD

<http://www.wbcd.org/Pages/EDocument/EDocumentDetails.aspx?ID=27&NoSearchContextKey=true>

TEEB. Economic and Ecological Foundations (D0).

<http://www.teebweb.org/EcologicalandEconomicFoundation/tabid/1018/Default.aspx>

Slide 24

Instructions:

Facilitator to talk through how biodiversity underpins all Ecosystem Services

Facilitator to step through the links between biodiversity and one example of an ecosystem service at each level provided within the table on the slide (i.e. Ecosystem level, species level and gene level).

Media/activity/handout guidance



Biodiversity	Quality	Quantity	Services (examples)
Ecosystems	Variety	Area/extent	Recreation Water regulation Biological control
Species	Diversity	Abundance	Food, fibre, medicine Design inspiration Pollination
Genes	Variability	Population	Bio-tech inputs Disease resistance Adaptive capacity

Slide 25

Instructions:

Facilitators to step through an example:

An **Ecosystem** is measured in both the **variety** it represents (qualitatively) and the **area / extent** that it covers (quantitatively). Ecosystem biodiversity provides many recreational ecosystem services, e.g. forest treks.

Species are measured in terms of **diversity** (qualitatively) and **abundance** (quantitatively). Species biodiversity provides ecosystem services such as ingredients in medicinal and pharmaceutical products.

Genes are measured in terms of **variability** (qualitatively) and **population** (quantitatively). Genetic biodiversity provides ecosystem services such as disease resistance.



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 28: 2 minutes

Sources:

Slide 35 *Connecting the dots* (2005), WBCSD

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Ecosystems and Human Well-being: Biodiversity Synthesis [online].

Available from: <http://www.maweb.org/documents/document.354.aspx.pdf>

Instructions:

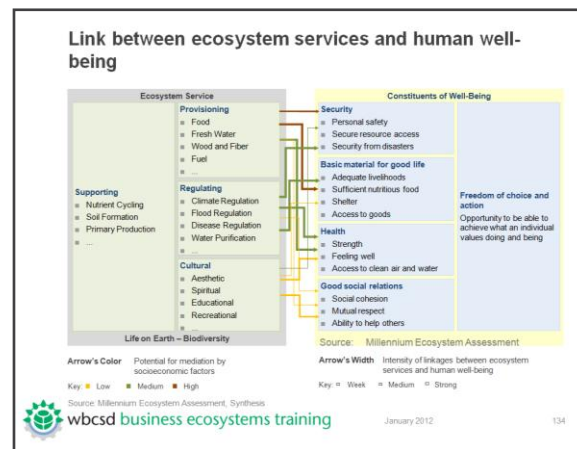
Present and explain to the group the conceptual framework developed by the MA. Suggest the following:

“We can see that the MA’s framework illustrates the links between each of the service types and their links to each other”, these concepts are similar to the linking concepts demonstrated in the last two sets of slides.

The framework shows a direct link between ecosystems, the services they provide and human wellbeing.

There are therefore a number of societal links to ecosystem services. This becomes more marked in areas where communities rely on ES directly e.g. substance fishing and so on. Social impacts are covered in more detail in Module 2.

Media/activity/handout guidance



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 29: 2 minutes

Sources:

Slide 11 *Connecting the dots* (2005), WBCSD

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page)

Ecosystems and Human Well-being: Biodiversity Synthesis [online].

Available from: <http://www.maweb.org/documents/document.354.aspx.pdf>

Instructions:

Facilitator to talk through the following:

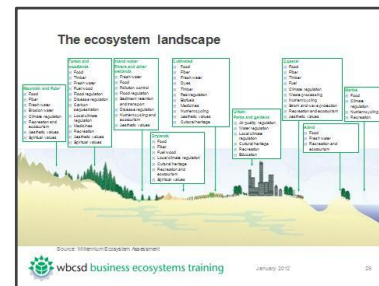
- ✧ Every company will be able to find themselves operating somewhere in the ecosystem landscape and hence have an impact (positive or negative) or depend on a number of ecosystem services.
- ✧ This slide shows the different sorts of ecosystem service available from different habitat types.

Background (facilitator to read and provide examples or draw on specific points as necessary).

Types of ecosystem services provided by different ecosystems.

Different combinations of services are provided to humans from the ecosystems represented here. Their ability to deliver the services depends on complex biological, chemical, and physical interactions, which are in turn affected by human activities.

Media/activity/handout guidance



Beneficiaries

Beneficiaries of these services can be at the local, regional, and/or global scale and may include future generations. For instance, a forest may provide local people with wild food, natural fibers, and fuel wood. At a regional level, it may prevent landslides, filter water, and offer recreation for inhabitants of a nearby city.

At a global level, this forest may sequester carbon dioxide—helping to regulate greenhouse gas concentrations in the atmosphere—and be the home of a rare plant with pharmaceutical properties that benefit people around the world.



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes	Media/activity/handout guidance
Slide 30: 2 minutes Sources: Slide 11 <i>Connecting the dots</i> (2005), WBCSD http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true (link to connecting the dots at the bottom of the page) <i>Ecosystems and Human Well-being: Biodiversity Synthesis</i> [online]. Available from: http://www.maweb.org/documents/document.354.aspx.pdf Instructions: [Optional slide: Company to add own customized ecosystem landscape and to talk through as for the general example in the previous slide] Facilitator to talk through the following: ✧ Every company will be able to find themselves operating somewhere in the ecosystem landscape and hence have an impact (positive or negative) or depend on a number of ecosystem services. ✧ This slide shows the different sorts of ecosystem service available from different habitat types.	



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes

Slide 31: 3 minutes

Basic Concepts – Stakeholder engagement

Instructions: Facilitator to talk through basic concepts associated with stakeholder engagement.

Source: Global Reporting Initiative, www.globalreporting.org

“Stakeholders are defined broadly as those 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.”

Source: Measuring Impact Framework(2008), WBCSD, <http://www.wbcsd.org/Pages/EDocument/EDocumentDetails.aspx?ID=205&NoSearchContextKey=true>

Stakeholder engagement

A process whereby a company interacts with a stakeholder, either actively or passively. Active stakeholder engagement can occur through interviews, discussions and/or some form of direct communication where the stakeholder is aware the company is carrying out an assessment. In passive stakeholder engagement, a company interacts with stakeholders by accessing information provided by stakeholders. An example of this could include the collection of data and statistics from local government offices and development agencies to build a local socio-economic profile. No direct communication occurs between the company and stakeholders related to the assessment.

Stakeholder mapping

A process whereby all the stakeholders who are interested in, impacted by, or who have an impact upon the company's operations are identified.

Media/activity/handout guidance

Basic concepts (cont.) – stakeholder engagement

- ✕ 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 mappings

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Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes	Media/activity/handout guidance
Slide 32: 5 minutes Instructions: Facilitator use one of the following options. Key concepts exercise [optional: depending on timing] Interactive (option 1): Group work Facilitator to split delegates into groups of 4 or 5, and ask each group two questions on key concepts (presented in the previous slides), assigning points and passing the question on to another team if unanswered. Facilitator will keep each team's score, and whoever is the highest will get a small prize! (e.g. candy, cookies, etc.) Interactive (option 2): Spin the bottle! All delegates will stand in a circle with the facilitator in the middle. The facilitator will spin a bottle, and whoever gets pointed is asked a question, allowing 10 seconds to answer. If the person answers correctly he/she will be asked to step out of the circle (a small candy can be given as a prize). If the person answers incorrectly, the facilitator should provide an example answer. The process is repeated until the sessions time runs out. Facilitator should keep questions short. Interactive (option 3): Solo work Delegates will be asked to write the answers to questions individually. Questions: 1. Can you define the term 'ecosystem service'? 2. According to the Millennium Ecosystem Assessment, how many categories of ecosystem services exist? 3. What ecosystem service includes food, fiber, freshwater? 4. What ecosystem service includes water purification and waste treatment? 5. What ecosystem service includes recreation and ecotourism?	Questions (cont.): 6. What ecosystem service includes nutrient cycling and photosynthesis? 7. Optional question: what ecosystem services have you used today? Answers: 1. Ecosystem services—sometimes called “environmental services” or “ecological services”—are the benefits that people obtain from ecosystems. Examples include freshwater, timber, climate regulation, protection from natural hazards, erosion control, and recreation. 2. 4 – (Provisioning, regulating, cultural and supporting) 3. Provisioning 4. Regulating 5. Cultural 6. Supporting 7. Optional question: assess answers based on relevance, e.g., drinking water and or food.



Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes	Media/activity/handout guidance
Slide 33: <1 minute Instructions: Facilitator to recap what has been covered in the module so far	



Session 3: Introduction to Policy Trends

Time guidelines

Time guidelines	Time
Introduction to broader policy trends and examples of regulations	15 mins

Session overview

The session will be presentation based. The session will use the examples of international conventions to walk through how decisions from an international perspective can filter through to impact on companies.

Session objective

To give delegates a simple overview of the process of addressing global environmental concerns.

Session format

This session will be run by one course facilitator, who will talk through key concepts with delegates.

Handouts

Delegates course material desk pack – hardcopies will be laid out on delegate desks in advance of their arrival at the course. This pack contains copies of all of the slides used throughout this course together with relevant handout materials required for each session.

A separate glossary of terms used during the module will also be available in the course material desk pack.



Session 3

Introduction to policy trends

Facilitators' notes

Total Time: 15 minutes

Slide 34: <1 minute

In this session, trainees will be introduced to the policy background, general trends and processes by which issues are passed into legislation (and thus impact on businesses), with specific regard to biodiversity and ecosystem based policies.

Slide 35: 2 minutes

Long history of environmental policy

- A. **Option: ask delegates to guess the year the UK introduced environmental restrictions relating to fresh water–**
1388 UK water pollution restrictions. This was one of the earliest environmental restrictions outlawing the dumping of animal waste, dung or litter in to rivers. Please refer to:
<http://www.environmentlaw.org.uk/rte.asp?id=108>
- A. 1973 EU Action Programme on Environment. Please refer to:
<http://www.environmentlaw.org.uk/rte.asp?id=108>

The limits to growth (1972)

Limits to Growth is a study about the future of our planet. It involved designing a computing model which took into account the relations between various global developments and produced computer simulations for alternative scenarios. Part of the modelling were different amounts of possibly available resources, different levels of agricultural productivity, birth control or environmental protection.

Source: Club of Rome, <http://www.clubofrome.org/?p=326>

Media/activity/handout guidance

Session 3 Introduction to policy trends Module 1: Understanding the links between ecosystem services and business wbcd business ecosystems training	Background to ecosystem policy Long history of environmental policy 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' wbcd business ecosystems training January 2012 22
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Brundtland Report (1987): original

Source: United Nations,
http://www.un.org/esa/sustdev/csd/csd15/media/backgrounder_brundtland.pdf

Updated 20 years on, the Brundtland Report defined sustainable development and called for increased international cooperation.

Conventions, treaties, protocols, agreements...

Over 250 multilateral environmental agreements exist – slide 34 shows just a few as examples.

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

Source: United Nations, <http://www.un.org/geninfo/bp/enviro.html>



Introduction to policy trends

Facilitators' notes

Total Time: 10 minutes

Slide 36: <1 minute

History of environmental policy in India

Option: ask delegates whether they think environment conservation has been part of India's history for long

Environmental consideration, conservation and sustainable use of biodiversity has been an integral part of Indian culture and heritage. Presence of Community Conserved Areas (CCAs) and Sacred Groves are a testimony to this rich and vibrant tradition. Apart from the cultural beliefs towards conservation, India has a well-developed agenda for the protection of environment and ecosystems, reflected in the constitutional, legislative and policy framework.

- ✧ Mention of various aspects of environment protection and natural resource use in **ancient scriptures**.
- ✧ Several policies for environment safety and protection drafted during the **British Reign** in India.
- ✧ **Environment protection** is a mandate in the **Constitution of India** under Article 48-A and Article 51- A(g).
- ✧ Well developed **framework of legislation** initiated mainly after the UN Conference on Human Environment (Stockholm, 1972)
- ✧ Participated in all major international events and ratified major biodiversity and environment related global conventions over the past decades.

More information about CCAs at: IUCN,
http://cmsdata.iucn.org/downloads/jardhargaoon_india_report_icca_grassroots_discussions.pdf

Media/activity/handout guidance



Session 3

Introduction to policy trends

Facilitators' notes

Slide 37: 1 minute

Instructions:

Facilitator to show some of the policies that have been put in place since the Rio Earth Summit.

Slides 38 & 39: 2 minutes

Instructions:

Facilitator to choose either ozone, CITES or the CBD as examples of a policy trend moving from issue recognition to mitigation, depending on the audience. The following slides provide background notes for these 3 options.

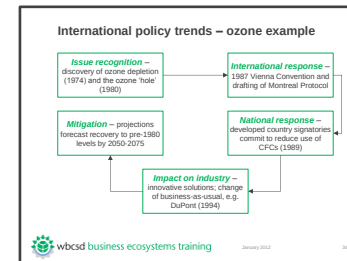
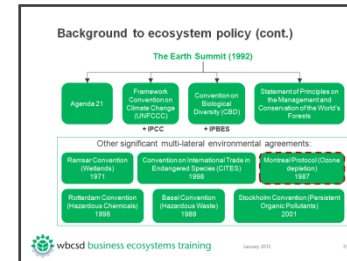
Note: though the following facilitator notes begin with Issue Recognition and move forwards through to Mitigation, the animation in the main presentation slides begin with Mitigation and moves backwards through to Issue Recognition. The facilitator should choose which direction they feel is more appropriate.

1) Option 1: Ozone

Source: UNEP, *The Montreal Protocol on Substances that Deplete the Ozone Layer, Progress Report 1987-2007*,
http://ozone.unep.org/Publications/MP_Achievements-E.pdf

Issue recognition: “In 1974, scientists discovered that emissions of chlorofluorocarbons (CFCs) were depleting ozone in the stratosphere. CFCs were a common aerosol propellant in spray cans and were also used as refrigerants, solvents, and foam-blowing agents. In the 1980s, scientists observed a thinning of the ozone layer over Antarctica, and people began thinking of it as an “ozone hole.” Additional research has shown that ozone depletion occurs over every continent.”

Media/activity/handout guidance



International response: “As our scientific knowledge about ozone depletion grew, so too did the response to the issue. In 1987, leaders from many countries came together to sign a landmark environmental treaty, the Montreal Protocol on Substances That Deplete the Ozone Layer. Today, more than 190 Parties have ratified the treaty. These countries are committed to taking action to reduce the production and use of CFCs and other ozone-depleting substances to protect the ozone layer.”



Session 3

Introduction to policy trends

Facilitators' notes

Slides 38 & 39 (cont.): 2 minutes

Instructions:

Facilitator to describe the process by which issues are mitigated on an international policy basis, using the ozone layer as an example.

Source: UNEP, *The Montreal Protocol on Substances that Deplete the Ozone Layer, Progress Report 1987-2007*,
http://ozone.unep.org/Publications/MP_Achievements-E.pdf

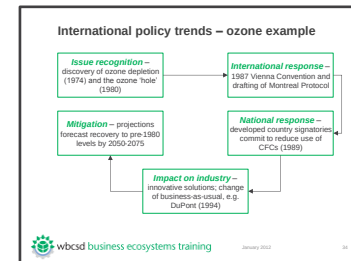
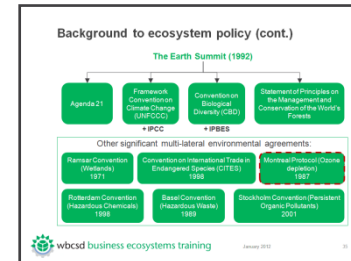
Background:

National response: In 1989, all developed countries that are parties to the Montreal Protocol freeze production and consumption of CFCs at 1986 levels. All developing countries that are parties to the Montreal Protocol were scheduled to begin phase-out of CFCs, halons and carbon Tetrachloride by 2010. India is a ratifying party of the Montreal Protocol.

Impact on industry: CFCs were key components of products such as aerosols and polystyrenes, and were used in cleaning and industrial processes and for refrigeration and air-conditioning. Companies had to develop innovative solutions to reduce the use of these chemicals. For example: in 1993, DuPont committed to phasing out CFCs by the end of 1994.

Mitigation: The ozone layer has shown signs of recovery, in line with reduced CFC emissions, and some projections estimate it may return to pre-1980s levels by 2050-2075.

Media/activity/handout guidance



Introduction to policy trends

Facilitators' notes

Slides 40 & 41: 2 minutes

Instructions:

Facilitator to pick either an example relating to ozone or an examples relating to CITES or CBD to show how issues are mitigated on an international policy basis.

Note: though the following facilitator notes begin with Issue Recognition and move forwards through to Mitigation, the animation in the main presentation slides begin with Mitigation and moves backwards through to Issue Recognition. The facilitator should choose which direction they feel is more appropriate.

2) Option 2: CITES

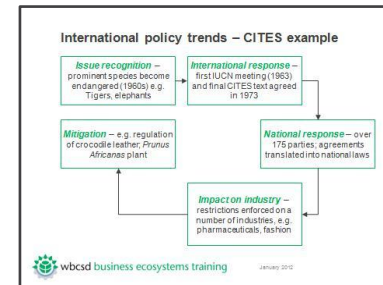
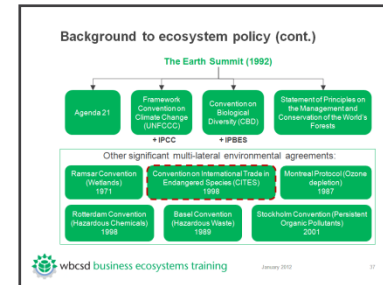
Sources: CITES, <http://www.cites.org/>

Background:

Issue recognition: “Widespread information nowadays about the endangered status of many prominent species, such as the tiger and elephants, might make the need for such a convention seem obvious. But at the time when the ideas for CITES were first formed, in the 1960s, international discussion of the regulation of wildlife trade for conservation purposes was something relatively new. With hindsight, the need for CITES is clear. Annually, international wildlife trade is estimated to be worth billions of dollars and to include hundreds of millions of plant and animal specimens. “

International response: “CITES was drafted as a result of a resolution adopted in 1963 at a meeting of members of IUCN (The International Union for the Conservation of Nature). The text of the Convention was finally agreed at a meeting of representatives of 80 countries in Washington DC., United States of America, on 3 March 1973, and on 1 July 1975 CITES entered in force.” Countries (states) enter into the agreement voluntarily.

Media/activity/handout guidance



Session 3

Introduction to policy trends

Facilitators' notes

Slides 40 & 41 (cont.): 2 minutes

Instructions:

Facilitator to describe the process by which issues are mitigated on an international policy basis, using CITES as an example.

Source: CITES, <http://www.cites.org/>

Background:

National response: Signatory states translate the agreement into national laws. CITES subjects international trade in specimens of selected species to import, export and re-export controls. The species covered by CITES are listed according to the degree of protection they need, covering over 30,000 species of animal and plant. India has ratified the CITES Convention in 1976.

Impact on industry: two examples relating to the industry

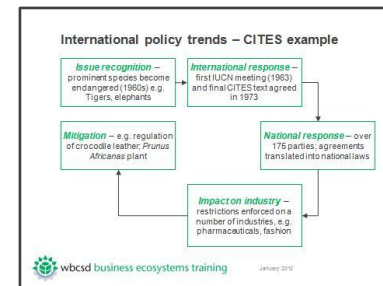
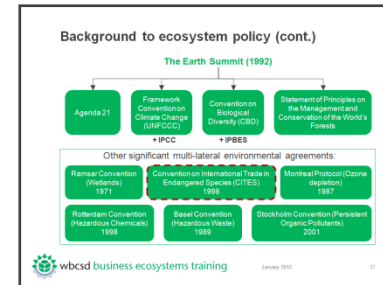
Pharmaceutical industry - *Prunus Africana*: A unique African plant species with a wide range of benefits to local people, including medicinal. It came under pressure after it began being used as a medicine for commercial purposes. Under CITES, governments in range countries effectively fostered implementation of management plans for sustainable harvesting and population monitoring –

Source: CITES, <http://www.cites.org/common/prog/african-cherry/11-CUNNINGHAM.pdf>

Fashion industry - Crocodiles and alligators: all species of the order *Crocodylia* are protected by CITES. Crocodilian leather has been a desirable commodity for many years, and has been under increasing pressure from increases in technology. Whilst some commercial ranch-farmed products are produced sustainably, with little impact on wild populations, some species are prohibited from trade due to population numbers being unable support any trade levels –

Source: CITES, <http://www.doc.govt.nz/upload/documents/about-doc/role/international/cites-crocs.pdf>

Media/activity/handout guidance



Mitigation:

Management and monitoring of plant and animal trade is an ongoing issue that requires continued international-level attention.



Session 3

Introduction to policy trends (cont.)

Facilitators' notes

Slides 42 & 43: 2 minutes

Instructions:

Facilitator to pick either an example relating to ozone or an examples relating to CITES or CBD to show how issues are mitigated on an international policy basis.

3) Option 3: CBD

Source: United Nations, <http://www.un.org/geninfo/bp/envirp2.html>

Facilitator to refer to source and broadly present the CBD and its 3 objectives – briefly mentioning the Aichi targets (this will be further developed in later Modules).

Background:

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

International response:

The Convention on Biological Diversity (CBD) established during the Rio Earth Summit and that entered into force on 29 December 1993. It has 3 main objectives:

- ✧ The conservation of biological diversity
- ✧ The sustainable use of the components of biological diversity
- ✧ The fair and equitable sharing of the benefits arising out of the utilization of genetic resources

The CBD states that the ecosystem approach is a strategy for the integrated management of land, water, and living resources that promotes conservation and sustainable use in an equitable way. This approach recognizes that humans, with their cultural diversity, are an integral component of many ecosystems.

In order to implement the ecosystem approach, decision-makers need to understand the multiple effects on an ecosystem of any management or policy change.

Media/activity/handout guidance



By way of analogy, decision-makers would not make a decision about financial policy in a country without examining the condition of the economic system, since information on the economy of a single sector such as manufacturing would be insufficient.

The same need to examine the consequences of changes for multiple sectors applies to ecosystems. For instance, subsidies for fertilizer use may increase food production, but sound decisions also require information on whether the potential reduction in the harvests of downstream fisheries as a result of water quality degradation from the fertilizer runoff might outweigh those benefits.

The 10th Conference of the Parties (COP10) in **Nagoya** in October 2010 set out 5 **Biodiversity Strategic Goals**, and the headline **Aichi Targets** which include the following business-relevant targets:

Target 2 – biodiversity values integrated into planning processes, national accounting, and reporting systems

Target 3 – phase out of incentives and subsidies negatively impacting biodiversity, and implementation of positive incentives

Target 5 – halving rate of loss of all natural habitats, including forests, and where feasible brought close to zero

Target 7 – agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity

Target 11 – protection of at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas

Target 15 – restoration of at least 15 per cent of degraded ecosystems

For a full definition of the Aichi targets refer to <http://www.cbd.int/doc/strategic-plan/2011-2020/Aichi-Targets-EN.pdf>



Session 3

Introduction to policy trends (cont.)

Facilitators' notes

Slide 42-43: 2 minutes

Sources: CBD, <http://www.cbd.int/> and Government of India, Ministry of Environment and Forests, National Biodiversity Action Plan (2008) <http://envfor.nic.in/downloads/public-information/NBAP-iyb.pdf>

Instructions:

Facilitator to present an example (India) of how the CBD has been translated at a national level in India.

Background:

National response: Article 6 of the Convention (CBD) calls upon the Parties to develop national biodiversity strategies and action plans.

Example of National Biodiversity Strategy and Action Plan – India

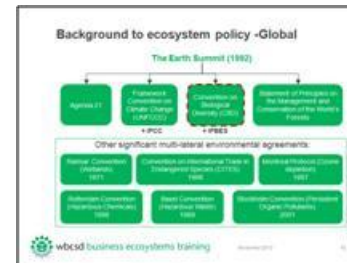
MoEF, the nodal agency for implementing the provisions under Convention on Biological Diversity (CBD) in India, has developed a strategy for biodiversity conservation at macro-level in 1999 and enacted the Biological Diversity Act in 2002, followed by the Rules there under in 2004, then developed the National Biodiversity Action Plan in 2008.

India National Biodiversity Action Plan – Nov.2008

Contains the following sections:

- ✧ Strengthening and integration of in situ, on-farm and ex situ conservation
- ✧ Augmentation of natural resource base and its sustainable utilization : Ensuring inter and intra-generational equity
- ✧ Regulation of introduction of invasive alien species and their management
- ✧ Assessment of vulnerability and adaptation to climate change, and desertification

Media/activity/handout guidance



- ✧ Integration of biodiversity concerns in economic and social development (see module 3 session 3 for more information)
- ✧ Pollution impacts
- ✧ Development and integration of biodiversity databases
- ✧ Strengthening implementation of policy, legislative and administrative measures for biodiversity conservation and management
- ✧ Building of national capacities for biodiversity conservation and appropriate use of new technologies
- ✧ Valuation of goods and services provided by biodiversity and use of economic instruments in decision making processes
- ✧ International cooperation

Impact on Industry: innovative solutions; change of business as usual.

Mitigation: management and conservation of the impact of human activity on damage or loss of ecosystems / biodiversity is an ongoing issue.



Session 3

Introduction to policy trends (cont.)

Facilitators' notes

Slide 44: 1-2 minutes

Instructions:

Facilitator to describe ecosystem related policy in India (Presentation slides can be customized to focus on a shorter selection of policies, depending on audience profile and interest)

Background:

A number of statutes, rules and guidelines related to the various aspects/elements of Environment have been endorsed by the Government of India. These statutes provide the Government to address to challenges of environment as a whole. All matters related to environment and biodiversity conservation are addressed by the Ministry of Environment and Forests (MoEF). MoEF is responsible for implementing policies and programs relating to conservation of the country's natural resources, including lakes and rivers, biodiversity, forests and wildlife, ensuring the welfare of animals and prevention & abatement of pollution.

Constitution of India lays down the responsibility with regard to environment protection to both the State and the citizens of the country. The responsibility of the State with this regard is mentioned under Article 48-A of the Constitution of India, which reads as follows: "The State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country". The duty of the citizens with regards to the protection of the environment is mentioned under Article 51-A(g), which reads as follows: "It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures."

Framework related to Biodiversity and Ecosystem

Environment Protection Act, 1986: The act was introduced as an umbrella legislation to provide a holistic framework for the protection and improvement of the the environment. The Act authorizes the central government to protect and improve environmental quality, control and reduce pollution from all sources, and prohibit or restrict the setting and/or operation of any industrial facility on environmental grounds.

Media/activity/handout guidance



The Indian Forest Act, 1927 and Amendment, 1984, is one of the many surviving colonial statutes. It was enacted to consolidate the law related to forest, the transit of forest produce, and the duty leviable on timber and other forest produce.

The Forest (Conservation) Act, 1980: This Act provides for the conservation of forests and regulating diversion of forestlands for non-forestry purposes. This Act was adopted to protect and conserve forests. The Act restricts the powers of the state in respect of de-reservation of forests and use of forestland for non-forest purposes.

National Forest Policy, 1988: provides that the country should have a minimum of 33% of the land area under forests. The policy further suggests that the hill states would maintain 66% of the area under forest cover, so as to prevent erosion and degradation.

The Wildlife (Protection) Act, 1972, Amendment 1991 and 2002: The WPA (Wildlife Protection Act), 1972, provides for protection to listed species of flora and fauna and establishes a network of ecologically-important protected areas. The WPA empowers the central and state governments to declare any area a wildlife sanctuary, national park or closed area. The near-total prohibition on hunting was made more effective by the Amendment Act of 1991. According to the Wildlife Protection Act, 1972 "wildlife" includes any animal, bees, butterflies, crustacea, fish and moths; and aquatic or land vegetation which forms part of any habitat. In accordance with Wildlife (Protection) Amendment Act, 2002 "no alternation of boundaries / National Park / Sanctuary shall be made by the State Govt. except on recommendation of the National Board for Wildlife (NBWL)"



Introduction to policy trends (cont.)

Facilitators' notes

Slide 44 (cont.): 1-2 minutes

Instructions:

Facilitator to describe ecosystem related policy in India

Background (cont):

The Biological Diversity Act, 2002: is an act to provide for the conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of the benefits arising out of the use of biological resources and knowledge associated with it. The Ministry of Environment and Forests has enacted the Biological Diversity Act, 2002 under the United Nations Convention on Biological Diversity signed at Rio de Janeiro on the 5th day of June, 1992 of which India is also a party. This Act is to “provide for the conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith or incidental thereto.”

National Environment Policy, 2006: seeks to achieve balance and harmony between conservation of natural resources and development processes and also forms the basic framework for the National Biodiversity Action Plan. The NEP prescribes that human beings are at the centre of concerns for sustainable development and they are entitled to a healthy and productive life in harmony with nature.

Media/activity/handout guidance



Session 3

Introduction to policy trends (cont.)

Facilitators' notes

Slides 45 & 46: 3 minutes

Instructions:

Facilitator to describe specific action plans and guidelines in India

Background (cont):

National Biodiversity Action Plan (NBAP) 2008: As per Article 6 of the Convention, all parties have to develop a national biodiversity strategies and action plans. MoEF, the nodal agency for implementing the provisions under Convention on Biological Diversity (CBD) in India, MoEF has developed a strategy for biodiversity conservation at macro-level in 1999 and enacted the Biological Diversity Act in 2002, followed by the Rules there under in 2004.

Source: Government of India, Ministry of Environment and Forests, National Biodiversity Action Plan (2008)

<http://envfor.nic.in/downloads/public-information/NBAP-iyb.pdf>

National Targets for Biodiversity 2012-2020

The National Targets (in development in 2012) will provide a national framework for better management, use and sharing of benefits of the ecosystem goods and services for every citizen of India.

10 national targets currently being considered:

- ✧ **Target 1** By 2020, the national planning process of Government of India considers biodiversity as an integral part of national development that is reflected by biodiversity and ecosystem related issues as a part of implementation strategies across sectors, ministries and programmes with adequate and where possible specific financial allocations.
- ✧ **Target 2** Specific programmes linking economic and social well-being based on conservation and sustainable use action combined with equitable sharing of benefits developed by 2015 and implemented by government agencies as well as all relevant stakeholder groups, including private sector, thereafter.

Media/activity/handout guidance



- ✧ **Target 3** Ecosystems and biodiversity goods and services maintained, translated into local livelihood security programmes that results in revival of at least 7-10 per cent of representative ecosystems by 2020.
- ✧ **Target 4** By 2015, a coordinated and incrementally tested action programme on implementing the Biological Diversity Act (2002) and the Rules (2004) developed with a target that by 2020, policy, regulatory and enabling actions for conservation, sustainable use and benefit sharing are firmly in place.
- ✧ **Target 5** By 2020, achieve at least 5% increase in agricultural production systems based on enhanced use of agro biodiversity, participatory actions, public private partnership and appropriate investments in inclusive development agenda besides developing better approaches for fisheries and livestock management.
- ✧ **Target 6** Develop integrated action frameworks, based on policy and regulatory reviews and implementation experiences, on forest conservation, protected areas management that include coastal and marine ecosystems in a manner that enhances local governance systems by 2017, resulting in at least 2 to 5 per cent increase in their cover.



Session 3

Introduction to policy trends (cont.)

Facilitators' notes

Slides 45 & 46: 3 minutes

Instructions:

Facilitator to describe specific action plans and guidelines in India

Background (cont):

National Targets for Biodiversity 2012-2020 (cont.)

The National Targets (in development in 2012) will provide a national framework for better management, use and sharing of benefits of the ecosystem goods and services for every citizen of India.

10 national targets currently being considered:

- ✧ **Target 7** By 2015, develop a comprehensive national programme on management of invasive alien species, rare, endangered, endemic and threatened species of flora and fauna, management of urban biodiversity and by 2020 achieve its effective implementation
- ✧ **Target 8** By 2015, establish national coordination mechanism(s) to deal with9 capacity building, sharing of information and knowledge, traditional knowledge, technology transfer and cooperation and access and benefit sharing (ABS) issues at State and National levels.
- ✧ **Target 9** Develop cooperative approaches for conservation that involves wider stakeholder groups based on commitments and awareness by 2015.
- ✧ **Target 10** Achieve, by 2015, institutional and programmatic synergies, including on issues of implementation of biodiversity related Multilateral Environmental Agreements (MEAs).

Source: National Biodiversity Authority, *Draft National Targets for Biodiversity 2012-2020*,

http://nbaindia.org/uploaded/pdf/Strategic_Vision_tar.pdf

Media/activity/handout guidance



National Voluntary Guidelines on Social Environmental and Economic Responsibilities of Business: National Voluntary Guidelines on Social, Environmental and Economical Responsibilities of Business being brought out by the Ministry of Corporate Affairs national good practices, norms and frameworks, and provide a distinctively 'Indian' Guidelines emphasize that responsible businesses alone will be able to help India meet its ambitious goal of inclusive and sustainable all round development, while becoming a powerful global economy by 2020.

Principle 6 of the guidelines recognizes that environmental responsibility is a prerequisite for sustainable economic growth and for the well-being of society. The principle emphasizes that environmental issues are interconnected at the local, regional and global levels which makes it imperative for businesses to address issues such as global warming, biodiversity conservation and climate change in a comprehensive and systematic manner. The principle encourages businesses to understand and be accountable for direct and indirect environmental impacts of their operations, products and services and to strive to make them more environment friendly.



Introduction to policy trends (cont.)

Facilitators' notes

Slides 45 & 46: 3 minutes

Instructions:

Facilitator to describe specific action plans and guidelines in India

National Wildlife Action Plan (2002-2016)

Calls for adoption and implementation of strategies covering strengthening and enhancing the PA network, effective management of PAs, conservation of wild and endangered species and their habitats, restoration of degraded habitats outside PAs, control of poaching, and illegal trade in wild animal and plant

Sustainable Development Guidelines for Central Public Sector Enterprises

In order to assist the Central Public Sector Enterprises in aligning Sustainable Development into the core of their business planning, the Government has released these guidelines. The guidelines clearly indicate that the CPSEs are responsible for conserving biodiversity and states that "CPSE shall be expected to implement measures for Biodiversity Conservation which is the practice protecting, conserving, and restoring/reclaiming the ecosystem." The guidelines also lay down instructions for management of natural resources and material and states "CPSE shall be expected to implement measures for ensuring the management of natural resources such as land, water, soil, minerals or any other related resources. NRM specifically focuses on a scientific and technical understanding of resources, ecology and life supporting capacity of those resources for both present and future generations."

Media/activity/handout guidance

Focus on relevant action plan and guidelines -India

- National Biodiversity Action Plan (NBAP) 2008**
 - Article 8 of the Convention (CBD) calls upon the Parties to develop national biodiversity strategies and action plans
 - India's strategy for conservation and sustainable utilization of biodiversity has evolved through various initiatives addressing specific issues, viz. National Forestry Action Plan, National Conservation Strategy, National Environment Action Programme, NBAP, etc.
 - The NBAP has been developed in consultation with various stakeholders to identify threats and constraints in biodiversity conservation
 - NBAP is consistent with the ecological, social, cultural and economic needs of the country, and provides a focus and impetus to the current efforts towards biodiversity conservation
- National Targets for Biodiversity 2012-2020**
 - The National Targets (10 targets in development in 2012) will provide a national framework for better management, use and sharing of benefits of the ecosystem goods and services for every citizen of India

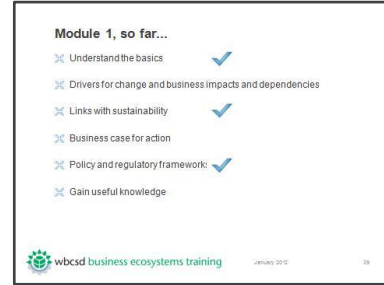
Focus on relevant action plan and guidelines -India

- National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business**
 - The Ministry of Corporate Affairs had released Voluntary Guidelines on CSR in 2008 as the first step towards mainstreaming the concept of Business Responsibility
- National Wildlife Action Plan (2002-2016)**
 - Calls for adoption and implementation of strategies covering strengthening and enhancing the PA network, effective management of PAs, conservation of wild and endangered species and their habitats, restoration of degraded habitats outside PAs, control of poaching, and illegal trade in wild animal and plant
- Sustainable Development Guidelines for Central Public Sector Enterprises**
 - Assists the Central Public Sector Enterprises in aligning Sustainable Development into the core of their business planning, the Government has released these guidelines



Session 3:

Introduction to policy trends (cont.)

Facilitators' notes	Media/activity/handout guidance
Slide 47: <1 minute Instructions: Facilitator to recap what has been covered so far in the module	



Session 4: Identifying key ecosystem services (exercise)

Time guidelines

Time guidelines	Time
Identifying key ecosystem services – activity.	10-25 mins

Session objective

Objective: short group exercise to make link between ecosystem services. Build awareness of the extension and relevance of ecosystem services to delegate employers.

Session format

This session will be run by the two course facilitators – one will be leading the session and the second should facilitate material and/or address questions/queries from delegates/groups.

Handouts

Delegates course material desk pack

Materials:

- ✂ blank A1 wall charts or A4 print out of the BET Score Card
- ✂ Flipchart (one per group)

Session overview

The session starts with an open question to enable discussion between the delegates, and initiate a dialog between them to think how ecosystem services link to their business.

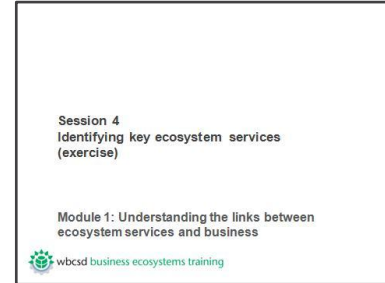
Later on, delegates will be reminded of the different goods from ecosystems, allowing them to rethink and evaluate what their business should take into consideration, and what might be taken for granted.

Finally, the session will close with a discussion analyzing how different business sectors are using ecosystem services and their goods.



Session 4:

Identifying key ecosystem services (exercise)

Facilitators' notes	Media/activity/handout guidance
Slide 48: <1 minute Instructions: Facilitator to go through the objectives for the session Objective: short group exercise to make link between their business and ecosystem services. The exercise should build awareness of the extension and relevance of ecosystem services of relevance to delegate employers. Total time for exercise: 25 minutes Alternative options: ▪ If running the course in one block consider using OPTION 1 ▪ If running the course in one block and short of time consider using OPTION 2 ▪ If running the course as a separate module consider using OPTION 3 Background: Get people thinking about which ecosystem services their employer may rely on or benefit from.	



O1: Identifying key ecosystem services (exercise)

Facilitators' notes

OPTION 1 (14 minutes)

Slides 49-50: 14 minutes

Background:

The BET Score Card is inspired by the Dilemma Assessment Card that was developed by the WBCSD's Future Leaders Team in 2007. The Card (as illustrated on the slide) was designed as a discussion tool.

There are 6 questions covering the key ecosystem challenges facing business, the main ecosystem services and key drivers for addressing ecosystems alongside questions on the above mentioned dilemmas and how they are being managed inside a company. To use the card successfully, the interviewer will need a good understanding of ecosystems and their services and their impact on business.

Instructions:

1. The facilitators will distribute between delegates a BET Score Card, and will ask them to answer it. Provide **4 minutes** to answer.
2. After the above time, **Facilitator 1** will ask delegates to discuss the most commonly identified challenges at their table, and discuss their answers. Allow **10 minutes**.
3. **Optional: Delegates to consider supply / value chain issues**

Media/activity/handout guidance

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
Market change	☐ Yes	☐ No	☐ Don't know
Business loss	☐ Yes	☐ No	☐ Don't know
Overexploitation of oceans	☐ Yes	☐ No	☐ Don't know
Business 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 fibre	☐ Benefits	☐ Impacts	☐ Don't know
Regulating The benefits obtained from an ecosystem's control of natural processes such as climate, disease, erosion, water flow and pollution 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, cultural and aesthetic	☐ Benefits	☐ Impacts	☐ Don't know
Supporting These are not subject to this specific question regarding supporting services as these services are underlying the above 3 categories (provisioning 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?



O2: Identifying key ecosystem services (exercise)

Facilitators' notes

OPTION 2 (10 minutes plus pre-work)

Slides 49-50: 5 minutes

Background:

The BET Score Card is inspired by the Dilemma Assessment Card that was developed by the WBCSD's Future Leaders Team in 2007. The Card (as illustrated on the slide) was designed as a discussion tool.

There are 6 questions covering the key ecosystem challenges facing business, the main ecosystem services and key drivers for addressing ecosystems alongside questions on the above mentioned dilemmas and how they are being managed inside a company. To use the card successfully, the interviewer will need a good understanding of ecosystems and their services and their impact on business.

Instructions:

1. The facilitators will set the BET Score Card as **pre-work for the course**, delegates will be asked to answer the questions from the perspective of the company they work for.
2. The **facilitator** will ask delegates to identify the top three most common challenges at their table and discuss their answers. Allow **5 minutes**.
3. **Optional: delegates to consider supply / value chain issues**

Media/activity/handout guidance

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
Market change	☐ Yes	☐ No	☐ Don't know
Resource loss	☐ Yes	☐ No	☐ Don't know
Overexploitation of oceans	☐ Yes	☐ No	☐ Don't know
Business 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 fibre	☐ Benefits	☐ Impacts	☐ Don't know
Regulating The benefits obtained from an ecosystem's control of natural processes such as climate, disease, erosion, water flow and pollution 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, cultural 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?



O2: Identifying key ecosystem services (exercise)

Facilitators' notes

OPTION 2 (continued)

Slide 51: 5 minutes

Instructions:

Facilitator to ask groups to provide feedback to the overall audience by collecting the top three challenges from each group (5 minutes). Then compare and contrast the thoughts gathered on the flip chart.

Summary guidance:

Key points for the facilitator to look for include:

- ✕ Risk to operations, supply chain from decreased access to resources,
- ✕ Commodity price shocks,
- ✕ Problems/new conditions for licenses to operate,
- ✕ Problems relating to reputation,
- ✕ Environmental liability issues.

Media/activity/handout guidance



O3: Identifying key ecosystem services (exercise)

Facilitators' notes

OPTION 3 (25 minutes)

Slide 52: 5 minutes

Source: WBCSD, *Guide to Corporate Ecosystem Valuation* (2011), <http://www.wbcsd.org/Pages/EDocument/EDocumentDetails.aspx?ID=104&NoSearchContextKey=true>

Links between business sectors and ecosystem service values

Instructions:

Facilitator to introduce the slide using the following text:

- ✧ “The following slide shows a table taken from the WBCSD CEV guide that can be used to provide a summary of the most likely biodiversity and ecosystem services related to different industries” (table to be provided to delegates as a handout).

Facilitator to set the context of incorporating biodiversity and ecosystem service risks by presenting the following challenge:

- ✧ “Companies base risk assessment on the potential for the issues to harm their business interests and account for them using financial terms. This results in a lack of accounting for those risks, such as impacts on biodiversity and ecosystems, that do not have a direct financial impact on the company and those that are more difficult to translate into economic losses and gains.” (TEEB CH4., pp 7).

Facilitator to give the following example:

- ✧ “As traditional oil producing regions mature and yield progressively less oil, the petroleum industry is increasingly forced to explore and produce in ever more sensitive environments. In socially and environmentally sensitive areas, access to reserves can be denied, restricted, or unresolved.” (TEEB CH 4 pp.5).

Note: Different types of risk will be introduced in **Session 8**.

Media/activity/handout guidance

Links between business sectors and ecosystem service values

Key Ecosystem Services	Company 1		Company 2		Company 3		Company 4	
	DEPEND	IMPACT	DEPEND	IMPACT	DEPEND	IMPACT	DEPEND	IMPACT
Provisioning								
Food								
Fiber and Fuel								
Genetic Resources								
Regulating								
Climate & air quality regulation								
Water regulation & purification								
Pollination								
Nature-based recreation								
Cultural								
Scientific & research								
Knowledge & innovation								
Ecosystem health								

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

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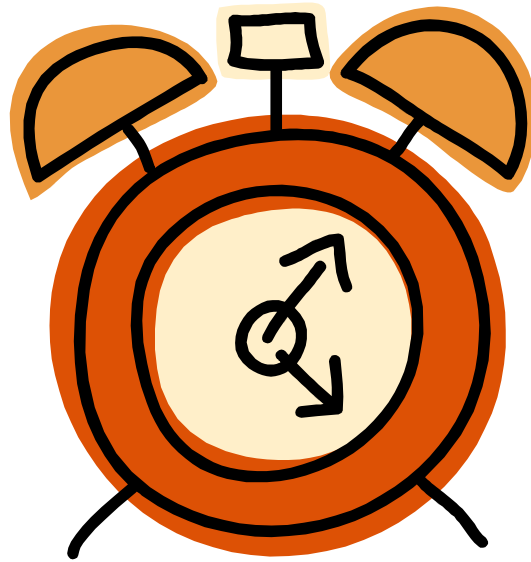
Session 4:

Identifying key ecosystem services (exercise)

Facilitators' notes	Media/activity/handout guidance
OPTION 3 (cont.) Slides 53-54: 10 minutes for discussion, + 10 minutes to feedback Instructions: ✧ Facilitator will split delegates into groups of 4 or 5 ✧ Use a blank A1 wall chart of slide 47 (one per group) and distribute ✧ Delegates will be given 10 minutes to discuss and capture responses to the question, delegates given red and black pens to modify the wall chart. The facilitator should tailor this question to the audience as appropriate, for example: 1. Which ecosystem services might your company rely on or benefit from? 2. Which ecosystem services might your department rely on or benefit from? 3. Which ecosystem services might you rely on or benefit from as an individual? ✧ Depending on the companies selected, the groups may complete the exercise for several or only 1 example. The facilitator should note this and encourage delegates to take the exercise at their own speed. ✧ Ask groups to provide feedback in turn – consider which ecosystem services are most common.	Ecosystems: identifying key ecosystem services Please discuss Which ecosystem services do your companies rely on or benefit from?  10 minutes  wbcSD business ecosystems training January 2012 47 Feedback...   wbcSD business ecosystems training January 2012 48 ✧ Discuss why not all ecosystems services are mentioned (i.e. if a service is not included, this does not necessarily mean it is not in use, but perhaps that it is less well known/understood). Refer back to Session 2. Note: If it is more appropriate for the audience, the facilitator may wish to describe a theoretical example (e.g. A mining company operating in South America) or encourage delegates to think beyond their own companies and consider customers/suppliers.



Coffee Break



30 minutes



wbcSD business ecosystems training

Session 5: The global ecosystem challenge

Time guidelines

Time guidelines	Time
The Global Ecosystem Challenge – presentation and activity	25-30 mins

Session objective

The session aims to raise key reflection questions that help illustrate the importance of ecosystem management and evaluation. Also, enable delegates to understand the business case for ecosystem management

Session format

This session will be run by the two course facilitators – one will be leading the session and the second should facilitate material and/or address questions/queries from delegates/groups.

Handouts

Delegates course material desk pack – hardcopies will be laid out on delegate desks in advance of their arrival at the course. This pack contains copies of all of the slides used throughout this course together with relevant handout materials required for each session.

Session overview

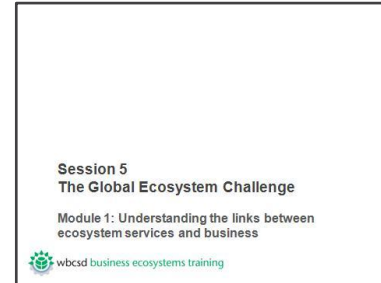
This session will give delegates an introduction to world wide trends and how these interlink with business and ecosystem service provision.

The session introduces the work of the Millennium Ecosystem Assessment (MA), Vision 2050 and The Economics of Ecosystems and Biodiversity (TEEB) among others.



Session 5:

The global ecosystem challenge

Facilitators' notes	Media/activity/handout guidance
Slide 56: <1 minute Objective: raise key reflection questions that help illustrate the importance of ecosystem management and evaluation. Enable understanding of the business case. Total time for presentation: 30 minutes ✦ 23 minutes presentation slides ✦ 7 minutes interactive exercise Instructions: Facilitator should read the content of this document thoroughly before the training to familiarize themselves with the terminology and prepare to deliver clear messages. Background: Description of <i>Millennium Ecosystem Assessment, Vision 2050</i> and <i>TEEB</i> The first phase of this session aims to raise key reflection questions that help illustrate the importance of ecosystem management and evaluation, thus enabling delegates to understand the business case. This knowledge will be used for the interactive session covering the drivers of ecosystem change.	



Session 5:

The global ecosystem challenge

Facilitators' notes

Slide 57: 2 minutes

Source: WBCSD, *Vision 2050* (2010), p2-3 [online]. Available from <http://www.wbcds.org/vision2050.aspx>

Instructions:

The facilitator will not be able to cover all of the available content in the Global Ecosystem Challenge section within the allocated time. Therefore the facilitator should familiarize themselves with the extensive background notes provided throughout this section and decide how/what content to present – in terms of specific bullet points of interest.

Background:

The WBCSD Vision 2050 report explores the global outlook for 2050 and finds significant challenges in the Business-as-Usual trajectory.

We have what is needed to live well, within the limits of the planet: the scientific knowledge, proven and emerging technologies, financial assets and instant communications. Nevertheless, today our societies are on a dangerously unsustainable track. The story is one of growth in populations and consumption (in most countries) compounded by inertia stemming from inadequate governance and policy responses necessary to manage this growth. The result is degradation of the environment and societies.

Media/activity/handout guidance



The global ecosystem challenge

Facilitators' notes

Slide 57 (cont.): 2 minutes

Source: WBCSD, *Vision 2050* (2010), p2-3 [online]. Available from <http://www.wbcsd.org/vision2050.aspx>

1. Growth: Population, urbanization and consumption

Between now and 2050 the global population is expected to increase to more than 9 billion, with 98% of this growth happening in the developing and emerging world, according to UN estimates. The global urban population will double. Meanwhile, populations are aging and stabilizing in many developed countries. Local demographic patterns will become increasingly diverse. There have been improvements in recent decades in terms of economic growth in many parts of the world, as well as in areas such as infant and maternal mortality, food supply, and access to clean water and education.

As this growth and development takes place, substantial changes will be required in all countries in order for 9 billion people to live well, within the limits of one planet by 2050.

2. Inertia and inadequate governance

The governance and policy responses to manage this growth often happen in silos and are limited by short-term, localized political pressures, and thus fall short of the level of commitment needed to make significant progress. In addition, the choices countries, companies, communities and individuals make are often characterized by inertia due to short-term goals and self interest.

3. Degradation: Climate change and deteriorating ecosystems

The Millennium Ecosystem Assessment found that 15 of the 24 ecosystem services they evaluated have been degraded over the past half century. A rapid and continuing rise in the use of fossil fuel-based energy and an accelerating use of natural resources are continuing to affect key ecosystem services, threatening supplies of food, freshwater, wood fiber and fish. More frequent and severe weather disasters, droughts and famines are also impacting communities around the world.

Media/activity/handout guidance



The global ecosystem challenge

Facilitators' notes

Slide 58: 2 minutes

Sources:

WBCSD, *Connecting the dots* (2005), Slide 31

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page)

WBCSD, *Vision 2050*, p2. WBCSD's Pathways to 2050 publication at <http://www.wbcd.org/includes/getTarget.asp?type=d&id=MTczNzE>. and Millennium Ecosystem Assessment (2005), <http://www.maweb.org/documents/document.356.aspx.pdf>

Instructions:

Facilitator to talk through the main drivers of change identified in the MEA:

- ✧ By the end of the century, climate change and its impacts may be the dominant direct driver of biodiversity loss and changes in ecosystem services globally,
- ✧ Harm to biodiversity will grow worldwide with increasing rates of change in climate and increasing absolute amounts of change,
- ✧ Some ecosystem services in some regions may initially be enhanced by projected changes in climate. As climate change becomes more severe the harmful impacts outweigh the benefits in most regions of the world.

Facilitator to mention that there are inter-linkages between these drivers and that this may lead to cumulative damages.

Media/activity/handout guidance

Drivers affecting the projected future – by 2050

- ✧ **Population size** (reaching ~9 billion people)
- ✧ **Lifestyle changes** (increasing urbanisation and per capita income growing 2-4 times)
- ✧ **Governance and policy responses** (coordinating responses to global challenges)
- ✧ **Land conversion and habitat loss** (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)



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Background:

The balance of scientific evidence suggests that there will be a significant net harmful impact on ecosystem services worldwide if the global mean surface temperature increases more than 2° C above preindustrial levels (*medium certainty*). This would require CO₂ stabilization at less than 450 parts per million, a target needed to keep climate change at bay.



Session 5:

The global ecosystem challenge

Facilitators' notes

Slide 59 : 3 minutes

Sources:

WNCSD, Connecting the dots (2005) , Slide 19

<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Biodiversity Synthesis* [online]. Available from:

<http://www.maweb.org/documents/document.354.aspx.pdf>

Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Opportunities and Challenges for Business and Industry* [online]. pp. 10-17 [Accessed 3 August 2011]. Available from:

<http://www.maweb.org/documents/document.353.aspx.pdf>

Instructions:

Facilitator to step through two of the six interconnected challenges identified in the MA depending on audience type: Water Scarcity, Climate Change, Habitat change, Biodiversity Loss and Invasive Species, Overexploitation of Oceans and Nutrient Overloading. Pick one to cover in greater detail.

Background:

Everyone in the world depends completely on Earth's ecosystems and the services they provide, such as food, water, disease management, climate regulation, spiritual fulfilment, and aesthetic enjoyment. Over the past 50 years, humans have changed these ecosystems more rapidly and extensively than in any comparable period of time in human history, largely to meet rapidly growing demands for food, fresh water, timber, fiber, and fuel. This transformation of the planet has contributed to substantial net gains in human well-being and economic development.

Media/activity/handout guidance



But not all regions and groups of people have benefited from this process—in fact, many have been harmed. Moreover, the full costs associated with these gains are only now becoming apparent.

Ecosystem Trends of Particular Importance to Business –

Six major changes are having or will have profoundly negative impacts on ecosystems: water scarcity, climate change, habitat change, biodiversity loss, invasive species, overexploitation of oceans, and nutrient overloading. Individually and collectively, these changes will have an impact on business.

1. Water Scarcity

Potentially of greatest importance to business is water scarcity. The MA found that 5–20% of freshwater use exceeds long-term sustainable supply and is met by water transfer or unsustainable mining of groundwater. Roughly 15–35% of irrigation withdrawal is estimated to be unsustainable.



The global ecosystem challenge

Facilitators' notes

Slide 59 (cont.): 3 minutes

Scarcity of water supply will affect all businesses either directly or indirectly, just as increases in the price of petroleum affect the state of the global economy.

Governments will be called on to allocate supplies and adjudicate water rights. Increasingly, markets and market mechanisms are being used to help achieve efficient use through prices that reflect scarcities.

- ✧ Businesses will find themselves in competition with others -including other businesses- for water.
- ✧ The cost of water may result in substantial increase in the cost of business operations.
- ✧ Decisions about locating operations must address long term water supply.
- ✧ Increasingly, businesses will need to find ways of recycling supplies.
- ✧ New technologies and modes of operation that reduce the consumption of water per unit of output and address water quality will be valuable.
- ✧ Marketing and selling water is a new business opportunity already being pursued in some places.

2. Climate Change

Observed recent changes in climate, especially warmer regional temperatures, have already had significant impacts on biodiversity and ecosystems, including changes in species distributions, population sizes, the timing of reproduction and migration events, and an increase in the frequency of pest and disease outbreaks. Many coral reefs have undergone major bleaching episodes.

By the end of the century, climate change may be the dominant direct driver of biodiversity loss and changes to ecosystem services globally. The balance of scientific evidence suggests that harm to biodiversity and degradation of ecosystem services will grow on a worldwide basis (although some ecosystem services in some regions could be initially enhanced) if the global mean surface temperature increases more than 2 degrees Celsius above preindustrial levels or at rates greater than 0.2 degrees per decade.

3. Habitat Change

More land was converted to cropland in the 30 years after 1950 than in the 150 years between 1700 and 1850. Cultivated systems now cover one quarter of Earth's terrestrial surface. A further 10–20% of grassland and forestland is projected to be converted between 2000 and 2050, primarily to agriculture. The projected land conversion is concentrated in low-income countries and dryland regions. Conversely, forestland is projected to continue to increase within industrial countries.

4. Biodiversity Loss and Invasive Species

The total number of species on the planet is declining and the distribution of species is becoming more homogeneous. Over the past few hundred years, humans have increased species' extinction rates by as much as 1,000 times over the background rates that have been more typical throughout the planet's history. Some 10–30% of mammal, bird, and amphibian species are currently threatened with extinction. Freshwater ecosystems tend to have the highest proportion of threatened species. In addition, the majority of species are seeing their populations fragmented and their population sizes and ranges decline.



The global ecosystem challenge

Facilitators' notes

Slide 59 (cont.): 3 minutes

Genetic diversity has also declined globally, particularly with respect to cultivated species. The spread of invasive alien species and disease organisms continues to increase due to both deliberate translocations and accidental introductions related to travel and trade. Invasive species generally threaten native species and many ecosystem services.

5. Overexploitation of Oceans

Increasing demand for seafood has been matched by increasing fishing capacity and technological advances. Reported catches from oceans increased steadily over the last century, reached a peak in the mid-1980s, then began to decline. A number of economically important fisheries, such as the Atlantic cod off Newfoundland, have collapsed abruptly under intense fishing pressure, causing significant social, economic, and ecological system disruption.

Widespread collapses, overfishing of top predators, and declining catches are all symptoms of seriously disrupted ocean ecosystems. Such systems are not able to provide the full range of services they did in the past, including the provision of food. The ability of an ecosystem to absorb threats or to be resilient may be compromised with such massive disruption to the integrity of the natural system.

6. Nutrient Overloading

Humans have doubled the flow of reactive nitrogen on the continents. Some projections suggest this may increase by roughly two thirds by 2050 and that the global flux of nitrogen to coastal ecosystems will increase by 10–20% by 2030, with most of this increase occurring in developing countries. Excessive flows of nitrogen contribute to eutrophication of freshwater and coastal marine ecosystems and acidification of freshwater and terrestrial ecosystems, with associated harm to biodiversity. Nutrient pollution in coastal areas often triggers harmful algal blooms and is increasing the number and size of zones of low or no oxygen (so called “dead zones”).



The global ecosystem challenge

Facilitators' notes

Slide 60: 3 minutes

Sources:

WBCSD, *Connecting the dots* (2005), Slide 21

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Millennium Ecosystem Assessment (2005), *Ecosystems and Human Well-being: Synthesis*. Pp. 1-5 [online]. Available from:

<http://www.maweb.org/documents/document.356.aspx.pdf>

Instructions:

Facilitator to read through the main ecosystem changes listed on the slide. These should be linked to the four main findings shown opposite.

Approximately 20% of the world's coral reefs were lost and an additional 20% degraded in the last several decades of the twentieth century, and approximately 35% of mangrove area was lost during this time (in countries for which sufficient data exist, which encompass about half of the area of mangroves). The amount of water impounded behind dams quadrupled since 1960, and three to six times as much water is held in reservoirs as in natural rivers.

Water withdrawals from rivers and lakes doubled since 1960; most water use (70% worldwide) is for agriculture.

The structure and functioning of the world's ecosystems changed more rapidly in the second half of the twentieth century than at any time in human history.

Media/activity/handout guidance

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.

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"Four main findings

1. *Over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history, largely to meet rapidly growing demands for food, fresh water, timber, fiber, and fuel. This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth.*
2. *The changes that have been made to ecosystems have contributed to substantial net gains in human well-being and economic development, but these gains have been achieved at growing costs in the form of the degradation of many ecosystem services, increased risks of nonlinear changes, and the exacerbation of poverty for some groups of people. These problems, unless addressed, will substantially diminish the benefits that future generations obtain from ecosystems.*



The global ecosystem challenge

Facilitators' notes

Slide 60 (cont.): 3 minutes

Sources:

WBCSD, *Connecting the dots* (2005) , Slide 21

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Millennium Ecosystem Assessment (2005), *Ecosystems and Human Well-being: Synthesis*. Pp. 1-5 [online]. Available from:

<http://www.maweb.org/documents/document.356.aspx.pdf>

Further background information

Four main findings (cont.):

3. *"The degradation of ecosystem services could grow significantly worse during the first half of this century and is a barrier to achieving the Millennium Development Goals.*
4. *The challenge of reversing the degradation of ecosystems while meeting increasing demands for their services can be partially met under some scenarios that the MA has considered, but these involve significant changes in policies, institutions, and practices that are not currently under way. Many options exist to conserve or enhance specific ecosystem services in ways that reduce negative trade-offs or that provide positive synergies with other ecosystem services."*

Pick one to present in further detail

Media/activity/handout guidance

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.



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Session 5:

The global ecosystem challenge

Facilitators' notes

Slide 61: 2 minutes

Sources:

WBCSD, *Connecting the dots* (2005) , Slide 24

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Millennium Ecosystem Assessment, (2005), *Ecosystems and Human Well-being: Opportunities and Challenges for Business and Industry [online]*. Pp.6-9. Available from:

<http://www.maweb.org/documents/document.353.aspx.pdf>

Instructions

The facilitator should talk through this slide for the delegates.

The slide shows how different ecosystem services have changed as assessed by the Millennium Ecosystem Assessment 2005. The ecosystem services are classified as either Provisioning, Regulating or Cultural and the change is defined as either Degraded, Mixed or Enhanced.

Background (for facilitator to refer to)

The harmful consequences of ecosystem change will grow during the first half of this century. Most of the direct drivers of degradation in ecosystem services are currently remaining constant or growing in intensity, and they reflect various indirect drivers such as population growth, increasing per capita consumption, economic arrangements, socio-political and cultural factors, and technological change.

Media/activity/handout guidance

MA major findings regarding ecosystem services

60% of the world's ecosystem services are degraded

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

Source: Millennium Ecosystem Assessment, 2005

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Session 5:

The global ecosystem challenge

Facilitators' notes

Slide 61 (cont.): 2 minutes

Sources:

WBCSD, *Connecting the dots* (2005) , Slide 24

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Millennium Ecosystem Assessment, (2005), *Ecosystems and Human Well-being: Opportunities and Challenges for Business and Industry [online]*. Pp.6-9. Available from:

<http://www.maweb.org/documents/document.353.aspx.pdf>

Approximately 60% (15 out of 24) of the ecosystem services examined in this assessment are being degraded or used unsustainably—including 70% of provisioning and regulating services. While 15 services have been degraded, only 4 have been enhanced in the past 50 years, 3 of which involve food production: crops, livestock, and aquaculture.

MA definitions of “enhanced” or “degraded” terminology:

“For provisioning services, we define enhancement to mean increased production of the service through changes in the area over which the service is provided (e.g., the spread of agriculture) or increased production per unit area. We judge the production to be degraded if the current use exceeds sustainable levels. For regulating and supporting services, enhancement refers to a change in the service that leads to greater benefits for people (e.g., the service of disease regulation could be improved by the eradication of a vector known to transmit a disease to people).

Media/activity/handout guidance

MA major findings regarding ecosystem services

60% of the world's ecosystem services are degraded

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

Source: Millennium Ecosystem Assessment, 2005

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MA definitions of “enhanced” or “degraded” terminology (cont.):

Degradation of regulating and supporting services means a reduction in the benefits obtained from the service, either through a change in the service (e.g., mangrove loss reducing the storm protection benefits of an ecosystem) or through human pressures on the service exceeding its limits (e.g., excessive pollution exceeding the capability of ecosystems to maintain water quality). For cultural services, enhancement refers to a change in the ecosystem features that increase the cultural (recreational, aesthetic, spiritual etc.) benefits provided by the ecosystem.”



Session 5:

The global ecosystem challenge

Facilitators' notes

Slide 62: 1 minute

Sources:

WBCSD, *Connecting the dots* (2005) , Slide 24

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page).

Millennium Ecosystem Assessment, (2005), *Ecosystems and Human Well-being: Opportunities and Challenges for Business and Industry [online]*. Pp.6-9. Available from:

<http://www.maweb.org/documents/document.353.aspx.pdf>

The Economy of Ecosystems and Biodiversity, <http://www.teebweb.org>

Instructions:

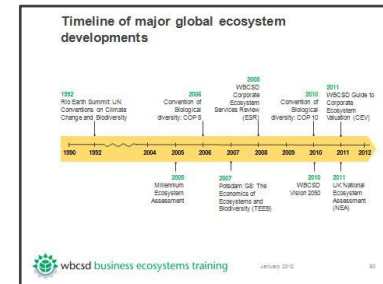
Facilitator to talk through the problems of ecosystem degradation and to introduce the studies and reports that have been developed to address this issue including: TEEB, the MA, Vision 2050 and so on.

The timeline shows the increasing international focus and action on this issue in recent years. Delegates with a desire for further information on how the ecosystem services have come to the forefront of international attention may wish to explore the Stakeholder Forum Earth Summit 2012 Sustainable Development timeline after the course:

<http://www.earthsummit2012.org/beta/sustainable-development-timeline>

[Customization: companies can show where their strategies have been implemented on the report timeline (if applicable).]

Media/activity/handout guidance



Session 5:

The global ecosystem challenge

Facilitators' notes

Slide 63: 1 minute

Source:

CBD, *Global Biodiversity Outlook (3)* (2010) Available at:
<http://www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf>

Instructions: Facilitator to describe the main findings of the latest Global Biodiversity Outlook report (CBD) and describe the illustrative indices.

The ecological footprint of humanity exceeds the biological capacity of the Earth.

There are multiple indications of continuing decline in biodiversity in all three of its main components (genes, species and ecosystems) including:

✧ **Genes:** for example crop and livestock diversity, continue to decline in agricultural systems. The five principal pressures directly driving biodiversity loss (habitat change, overexploitation, pollution, invasive alien species and climate change) are either constant or increasing in intensity.

✧ **Species:** species which have been assessed for extinction risk are on average moving closer to extinction. Amphibians face the greatest risk and coral species are deteriorating most rapidly in status. Nearly a quarter of plant species are estimated to be threatened with extinction.

The abundance of vertebrate species, based on assessed populations, fell by nearly a third on average between 1970 and 2006, and continues to fall globally, with especially severe declines in the tropics and among freshwater species.

Media/activity/handout guidance

Global Biodiversity Outlook report (CBD)

Continued decline in all three major components of biodiversity:

- ✧ Genes
- ✧ Species
- ✧ Ecosystems



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✧ **Ecosystems:** Natural habitats in most parts of the world continue to decline in extent and integrity, although there has been significant progress in slowing the rate of loss for tropical forests and mangroves, in some regions. Freshwater wetlands, sea ice habitats, salt marshes, coral reefs, seagrass beds and shellfish reefs are all showing serious declines.

Extensive fragmentation and degradation of forests, rivers and other ecosystems have also led to loss of biodiversity and ecosystem services.



Session 5:

The global ecosystem challenge

Facilitators' notes

Slides 64-66: 2 minutes

Source:

CBD, *Global Biodiversity Outlook (3)* (2010) Available at:
<http://www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf>

Instructions

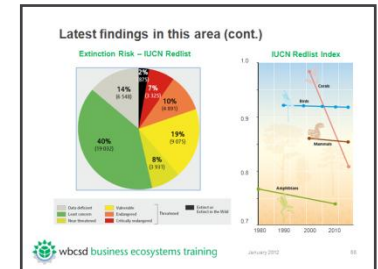
Facilitator to pick two indicators to describe to the audience.

Indicator list

Living Planet Index: Measures trends in the average size of species populations. The global Living Planet Index (LPI), shown here by the middle line, has declined by more than 30% since 1970, suggesting that on average, vertebrate populations fell by nearly one-third during that period. The Tropical LPI (bottom line) shows a sharper decline, of almost 60%. The Temperate LPI showed an increase of 15%, reflecting the recovery of some species populations in temperate regions after substantial declines in the more distant past.

Red List Index: A value of 1.0 indicates that all species in a group would be considered as being of Least Concern, that is not expected to become extinct in the near future. At the other extreme, a value of 0 indicates that all species in a group have gone extinct. A constant level of the index over time implies that the extinction risk of species is constant, and if the rate of biodiversity loss were reducing, the lines on this figure would drop.

Media/activity/handout guidance



The global ecosystem challenge

Facilitators' notes

Slides 64-66 (cont.): 2 minutes

Source:

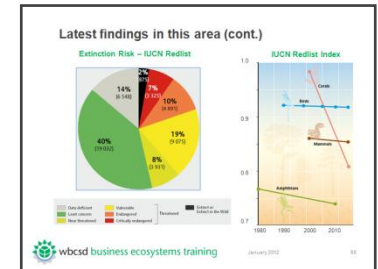
CBD, *Global Biodiversity Outlook (3)* (2010) Available at:
<http://www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf>

Indicator list (cont.)

Extinction Risk: The IUCN Red list categories reflect the likelihood that a species may become extinct if current conditions persist. The risk status of species is based on information generated from the work of thousands of species scientists from around the world. There are eight categories: Extinct, Extinct in the Wild, Critically Endangered, Endangered, Vulnerable, Near Threatened, Least Concern and Data Deficient. Those species that are classified as Critically Endangered, Endangered or Vulnerable are considered to be threatened. As of 2009, 47,677 species had been assessed and of these 36% are considered threatened with extinction; while of the 25,485 species in completely assessed groups (mammals, birds, amphibians, corals, freshwater crabs, cycads and conifers) 21% are considered threatened. Of 12,055 plant species assessed, 70% are threatened. However, plant species with a higher average extinction risk are over-represented in this sample.

Annual and cumulative deforestation of the Brazilian Amazon: The darker bars represent the actual area of the Brazilian portion of the Amazon deforested each year between 1990 and 2009 (figures on left vertical axis), as observed from satellite images analysed by the National Space Research Agency (INPE). The lighter bars represent the projected average annual rate required to fulfill the Brazilian government target to reduce deforestation by 80% by 2020 (from the average between 1996 and 2005). The solid line shows cumulative total deforestation (figures on right vertical axis) as a percentage of the estimated original extent of the Brazilian Amazon (4.1 million km²).

Media/activity/handout guidance



Session 5:

The global ecosystem challenge

Facilitators' notes

Slides 67-68: 2 minutes

Sources:

Government of India, Ministry of Environment and Forests, *National Biodiversity Action Plan* (2008), <http://moef.nic.in/downloads/public-information/NBAP-iyb.pdf>

National Biodiversity Authority, *Biodiversity...Future secured* (2011), <http://nbaindia.in/uploaded/pdf/Fact%20Sheet/Fact%20Sheets.pdf>

Instructions

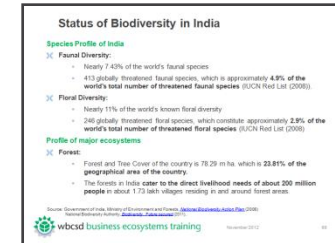
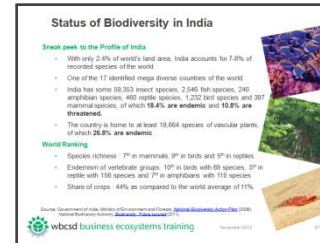
Facilitator to briefly describe India's specificities in terms of biodiversity

Background:

India, a mega diverse nation, is one of the richest nations in terms of biological diversity. The position of India in terms of its tropical and subtropical latitudes greatly influences the rich biodiversity. The natural ecosystems in India are diverse and range from the cold and high Himalayan regions to the sea coasts; from the wet north-eastern green forests to the dry northwestern arid deserts; with different types of forests, wetlands, islands and the oceans. diverse physical features and climatic situations have formed ecological habitats like forests, grasslands, wetlands, coastal and marine ecosystems and desert ecosystems, which harbour and sustain immense biodiversity.

India is one of the seventeen identified mega biodiversity countries of the world accounting for over 7.8% of all recorded species while representing only 2.5% of the world's geographic area (Mukerji, 2004). This includes more than 47,000 species of plants and 92,000 animal species documented till date. Besides, it is also home to over 16% of the world's population which exerts severe pressure on its rich and unique biological resources resulting in large scale habitat fragmentation and degradation, hastening the loss of biodiversity (MoEF, 2008). India, has an area of 329 mha, and is the seventh largest country in the world. With only 2.4% of the world's area, India accounts for 7-8% of the recorded species of the world.

Media/activity/handout guidance



With only 2.4% of world's land area. In terms of species richness, India ranks seventh in mammals, ninth in birds and fifth in reptiles. In terms of endemism of vertebrate groups, India's position is tenth in birds with 69 species, fifth in reptiles with 156 species and seventh in amphibians with 110 species. India's share of crops is 44% as compared to the world average of 11%. India also has 23.39% of its geographical area under forest and tree cover (India's Fourth Report to CBD, 2009) 7.43% of the world's fauna has been recorded in the country. According to IUCN Red List (2008), India has 413 globally threatened faunal species, which is approximately 4.9% of the world's total number of threatened faunal species.

India represents nearly 11% of the world's known floral diversity. As per the IUCN Red List (2008), India has 246 globally threatened floral species, which constitute approximately 2.9% of the world's total number of threatened floral species (8457).

Forests play a vital role in social, cultural, historical, economic and industrial development of the country and in maintaining its ecological balance. They are the resource base for sustenance of its population and a storehouse of biodiversity. The forests in the country have been classified into 16 major types and 251 subtypes on the basis of climatic and edaphic features. The total tree cover of the country has been estimated to be 9.17 mha (2.79 % of country's geographical area). The total forest and tree cover of the country is estimated as 23.39% of the geographical area.



The global ecosystem challenge

Facilitators' notes

Slides 69: 2 minutes

Sources:

Government of India, Ministry of Environment and Forests, *National Biodiversity Action Plan* (2008), <http://moef.nic.in/downloads/public-information/NBAP-iyb.pdf>
Conservation International, http://www.conservation.org/where/priority_areas/hotspots/asia-pacific/Pages/asia-pacific.aspx

Background:

Hotspots in India

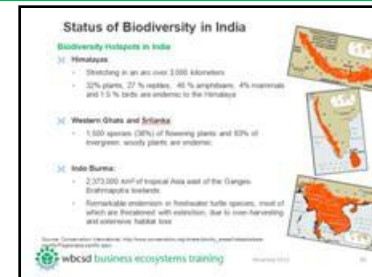
1. Himalaya Hotspot

The Himalaya Hotspot is home to the world's highest mountains, including Mt. Everest. The mountains rise abruptly, resulting in a diversity of ecosystems that range from alluvial grasslands and subtropical broadleaf forests to alpine meadows above the tree line. Vascular plants have even been recorded at more than 6,000 meters. The hotspot is home to important populations of numerous large birds and mammals, including vultures, tigers, elephants, rhinos and wild water buffalo.

2. Western Ghats and Srilanka

Faced with tremendous population pressure, the forests of the Western Ghats and Sri Lanka have been dramatically impacted by the demands for timber and agricultural land. Remaining forests of the Western Ghats are heavily fragmented; in Sri Lanka, only 1.5 percent of the original forest remains. Population levels are also applying increased stress on the fringes of protected areas where many farms, loggers, and poachers use the resources illegally. The region also houses important populations of Asian elephants, Indian tigers, and the Endangered lion-tailed macaque. Freshwater fish endemism is extremely high as well, with over 140 native species.

Media/activity/handout guidance



3. Indo Burma Hotspot

Encompassing more than 2 million km², Indo-Burma is home the large-antlered muntjac, the Annamite muntjac, the grey-shanked douc, the Annamite striped rabbit, the leaf deer, and the saola. The Indo-Burma hotspot encompasses 2,373,000 km² of tropical Asia east of the Ganges-Brahmaputra lowlands. It begins in eastern Bangladesh and then extends across north-eastern India, south of the Bramaputra River, to encompass nearly all of Myanmar, part of southern and western Yunnan Province in China, all of the Lao People's Democratic Republic, Cambodia and Vietnam, the vast majority of Thailand and a small part of Peninsular Malaysia. In addition, the hotspot covers the coastal lowlands of southern China (in southern Guangxi and Guangdong), as well as several offshore islands, such as Hainan Island (of China) in the South China Sea and the Andaman Islands (of India) in the Andaman Sea



Session 5:

The global ecosystem challenge

Facilitators' notes

Slides 70: 1 minute

Source:

Sources:

Government of India, Ministry of Environment and Forests, *National Biodiversity Action Plan* (2008), <http://moef.nic.in/downloads/public-information/NBAP-iyb.pdf>

Conservation International,
http://www.conservation.org/where/priority_areas/hotspots/asia-pacific/Pages/asia-pacific.aspx

Background:

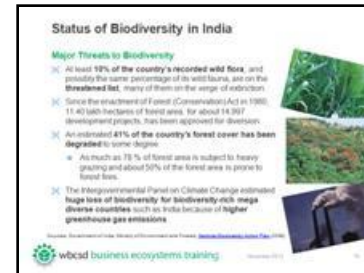
Major threats to biodiversity

The Ministry of Environment and Forests, in its *National Biodiversity Action Plan* recognizes that “*there is an urgent need for augmenting and accelerating the efforts for the conservation and sustainable use of biological diversity, and for fair and equitable sharing of benefits arising from the utilization of genetic resources.*”

Threat to biodiversity stems mainly from:

- ✧ Habitat fragmentation; degradation and loss;
e.g. Since the enactment of Forest (Conservation) Act in 1980, 11.40 lakh hectares of forest area, for about 14,997 development projects, has been approved for diversion.
- ✧ Shrinking genetic diversity;
e.g. Many among the well-known nearly 140 native breeds of farm livestock and poultry are also facing threat to their survival. This is happening even when local breeds are genetically better adapted to their environment and are more cost-effective being productive even whilst consuming lower quality feedstuffs.
- ✧ Invasive alien species;
e.g. Alien aquatic weeds like water hyacinth are increasingly choking waterways and degrading freshwater ecosystems. Lantana and carrot grass cause major economic losses in many parts of India.

Media/activity/handout guidance



- ✧ Declining forest resource base;
e.g. An estimated 41 %of the country's forest cover has been degraded to some degree. As much as 78 percent of forest area is subject to heavy grazing and about 50 percent of the forest area is prone to forest fires. Domestic demand for timber and fuelwood is well above the sustainable level.
- ✧ Climate change and desertification;
e.g. The Intergovernmental Panel on Climate Change in its summary report (Feb 2007) has estimated huge loss of biodiversity for biodiversity-rich megadiverse countries such as India because of higher greenhouse gas emissions. Similarly, scientific studies have brought out that strong interlinkages exist between desertification and biodiversity loss.



The global ecosystem challenge

Facilitators' notes

Slides 70: 1 minute

Source:

Sources:

Government of India, Ministry of Environment and Forests, *National Biodiversity Action Plan* (2008), <http://moef.nic.in/downloads/public-information/NBAP-iyb.pdf>

Conservation International,

http://www.conservation.org/where/priority_areas/hotspots/asia-pacific/Pages/asia-pacific.aspx

Background (cont.):

Major threats to biodiversity

Threat to biodiversity stems mainly from:

✧ Overexploitation of resources;

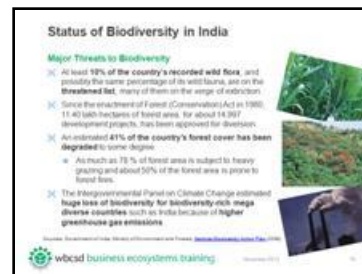
✧ Impact of development projects;

e.g. India, with its large population, is poised for rapid economic growth. Large infrastructural and industrial projects, including highways, rural road network, and the special economic zones, are coming up. With cities and townships expanding, often at the cost of agriculture, and agriculture expanding at the cost of tree cover, fresh threats to biodiversity are emerging. In addition, changing lifestyles of the people, with rising incomes, in both rural and urban areas, are placing increasing demands on biodiversity.

✧ Impact of pollution.

e.g. Biodiversity in India is facing threats from various sources of pollution, both point and non-point. The major threats are from improper disposal of municipal solid waste, inadequate sewerage, excessive use of chemical pesticides and continuous use of hazardous chemicals even where non-hazardous alternatives are available.

Media/activity/handout guidance



Session 5:

The global ecosystem challenge

Facilitators' notes

Optional: Slide 71: 5 minutes exercise, 2 minutes feedback

Source:

WBCSD, *Connecting the dots* (2005), Slide 34

<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page)

Objective: understand the main drivers and underlying causes of ecosystem and ecosystem service change (sector) and degradation. Understand current external pressures on biodiversity and ecosystem services. The exercise will help to identify gaps in people's understanding and perceptions of what drives ecosystem change.

Instructions:

Facilitator will allow the delegates to answer the following question individually:

'What do you think are the main drivers and underlying causes of ecosystem and ecosystem service change and degradation? You have 5 minutes to list as many as you can think of.'

Delegates asked to write down in 5 minutes as many as they can.

Once the 5 minute period is complete, continue to feedback slide.

Facilitator to ask delegates to feedback a few key examples for a group discussion. The facilitator should identify any key missing drivers highlighted during the section and encourage delegates to both review the course material further and consider if there are any wider drivers that have not been covered (e.g. The global financial crisis, technological innovation).

Media/activity/handout guidance



Session 5:

The global ecosystem challenge

Facilitators' notes

Slides 72 & 73: 2 minutes

Source: The Economics of Ecosystems and Biodiversity, <http://www.teebweb.org/>

Instructions:

Facilitator to introduce TEEB – introduce the main aims but only discuss one in detail.

Background:

TEEB – ‘The Economics of Ecosystems and Biodiversity’

TEEB originated at the meeting of G8+5 Environment Ministers in Potsdam, Germany in March 2007, where the German Government proposed a global study on “The economic significance of the global loss of biological diversity” as part of the “Potsdam Initiative” for biodiversity.

The German Federal Ministry for the Environment and the European Commission (EC), with the support of an Advisory Board, initiated work on this global study named “The Economics of Ecosystems and Biodiversity” (TEEB).

“The Economics of Ecosystems and Biodiversity compiled, built and made a compelling economics case for the conservation of ecosystems and biodiversity. The study drew on expertise from around the world to evaluate the costs of the loss of biodiversity and the associated decline in ecosystem services worldwide, and to compare them with the costs of effective conservation and sustainable use. The intent of the study is to sharpen awareness of the value of biodiversity and ecosystem services and facilitate the development of effective policy, as well as engaged business and citizen responses.” Pavan Sukhdev

The TEEB study is being conducted in phases. Preliminary findings from the first phase were presented in May 2008. Phase I's Interim Report demonstrates the huge significance of ecosystems and biodiversity and the threats to human welfare if no action is taken to reverse current damage and losses.

Media/activity/handout guidance



The Interim Report clearly showed that the economic size of the losses is enormous, as is their impact on human welfare. It illustrated the tensions between biodiversity loss and the achievement of the Millennium Development Goals, especially ending extreme poverty by 2025. For economists, Phase I showed that discount rates are an ethical choice and that we must measure what we manage. Despite the huge complexity of the task ahead, the study also showed that biodiversity must become the responsibility of everyone with the power and resources to act.



Session 5:

The global ecosystem challenge

Facilitators' notes

Slides 72 & 73 (cont.): 2 minutes

Source: The Economics of Ecosystems and Biodiversity, <http://www.teebweb.org/>

Instructions:

Facilitator to introduce TEEB – introduce the main aims but only discuss one in detail.

Background (cont.):

TEEB – ‘The Economics of Ecosystems and Biodiversity’

In TEEB phase 2 four key publications, presented on at the CBD COP-10 in Nagoya, Japan in October 2010:

- ✧ **TEEB Ecological and Economic Foundations.** A report on the fundamental concepts and state-of-the-art methodologies for economic valuation of biodiversity and ecosystem services;
- ✧ **TEEB in National and International Policy Making.** A report providing analysis and guidance on how to value and internalize biodiversity and ecosystem values in policy decisions;
- ✧ **TEEB in Local and Regional Policy.** A report providing analysis and guidance for mainstreaming biodiversity and ecosystem values at regional and local levels, copiously illustrated with case study examples; and
- ✧ **TEEB in Business and Enterprise.** A report providing analysis and guidance on how business and enterprise can identify and manage their biodiversity and ecosystem risks and opportunities.

Media/activity/handout guidance



The “buzz” surrounding TEEB has led to numerous requests by governments, in both developed and developing countries, for support in the implementation of TEEB national projects. Phase 3 of TEEB has been designed to meet this demand and at its heart is the aim to support the implementation of TEEB projects, particularly in developing countries by building national, regional and local government capacity to produce tailored economic assessments of ecosystems and biodiversity and supporting the mainstreaming of this information in policymaking processes.

In Feb 2010, the Ministry of Environment and Forests, Government of India organized official launch of The Economics of Ecosystems and Biodiversity (TEEB) India process. The India TEEB project aims to recognize, demonstrate, capture and optimize the value of ecosystem services in India, and targets policy actions at national and state levels, improvements in business assessments and disclosure, and improved citizen awareness of the serious issues involved. The Ministry is ultimately aiming to produce a Green Domestic Product account by end Dec 2015.

Source: TEEB (2010), <http://gistadvisory.com/India%20TEEB%20Launch%20-%20Pavan%20Sukhdev.pdf>



Session 5:

The global ecosystem challenge

Facilitators' notes

Slides 72 & 73 (cont.): 2 minutes

Source: The Economics of Ecosystems and Biodiversity, <http://www.teebweb.org/>

Background:

Alongside identifying urgent strategic priorities and policy solutions, TEEB provides a clear call for business action:

- ✧ Identify ecosystem impacts and dependence
- ✧ Assess risks and opportunities associated with ecosystem change
- ✧ Develop information systems, set targets, measure and value performance, report results
- ✧ Avoid, minimize, mitigate and offset ecosystem impacts
- ✧ Grasp opportunities, e.g. cost-efficiencies, new products and new markets
- ✧ Integrate ecosystem actions with wider CSR
- ✧ Engage business peers and other stakeholders to improve ecosystem guidance and policy



Session 6: Case study and exercise

Time guidelines

Time guidelines	Time
Exercise	25 mins

Session objective

Introduce the audience to the case study to be used in the exercise.

There are a choice of case studies available in the accompanying slide pack. These should be reviewed in advance and the most appropriate case study selected based on the audience.

This session will enable delegates to identify: the basic concepts that apply to each case study, the business case for action and how a company might choose to respond to these drivers.

Session format

This session will be run by one course facilitator, talking through the case study phases and enabling interaction and discussion between delegates.

Handouts & Material

- ✦ "The issue" slide- to be distributed at the discussion stage.
- ✦ "The response and results" are covered in session 9
- ✦ One flipchart per group

Session overview

The session will start with the introduction of a case study, which will be selected in advance by the facilitator based on the audience.

Through a group discussion, delegates will be able to compare their analysis against the case study. This will allow the delegates to see the concepts that they have learned and/or strengthened through previous sessions actively applied in a case study that they can relate to.



Session 6:

Case study and exercise

Facilitators' notes

Slide 74: < 1 minute

Objective: This session will enable delegates to identify the rationale for the approach used, the basic concepts applied and why business acted in the case study example.

Instructions:

Introduce the audience to the case study, choice of three available.

Total time for exercise: 20 minutes

Slides 75-93: 1 minute (one case study to choose)

Description of material: The facilitator sets the context for the case study, and states what the desired outcome of the project.

[Option of one of six case studies, facilitator to select appropriate case study]

Case Studies

- ✕ ArcelorMittal
- ✕ Lafarge
- ✕ BASF

India specific case studies

- ✕ Tata Chemicals
- ✕ Rio Tinto
- ✕ Ambuja Cements Limited

Media/activity/handout guidance

The collage contains the following slides:

- Session 6 Case study and exercise**
Module 1: Understanding the links between ecosystem services and business
wbcsl business ecosystems training
- Case study and exercise – ArcelorMittal**
Module 1: Understanding the links between ecosystem services and business
wbcsl business ecosystems training
- Case study and exercise – Lafarge**
Module 1: Understanding the links between ecosystem services and business
wbcsl business ecosystems training
- Case study and exercise – BASF**
Module 1: Understanding the links between ecosystem services and business
wbcsl business ecosystems training
- Case study and exercise – Tata Chemicals**
Module 1: Understanding the links between ecosystem services and business
wbcsl business ecosystems training
- Case study and exercise – Rio Tinto**
Module 1: Understanding the links between ecosystem services and business
wbcsl business ecosystems training
- Case study and exercise – Ambuja Cements Limited**
Module 1: Understanding the links between ecosystem services and business
wbcsl business ecosystems training



Session 6:

Case study and exercise

Facilitators' notes

Slides 75-93 (cont.): 1 minute

Source: WBSCD case studies

Instructions

The facilitator should split the delegates into 3 groups and explain that a business issue from a real case study will be presented.

The facilitator should explain the 3 sections of the exercise: understanding of the issue, the response from the business and the final results. Each section will be provided in different stages (i.e. Not all at once).

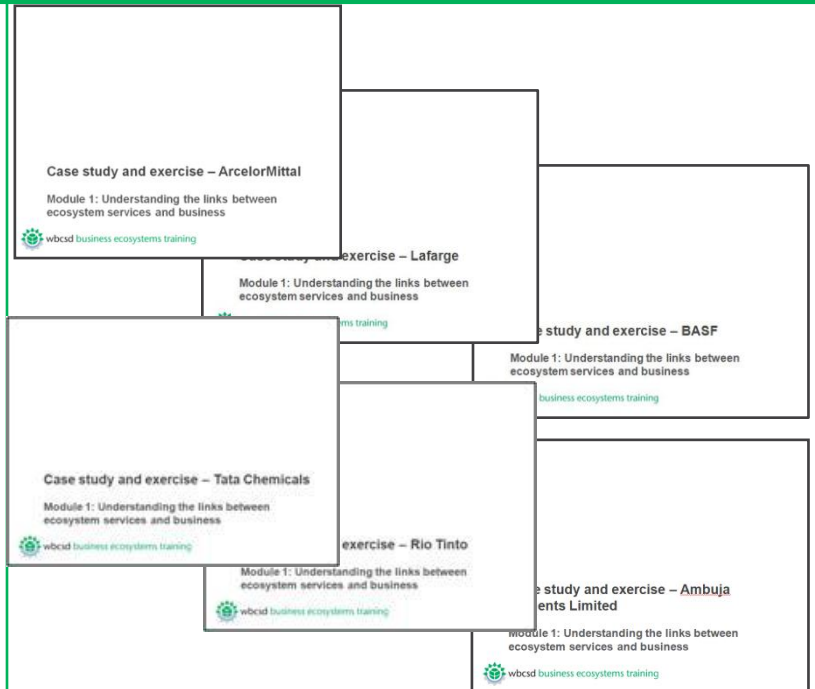
The case study “issue” will be provided for delegates to read after it has been read through on the slide by the facilitator.

The facilitator should explain that after the business issue has been presented, the group will be asked to consider a different aspect of the case study, structuring their discussion around the questions presented in this slide (i.e. consider the basic concept that cover biodiversity, ecosystems and ecosystem services; review the impacts and/or dependencies on ecosystem services; and consider the company's best response).

Once the groups have completed their discussions, one member of each group will then be asked to present back the key findings to the room. The facilitator should allow time for questions at that point.

The facilitator will then explain that the actual response and results from the company will be discussed following session 9.

Media/activity/handout guidance



Materials: Handouts:

- ✂ “The issue” slide, to be distributed at the discussion stage.
- ✂ 1x flipchart per group



Case study and exercise

Facilitators' notes

Slides 76, 79, 82: 1 minute

Source: WBSCD case studies

Instructions:

The facilitator should explain the business issue facing the company presented in this slide. This provides the context for the discussion.

Case studies:

Option 1: ArcelorMittal

In this case, the main issue is a heavy dependency and impact on a single, large water resource. ArcelorMittal's core operations, as well as its employee welfare and relationships with other stakeholders, hang upon its interaction with the Great Lakes Basin in North America.

Option 2: Lafarge

In this case, the main issue is that extractive operations have a significant impact on local biodiversity and environmental quality. Lafarge are attempting to ameliorate this through a series of initiatives to secure their license to operate into the future, particularly in developing countries.

Option 3: BASF

BASF is operating a Crop Protection division whose role is to enhance sustainable agriculture, providing farmers with products and services to improve crop yields and quality. BASF recognizes that the functioning of ecosystems is important for agriculture and the company's customers, the farmers.

Media/activity/handout guidance

Creating business value – ArcelorMittal

The issue
Water dependency
ArcelorMittal owned operations in the Great Lakes basin.

- ✗ 9 facilities throughout USA and Canada surrounding the Great Lakes.
- ✗ After iron and coal, water is the most important component in the steel making process.
 - Between 13,000 to 23,000 gallons of water per ton of steel.
- ✗ Also dependent on the Great Lakes to ship raw materials for manufacturing and for product distribution.
- ✗ 37 million people, including more than 25,000 ArcelorMittal employees, live and rely on the lakes for drinking water, recreation and food sources.



wbcsd business ecosystems training JANUARY 2012 82

Creating business value – Lafarge

The issue
Mitigating impacts and restoring biodiversity, critical steps for extractive industries.

- ✗ Lafarge is a French group operating in resources extraction and building materials
- ✗ Worldwide operations, significantly in developing countries.
- ✗ Several potentials for impacts, e.g. removal of soil and destruction of habitats.
- ✗ Managing and mitigating impacts very important for corporate reputation and the acceptability of mining operations.

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Creating business value – BASF

The issue
BASF are a world leading chemical company. They operate a Crop Protection in order to work with farmers to enhance sustainable agriculture.

- ✗ BASF recognizes that the functioning of ecosystems is important for agriculture and the company's customers, the farmers.
- ✗ Acknowledge that competitive agriculture needs to be compatible with biodiversity, in order to be accepted by society.

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Session 6:

Case study and exercise

Facilitators' notes

Slides 85, 88, 89, 92: 1 minute

Source: WBSCD case studies

Instructions:

The facilitator should explain the business issue facing the company presented in this slide. This provides the context for the discussion.

Case studies:

Option 4: Tata Chemicals

In this case, Tata Chemicals is considering different options to mitigate the ecosystems impacts caused by the production of soda ash in one of its plant was set up in Okhamandal, Gujarat.

Option 5: Rio Tinto

In this case Rio Tinto is looking into the mitigation options of the exploration then operations of a diamond mine in Madhya Pradesh, in a region where water resources are becoming scarcer.

Option 6: Ambuja Cements Limited

In this case, the main issue is that extractive operations have a significant impact on local biodiversity and environmental quality. Ambuja Cements Limited, a group company of Swiss Cement group Holcim, is dedicated to mitigate the impacts from the withdrawal of limestone and water from the area, both of which are required for cement manufacturing.

Media/activity/handout guidance

Greening the Lands – Tata Chemicals

The Issue: Waste Disposal

- Tata Chemicals soda ash plant was set up in Okhamandal, Gujarat in 1928 and is the second largest producer of soda ash (sodium carbonate) in the world.
- The manufacturing process is such that more than 400kg of waste is generated for every tonne of soda ash produced.
- Production volume has grown from 80 tonnes / day in 1944 to the current 2,400 tonnes / day; the volume of wastes generated from its operation has also increased.
- Initially, a barren site was used for waste disposal.
- Solid waste disposal was building up as a big issue as the waste pile grew at around 1000kg.
- The problem escalated to such proportions, and the company having exhausted all different impact mitigation options that in 1998 the company consulted consulting the waste site by another unit. However the cost was estimated to Rs120 million.

Source: Tata Chemicals
http://www.tatachemicals.com/india/india/okhamandal/okhamandal.pdf

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Setting up a new benchmark for mine development in India – Rio Tinto

The Issue

- The Bundar project is Rio Tinto's first and most advanced diamond mining venture in India.
- Rio Tinto began exploration for diamonds in this central Indian state of Madhya Pradesh in late 2001.
- Diamond bearing lamprophyre was discovered in the Bundar region in 2004. The deposit – the first diamond discovery in India for over 50 years and one of only four new diamond mines globally that is likely to become functional in the next 10 years – consists of a cluster of eight diamondiferous lamprophyres (igneous rock), the largest of which measures 18 ha.
- Construction is scheduled for 2014 and 2015, with the mine expected to be operational by 2016.

Source: Rio Tinto India
http://www.riointia.com/india/india/bundar/bundar.pdf

wbcsd business ecosystems training December 2012

Sustaining the Ecosystem for Water, Wildlife and Community in India: Ambuja Cements Limited

The Issue

- Ambuja Cements Limited (Group company of Holcim) is a leading supplier of cement in India.
- The company operates the Ambujanagar cement plant in the Kodinar region of Gujarat, India.
- The Ambujanagar facility is located between the Arabian Sea and the Gir Sanctuary and National Park (designated protected area).
- There have been critical problems of freshwater availability in the state of Gujarat since 1970.
- Owing to over-withdrawal of freshwater and intensive land use in the Kodinar region, there has been marked depletion of the water table and an associated serious increase in water salinity from the regression of seawater into the water table.

Source: Ambuja Cements Limited
http://www.ambujacement.com/india/india/kodinar/kodinar.pdf

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Session 6:

Case study and exercise

Facilitators' notes

Slides 77, 80, 83, 86, 90, 93: 15 minutes discussion

Instructions:

The facilitator should distribute the handout of the previous slide and encourage the groups to discuss their assigned issue for 5 minutes.

It is important to emphasize that there are no right answers in this discussion – the company's actual response and outcomes will be presented later but there may well be other responses and outcomes possible!

Slide 94: 6 minutes feedback

Instructions

The facilitator should ask one member from each group to present back the key points from their discussion, recording very simple bullets on a flipchart.

The solutions will be discussed in **Session 9**.

Media/activity/handout guidance

Creating business value – Exercise

ArcelorMittal decided to implement a strategy to manage their impacts and dependencies in the Great Lakes basin.

In your groups, discuss the following questions:

- 1) What ecosystems and ecosystem services apply to this case study?
- 2) What are ArcelorMittal's ecosystem service impacts/dependencies?
- 3) Based on your answers to 1 and 2, how can ArcelorMittal address their impacts and dependencies?



wbcd business ecosystems training

January 2012

Creating business value – Exercise

BASF decided to implement a strategy to manage their impacts and dependencies on biodiversity/ecosystem services.

In your groups, discuss the following questions:

- 1) What ecosystems and ecosystem services apply to this case study?
- 2) What are BASF's ecosystem service impacts/dependencies?
- 3) Based on your answers to 1 and 2, how can BASF start to address their impacts and dependencies?



wbcd business ecosystems training

January 2012

Creating business value – Exercise

Lafarge decided to implement a strategy to manage their impacts and dependencies on biodiversity/ecosystem services.

In your groups, discuss the following questions:

- 1) What ecosystems and ecosystem services apply to this case study?
- 2) What are Lafarge's ecosystem service impacts/dependencies?
- 3) Based on your answers to 1 and 2, how can Lafarge start to address their impacts and dependencies?

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Feedback

Group Brief



wbcd business ecosystems training

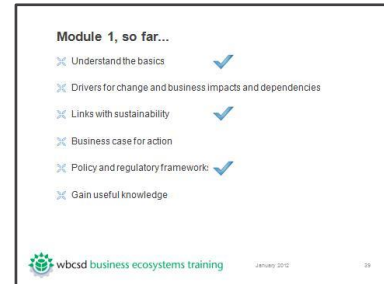
December 2012

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Session 6:

Knowledge check

Facilitators' notes	Media/activity/handout guidance
Slide 96: <1 minute Instructions: Facilitator to recap what has been covered so far in the module	



Session 7: Knowledge check

Time guidelines

Time guidelines	Time
Knowledge check- activity	10 mins

Session overview

The session will run by reminding the delegates of the session previously seen, followed up by a quick quiz of key concepts and terminology.

Session objective

Reinforce the explicit or implicit learning of the course, and provide an overview of the learning gaps in the group.

Session format

This session will be run by one course facilitator.

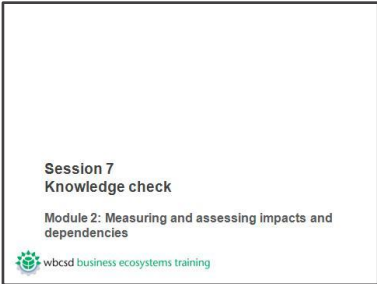
Handouts

Delegates course material desk pack – hardcopies will be laid out on delegate desks in advance of their arrival at the course. This pack contains copies of all of the slides used throughout this course together with relevant handout materials required for each session.



Session 7:

Knowledge check

Facilitators' notes	Media/activity/handout guidance
Slide 96: 2 minutes Instructions: Facilitator to quickly review the key knowledge gained through the previous sessions. Note to facilitator: do not stop to explain a specific concept, only list the sessions and the overall objective of each one. Gaps in knowledge should be identified after the delegates have responded to the “knowledge check” questions.	



Session 7:

Knowledge check

Facilitators' notes	Media/activity/handout guidance
Objective: knowledge check Total time for exercise: 8 minutes Slide 76: 8 minutes Instructions: 1. Delegates will have a couple of minutes to answer the questions on a piece of paper 2. Facilitator to ask delegates to provide their answer 3. Facilitator will debrief and clarify any doubts from delegates Questions: 1. What does Vision 2050 do? 2. What is TEEB? 3. Name two drivers and/or underlying causes of ecosystem and ecosystem service change? Answers: 1. The Vision 2050 study lays out a pathway leading to a global population of some 9 billion people living well, within the resource limits of the planet by 2050. 2. The Economics of Ecosystems and Biodiversity (TEEB) compiled, built and made the economics case for the conservation of ecosystems and biodiversity. The study aims to improve awareness of the value of biodiversity and ecosystem services and facilitate the development of effective policy, as well as engage businesses and the public. 3. Population growth, climate change (see Session 7 for more examples).	



Time guidelines

Time guidelines	Time
The business case for action – presentation	15 mins (8a+b)

Session overview
This session will introduce the case for including ecosystem considerations within business decision making.

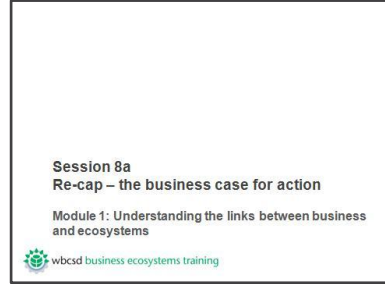
Session objective
This session aims to explain: ✦ Why biodiversity and ecosystem services matter to business ✦ The importance of building a business case for ecosystems and their services

Session format
This session will be run by one course facilitator, who will talk through key concepts and definitions with delegates.

Handouts
Delegates course material desk pack – hardcopies will be laid out on delegate desks in advance of their arrival at the course. This pack contains copies of all of the slides used throughout this course together with relevant handout materials required for each session.



Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 98: <1 minute Objective: why this matters to business, and the importance of building a business case for ecosystems and their services. Total time for exercise: 20 minutes Instructions: Talk through slides. Background Businesses have an impact on ecosystems and ecosystem services and also a reliance and dependence on them. Changes in ecosystems create both business risks and opportunities. Managing ecosystems services – Role of business in managing impacts of and dependencies on ecosystems.	



Re-cap: The Business case for action

Facilitators' notes

Slide 99: 1 minute

Source:

WBCSD, *Connecting the dots* (2005),
<http://www.wbcd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true> (link to connecting the dots at the bottom of the page)

Instructions:

Facilitator to talk through the following:

- ✧ All businesses **depend** and **impact** on ecosystems and their services – either as part of their core operations or through their value chain Provisioning, Regulating, Cultural & Supporting Ecosystem Services.
- ✧ Ecosystem degradation can undermine a 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**.

Media/activity/handout guidance



Re-cap: The Business case for action

Facilitators' notes

Slide 100: 2 minutes

Source:

WBCSD, *Responding to the Biodiversity Challenge: Business contributions to the Convention on Biological Diversity* [online] (2010)
<http://www.wbcsd.org/web/nagoya/RespondingtotheBiodiversityChallenge.pdf>

Instructions:

Facilitator to talk through the following points: Corporations not only impact ecosystems and the services they provide, but also depend upon them. For instance:

- ✧ Water scarcity and declining water quality: Freshwater is a critical input for every conceivable major industrial process
- ✧ Disruption of food, fiber or other national industrial inputs. Agribusiness and the food sector depend on ecosystem services like pollination, pest and erosion regulation; forest industries – and the downstream construction, communications and packaging sectors – rely on continued supplies of timber and wood fiber
- ✧ Increasing incidents of extreme flooding storms, drought etc. building owners and plant operators benefit from the natural hazard regulation service that some ecosystems provide.
- ✧ Increasing stakeholder expectations
- ✧ Tightened public policies on natural resource management or operational permitting
- ✧ Traditional risk management processes do not always capture ecosystems risks/opportunities

Media/activity/handout guidance



Background: Ecosystems degradation will affect how business operates

In the past 50 years, human activity has altered ecosystems faster and more extensively than ever before.

This is unfortunate, as the degradation of ecosystems and the services they provide destroys business value and limits future growth opportunities. Biodiversity loss and ecosystem degradation come at a price, which has been estimated to be between Euro 1.35 trillion and Euro 3.10 trillion every year (WBCSD, 2010). Business cannot function if the ecosystem services it relies on are degraded or out of balance, and there is a need to recognise the full value of ecosystems and their services in order to ensure their sustainable use. In fact, it is hard to think of any economic activity that does not benefit from ecosystem services or, in some way, alter the ecosystems around it.

Example: All extractive industries cause some level of ecosystem disturbance; whilst tourism increasingly builds on an ecosystem's cultural services and aesthetic values



Re-cap: The Business case for action

Facilitators' notes

Slide 101: 1 minute

Source:

WBCSD, *Guide to Corporate Ecosystem Valuation* (2011). Detailed Presentation April 2011 p8

<http://www.wbcds.org/pages/adm/download.aspx?id=5921&objectypeid=7>

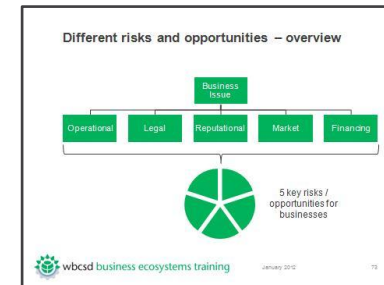
Instructions:

There are 5 broad categories of risk/opportunity for biodiversity and ecosystems which can be considered. The facilitator should introduce these categories and use examples from the background notes below to illustrate examples, depending on the time available.

When introducing this group of slides, the facilitator should acknowledge that the recommendations are intended to build upon existing business processes. It is not intended that businesses should undertake new processes to manage these risks and opportunities, but should aim to slightly modify their current approaches.

Introduce the main categories of risk and opportunity.

Media/activity/handout guidance



Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 102: 1 minute Source: WBCSD, <i>Guide to Corporate Ecosystem Valuation</i> (2011). Detailed Presentation April 2011 p8 http://www.wbcds.org/pages/adm/download.aspx?id=5921&objectypeid=7 Instructions: Talk through the following Operational risks relate to a company's day-to-day activities, expenditure and processes. Risks may include having to pay more for ecosystem dependencies such as water, and for environmental externalities. Operational opportunities can improve operational efficiencies and save costs, for example, by finding lower-cost ways of securing clean water supplies and flood control through maintaining ecosystems rather than investing in expensive technological solutions. ✦ For example, Dow uses household wastewater on its Terneuzen industrial site in The Netherlands, which not only allows water to be re-used three times but also saves energy and chemicals previously used for water treatment. Operational opportunities can also include building awareness and understanding amongst employees/stakeholders.	 The handout slide is titled 'Introduction to different types of risks and opportunities'. It features a circular icon with a green and blue design in the top right corner. The slide is divided into two main sections: 'Operational Risks' and 'Operational Opportunities'. Under 'Operational Risks', there is a bullet point: 'Increased scarcity and cost of raw materials'. Under 'Operational Opportunities', there are two bullet points: 'Improving operational efficiencies and saving costs' and 'Building awareness amongst employees/stakeholders'. At the bottom left, there is a logo for 'wbcsd business ecosystems training'. At the bottom right, there is a date 'January 2012' and a page number '74'.



Re-cap: The Business case for action

Facilitators' notes

Slide 103: 1 minute

Source:

WBCSD, *Guide to Corporate Ecosystem Valuation* (2011). Detailed Presentation April 2011 p8

<http://www.wbcd.org/pages/adm/download.aspx?id=5921&objectypeid=7>

Regulatory and legal risks include government policies, laws, and court actions.

In terms of regulatory and legal opportunities, companies can demonstrate the value of improving ecosystem management policies, regulations and incentives to stakeholders and regulators. For example, companies dependent on ecosystem services, such as water or storm protection, could benefit from more sustainable catchment management practices.

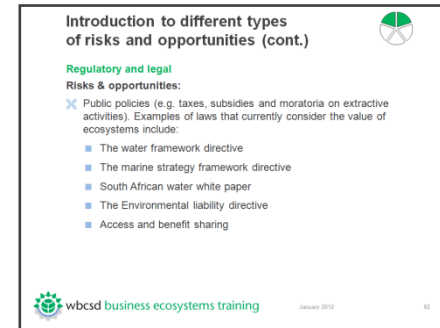
For example, Mondi, an integrated paper and packaging producer, is leading a multi-stakeholder program in South Africa to help restore wetlands, incl. by lobbying for policy changes – even if this means the loss of commercial forests, it helps preserve all of its operations that are highly dependent on water availability.

Examples of laws that currently consider the value of ecosystems include:

- ✂ The water framework directive,
- ✂ The marine strategy framework directive,
- ✂ South African water white paper,
- ✂ The Environmental liability directive,
- ✂ Access and benefit sharing

[Customize: Companies to customize this slide for inclusion of local legislation, i.e. according to audience need.]

Media/activity/handout guidance



The slide titled "Introduction to different types of risks and opportunities (cont.)" features a green circular icon with a white gear-like pattern in the top right corner. The text is organized into sections: "Regulatory and legal" in green, "Risks & opportunities:" in blue, and a list of public policies in blue. The list includes: "The water framework directive", "The marine strategy framework directive", "South African water white paper", "The Environmental liability directive", and "Access and benefit sharing". At the bottom left is the WBCSD logo and the text "wbcsd business ecosystems training". At the bottom right is the date "January 2012" and the slide number "103".



Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 104: 1 minute Source: WBCSD, <i>Guide to Corporate Ecosystem Valuation</i> (2011). Detailed Presentation April 2011 p8 http://www.wbcds.org/pages/adm/download.aspx?id=5921&objectypeid=7 Reputational risks affect a company's brand, image, "goodwill" and relationships with their customers and other stakeholders. Reputational opportunities could include implementing and communicating sustainable purchasing, operating or investment practices in order to differentiate corporate brands. A number of big businesses are familiar with these risks and opportunities. In 2008, Unilever's CEO announced that all Unilever's palm oil will be certified sustainable by 2015. Before this announcement, Unilever had been targeted by pressure group Greenpeace as part of a campaign to highlight the environmental impact of the global increase in demand for palm oil. Unilever buys about 1.6 million tons of palm oil each year so this is a significant commitment.	 The handout slide is titled 'Introduction to different types of risks and opportunities (cont.)'. It features a green circular icon with a white gear-like pattern in the top right corner. The slide is divided into two main sections: 'Reputational Risks' and 'Reputational Opportunities'. Under 'Reputational Risks', there are two bullet points: 'Relationships with their customers and other stakeholders' and 'Affect a company's brand, image, "goodwill" (e.g. image from media and NGOs)'. Under 'Reputational Opportunities', there is one bullet point: 'Implementing and communicating sustainable purchasing, operating or investment practices in order to differentiate corporate brands'. At the bottom left, there is a logo for 'wbcsd business ecosystems training'. At the bottom right, there is a date 'January 2012' and a page number '79'.



Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 105: 1 minute Source: WBCSD, <i>Guide to Corporate Ecosystem Valuation</i> (2011). Detailed Presentation April 2011 p8 http://www.wbcds.org/pages/adm/download.aspx?id=5921&objectypeid=7 Market and product risks relate to product and service offerings, consumer preferences, and other market factors that affect corporate performance. Market and product opportunities include potential new revenue streams when participating in emerging environmental markets. For example, Henkel's eco-friendly "Terra" cleaners and detergents use active ingredients that are based predominantly on plant-derived raw materials rather than petrochemicals. Car manufacturers developing hybrid cars are another example. US organic food sales are growing at 3 times the rate of the food sector as a whole (ref. TEEB for Business).	 The handout slide is titled "Introduction to different types of risks and opportunities (cont.)". It features a diagram with a central circle labeled "Market and product" and two surrounding circles labeled "Risks" and "Opportunities". Under "Risks", it lists: "Relate to product and service offerings, consumer preferences, and other market factors that affect corporate performance" and "Consumer preferences". Under "Opportunities", it lists: "Potential new revenue streams when participating in emerging environmental markets". The slide footer includes the WBCSD logo, "wbcsd business ecosystems training", "January 2012", and the page number "77".



Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 106: 1 minute Source: WBCSD, <i>Guide to Corporate Ecosystem Valuation</i> (2011). Detailed Presentation April 2011 p8 http://www.wbcds.org/pages/adm/download.aspx?id=5921&objectypeid=7 Financing risks affect the cost and availability of capital to companies. For example, project finance loans can only be received if the company complies with the 'Equator Principles' and the underlying IFC biodiversity performance standards or a bank's own biodiversity policies. Financing opportunities could potentially include companies obtaining more favourable lending terms, or access to new green funds. For example, ChevronTexaco received approval in 2005 to convert a tapped-out drilling site in Louisiana into a 2,800-hectare wetland to generate credits for the U.S. wetland mitigation banking market – the company could earn more than \$150 million selling the credits to developers. Rabobank has specific requirements regarding impacts on biodiversity for palm oil and soya (ref. TEEB for Business).	 The handout slide is titled 'Introduction to different types of risks and opportunities (cont.)'. It features a green circular logo in the top right corner. The slide is divided into two main sections: 'Financing Risks' and 'Financing Opportunities'. Under 'Financing Risks', there is a bullet point: 'Affect the cost and availability of capital to companies'. Under 'Financing Opportunities', there are two bullet points: 'Could potentially include companies obtaining more favourable lending terms' and 'Access to new green funds'. At the bottom left, there is a logo for 'wbcsd business ecosystems training' and the date 'January 2012'. At the bottom right, there is a small number '78'.



How can business respond?

Facilitators' notes

Slide 107: 1 minute

Instructions:

Facilitator to ask the audience How can business respond?

Slide 108: 1-5 minute(s)

Source: WBCSD, *Guide to Corporate Ecosystem Valuation* (2011).
Detailed Presentation April 2011 p8

Instructions:

Facilitator to talk through slide content supported by the background notes.

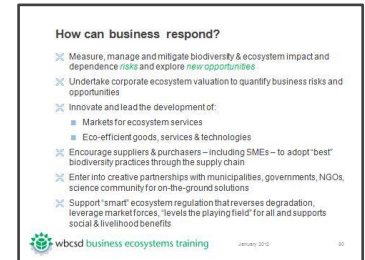
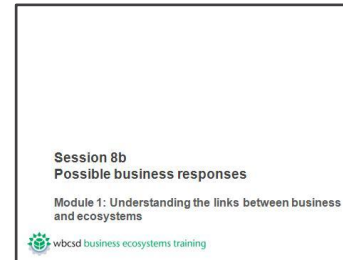
Background

In a world that is increasingly carbon- and natural resource- constrained, global companies with strong brand positions face material risk as a direct result of biodiversity loss and ecosystem degradation. By the same token, these risks provide many new business opportunities.

WBCSD encourages the business community to proactively:

1. Measure, manage and mitigate risks and impacts: Smart companies with material ecosystem “footprints” need to be proactive. They will need to anticipate significant changes in stakeholder expectations and government policy and regulation of business. An example of this is the push for companies to report on their water “footprint”, assessing their impacts.
2. Improve decision-making by undertaking corporate ecosystem valuation to quantify business risks and opportunities: This includes valuation, accounting, verification & reporting on impacts, use & management.
3. Innovate and help develop new markets for ecosystem services and eco-efficient goods, services & technologies: Business is well-known for being an innovation leader and a number of companies have seen these opportunities and already benefited from them.

Media/activity/handout guidance



4. Encourage suppliers & purchasers to adopt best practices: Many big companies have large and complex value chains, which makes measuring and mitigating impacts challenging because often the most significant impacts are up- and downstream rather than in their direct operations. For example, Unilever estimates that its manufacturing makes up less than 5 percent of its total water footprint: for its food products, the majority of water use is upstream in the growing of agricultural raw materials, and for its home and personal care products, the greatest impacts occur downstream in consumer use, for example water needed for personal washing and laundry. Since 1995, Unilever has reduced the amount of water used per ton of production by 63 percent by minimizing water use and maximizing water recycling.
5. Enter into local partnerships to address on-the-ground issues. This includes engaging with stakeholders, including customers, investors, governance boards, communities & employees in order to access and use ecosystem services.
6. Promote “smart” ecosystem regulation that leverages market forces and business solutions that halt degradation and “levels the playing field” for all.



How can business respond?

Facilitators' notes

Slide 108: 1-5 minute(s)

Source: TEEB D3 (p.1)

<http://www.teebweb.org/Portals/25/Documents/TEEB%20for%20Business/TEEB%20for%20Bus%20Exec%20English.pdf>

Instructions:

Facilitator should highlight the fact that the response to this issue is to take action and do things differently.

Facilitator to talk through the following points:

- ✧ A number of different reports exist that give examples of where business has accounted for ecosystem services within their business decisions.
- ✧ 28 case studies examples, from 16 different countries and 15 sectors are given in the report *Responding to the Biodiversity Challenge*, available from:
(<http://www.wbcsd.org/web/nagoya/RespondingtotheBiodiversityChallenge.pdf>).
- ✧ The TEEB reports specifically TEEB for business and the National Ecosystem Assessment in the UK
(<http://www.teebweb.org/InformationMaterial/TEEBReports/tabid/1278/Default.aspx>)
(<http://uknea.unep-wcmc.org/>)

Key action points for business covered by TEEB D3

1. Identify the impacts and dependencies of your business on biodiversity and ecosystem services (BES)
2. Assess the business risks and opportunities associated with these impacts and dependencies

Media/activity/handout guidance



3. Develop BES information systems, set SMART targets, measure and value performance, and report your results
4. Take action to avoid, minimize and mitigate BES risks, including in-kind compensation ('offsets') where appropriate
5. Grasp emerging BES business opportunities, such as cost-efficiencies, new products and new markets
6. Integrate business strategy and actions on BES with wider corporate social responsibility initiatives
7. Engage with business peers and stakeholders in government, NGOs and civil society to improve BES guidance and policy



Session 9: Brainstorming the business case

Time guidelines

Time guidelines	Time
Brainstorming the business case – activity	25 mins

Session overview

This session will help delegates to understand the main drivers and underlying causes of ecosystem and ecosystem service change and degradation.

Session objective

The session aims to enable an understanding of the main drivers and underlying causes of ecosystem and ecosystem service change and degradation.

Session format

This session will be run as a group exercise, both facilitators will be available to answer questions during the session.

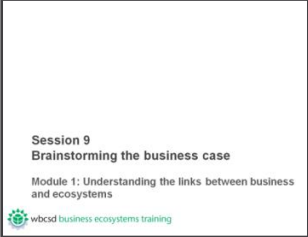
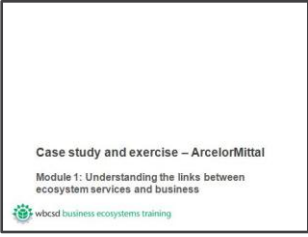
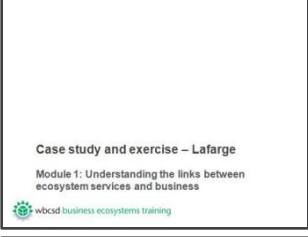
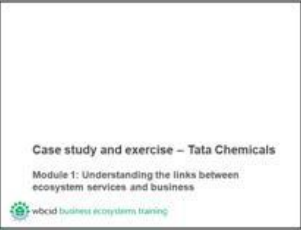
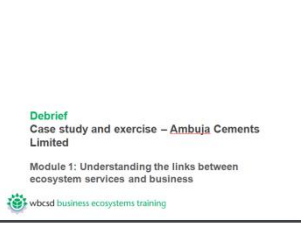
Handouts

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Session 9:

Brainstorming the business case (exercise)

Facilitators' notes	Media/activity/handout guidance	
Slide 109: <1 minute Instructions: facilitator to introduce objectives for sessions. Total time for exercise: 20 minutes Slide 110-122 (pick one from the six case studies available): 3 minutes Objective: understand the main drivers and underlying causes of ecosystem and ecosystem service change and degradation. Sources: WBCSD case studies Instructions: The facilitator will recap the issue presented in the original case study anecdote in session 6. The delegates will already be familiar with the case studies so the facilitator should focus on providing a high level recap, highlighting the key factors in both the situation and company response. Also the facilitator should refer back to any material that the group has produced in previous sessions to illustrate issues. In particular, the facilitator may want to refer to the exercise carried out in the Identifying Key Ecosystem Services activity (session 4).	 Session 9 Brainstorming the business case Module 1: Understanding the links between business and ecosystems wbcsl business ecosystems training	 Case study and exercise – ArcelorMittal Module 1: Understanding the links between ecosystem services and business wbcsl business ecosystems training
	 Case study and exercise – Lafarge Module 1: Understanding the links between ecosystem services and business wbcsl business ecosystems training	 Case study and exercise – Tata Chemicals Module 1: Understanding the links between ecosystem services and business wbcsl business ecosystems training
	 Case study and exercise – BASF Module 1: Understanding the links between ecosystem services and business wbcsl business ecosystems training	 Case study and exercise – Rio Tinto Module 1: Understanding the links between ecosystem services and business wbcsl business ecosystems training
		 Debrief Case study and exercise – Ambuja Cements Limited Module 1: Understanding the links between ecosystem services and business wbcsl business ecosystems training



Brainstorming the business case (exercise)

Facilitators' notes

Slide 123: 10 minutes for discussion + 5 minutes for feedback

Instructions:

Once the audience has had the recap from the previous slide.

1. Facilitator to divide delegates in groups of 4 or 5.
2. Facilitator will provide each group with a A1 print out of a table covering different groupings for risks and opportunities (as presented in the current slide).
3. Based on the case study presented at the beginning of the module, the facilitator will ask the delegates to identify the potential business risks and opportunities and capture them under the relevant section head on the wall chart provided.

Feedback

Ask groups to provide feedback in turn; facilitator to consolidate points from the discussion on a whiteboard/flipchart.

Instructions

The facilitator should distribute the “response and results” slides handout. Then compare and contrast the thoughts gathered on the flipchart against the actual response from **ArcelorMittal / Lafarge / BASF / Tata Chemincals / Rio Tinto / Ambuja Cement** and the results that were achieved.

Media/activity/handout guidance

Business risks and opportunities		
Type	Risk	Opportunity
Operational		
Legal and political		
Reputational		
Market and product		
Financing		

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Session 9:

Brainstorming the business case (exercise)

Facilitators' notes

Slides 125-128: 7 minutes

Option 1 ArcelorMittal

Instructions:

Following the exercise feedback, the facilitator should talk through the case study company's response to the issue and the positive results of this response.

Case study 1: ArcelorMittal

The response

"Sustain Our Great Lakes" Public Private Partnership

Recognizing that the planet's largest freshwater resource is in jeopardy, ArcelorMittal, as the sole corporate partner, joined the National Fish and Wildlife Foundation, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Forest Service and the National Oceanic and Atmospheric Administration in 2007, to focus on collaborative ecosystem restoration.

ArcelorMittal and partners work together to leverage resources and educate decision makers on the importance of the Great Lakes to the region's economic vitality and quality of life, the needs and priorities of the ecosystem, and to identify efforts that can have the largest impact towards restoration goals.

The ultimate goal of the Sustain Our Great Lakes program is to restore the ecological integrity of the Basin. This is achieved through financial grants that:

1. Increase capacity and collaboration of environmental initiatives; and
2. Enable NGOs to provide on-the-ground impact toward restoration goals, thereby increasing the overall health of the Great Lakes.

Media/activity/handout guidance

Creating business value – ArcelorMittal

The issue
Water dependency
ArcelorMittal owned operations in the Great Lakes basin.

- 9 facilities throughout USA and Canada surrounding the Great Lakes
- After iron and coal, water is the most important component in the steel making process.
 - Between 13,000 to 23,000 gallons of water per ton of steel.
- Also dependent on the Great Lakes to ship raw materials for manufacturing and for product distribution.
- 37 million people, including more than 25,000 ArcelorMittal employees live and rely on the lakes for drinking water, recreation and food.

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Creating business value – ArcelorMittal

The response
"Sustain Our Great Lakes" Public Private Partnership

- In 2007, ArcelorMittal joined the National Fish and Wildlife Foundation, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Forest Service and the National Oceanic and Atmospheric Administration.
- Collaborative ecosystem restoration. Partners work together to leverage resources and educate decision makers on the importance of the Great Lakes to the region's economic vitality and quality of life, the needs and priorities of the ecosystem, and to identify potential actions.

Sustain Our Great Lakes program aims to restore the ecological integrity of the Basin. Financial gains:

- Increase capacity and collaboration of environmental initiatives; and
- Enable NGOs to provide on-the-ground impact toward restoration goals, thereby increasing the overall health of the Great Lakes.

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ArcelorMittal Case study

"Sustain our Great Lakes" Project Location by Focal Issue (2006-2010)

From 2006 through 2010, the program awarded 103 grants for projects across all eight Great Lakes states and both Great Lakes provinces. All but nine of the 103 grants directly addressed one or more of the focal issue categories.

Note: Project locations include states and provinces with coordinates. Projects are listed in the order of the focal issue category.

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Creating business value – ArcelorMittal (cont.)

The results
Different projects for the same objective: biodiversity conservation

- Public-private partnership model
- Grants are leveraged two to one
- Since 2006, 103 grants totalling \$29 million USD in conservation investment (\$12.1 million cash funded by the partnership, \$16.9 million provided in matching funds)

Supports the implementation of the Great Lakes Restoration Initiative and is designed to protect, maintain and restore the basin's ecosystems. In the long term, ArcelorMittal's involvement in these projects demonstrate its responsibility and strengthens its license to operate in the Great Lakes region.

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Feedback...



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Session 9:

Brainstorming the business case (exercise)

Facilitators' notes

Slides 125-128(cont.): 7 minutes

Option 1 ArcelorMittal

Instructions

Following the exercise feedback, the facilitator should talk through the case study company's response to the issue and the positive results of this response.

Case study 1: ArcelorMittal

The results

Different projects for a same objective: biodiversity conservation

This bi-national effort represents a public-private partnership model where grants are leveraged two to one. Since the program's inception in 2006, the partnership has facilitated 103 grants totalling approximately \$29 million USD in conservation investment (\$12.1 million cash funded by the partnership, \$16.9 million provided in matching funds) across the Great Lakes.

The program supports the implementation of the Great Lakes Restoration Initiative and is designed to protect, maintain and restore the chemical, biological and physical integrity of the basin's ecosystem. In the long term, ArcelorMittal's involvement in these conservation projects demonstrate the company's responsibility, and consequently strengthens its license to operate in the Great Lakes region.

Media/activity/handout guidance

Creating business value – ArcelorMittal

The issue

Water dependency
ArcelorMittal owned operations in the Great Lakes basin.

- ✗ 9 facilities throughout USA and Canada surrounding the Great Lakes
- ✗ After iron and coal, water is the most important component in the steel making process.
 - Between 13,000 to 23,000 gallons of water per ton of steel.
- ✗ Also dependent on the Great Lakes to ship raw materials for manufacturing and for product distribution.
- ✗ 37 million people, including more than 25,000 ArcelorMittal employees live and rely on the lakes for drinking water, recreation and food.



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Creating business value – ArcelorMittal

The response

"Sustain Our Great Lakes" Public-Private Partnership

- ✗ In 2007, ArcelorMittal joined the National Fish and Wildlife Foundation, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Forest Service and the National Oceanic and Atmospheric Administration.
- ✗ Collaborative ecosystem restoration. Partners work together to leverage resources and educate decision makers on the importance of the Great Lakes to the region's economic vitality and quality of life, the needs and priorities of the ecosystem, and to identify potential actions.

Sustain Our Great Lakes program aims to restore the ecological integrity of the Basin. Financial gains:

- Increase capacity and collaboration of environmental initiatives; and
- Enable NGOs to provide on-the-ground impact toward restoration goals, thereby increasing the overall health of the Great Lakes.

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ArcelorMittal Case study

"Sustain our Great Lakes" Project Location by Focal Issue (2006-2010)

From 2006 through 2010, the program awarded 103 grants for projects across all eight Great Lakes states and both Great Lakes provinces. All but nine of the 103 grants directly addressed one or more of the focal issue categories.

Note: Projects that address multiple focal issues are counted as multiple projects, regardless of the number of focal issues addressed.



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Feedback...



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Creating business value – ArcelorMittal (cont.)

The results

Different projects for the same objective: biodiversity conservation

- ✗ Public-private partnership model
- ✗ Grants are leveraged two to one
- ✗ Since 2006, 103 grants totalling \$29 million USD in conservation investment (\$12.1 million cash funded by the partnership, \$16.9 million provided in matching funds)

Supports the implementation of the Great Lakes Restoration Initiative and is designed to protect, maintain and restore the basin's ecosystems. In the long term, ArcelorMittal's involvement in these projects demonstrate its responsibility and strengthens its license to operate in the Great Lakes region.

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Brainstorming the business case (exercise)

Facilitators' notes

Slides 130-132 : 7 minutes

Option 2 Lafarge

Instructions:

Following the exercise feedback, the facilitator should talk through the case study company's response to the issue and the positive results of this response.

Case study 2: Lafarge

The response

Plant nurseries as part of biodiversity restoration.

To maximize the conservation interest of its restoration projects, Lafarge has developed a number of tools and best practices organized in a biodiversity management system.

The creation of local nurseries is an important feature of the rehabilitation process as plants ensure soil stability and landscape integration. Local nurseries ensure the respect of indigenous species, the adaptation to the local biogeographical context, and avoid the spread of invasive species.

Plant nurseries have been created specifically in Uganda and the Philippines where Lafarge is rehabilitating quarries. The quarry team, together with a workforce from the local community, selects and collects seeds, and grows plants in significant numbers. In some cases, seeds or material for vegetative multiplication are collected directly in the vicinity of the quarry.

Local know-how also plays an important role: local communities sometimes help choose the potentially most adapted species and build the protocols for plant multiplication, planting and after care.

In some quarries, partnerships with botanical authorities can also be the ultimate stage of the process in order to formalize the way the plants are selected according to their adaptation to local conditions.

Media/activity/handout guidance

Creating business value – Lafarge

The issue
Mitigating impacts and restoring biodiversity, critical steps for extractive industries.

- ✗ Lafarge is a French group operating in resources extraction and building materials.
- ✗ Worldwide operations, significantly in developing countries.
- ✗ Several potentials for impacts, e.g. removal of soil and destruction of habitats.
- ✗ Managing and mitigating impacts very impact for corporate reputation and the acceptability of mining operations.

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Creating business value – Lafarge

The response
Plant nurseries as part of biodiversity restoration

- ✗ Lafarge has developed a biodiversity management system, including tools and best practices.
- ✗ Local nurseries important feature of rehabilitation as plants ensure soil stability and landscape integration. Local nurseries respect indigenous species, adaptation to the local biogeographical context, and avoid spread of invasive species.
- ✗ Specific rehabilitation programs in Uganda and the Philippines. Seeds and material for vegetative multiplication are collected directly in the vicinity of the quarry.
- ✗ Local know-how plays an important role by helping to choose the most adapted species and build the protocols for planting and care. Partnerships with botanical authorities the ultimate stage of the process.

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Creating business value – Lafarge (cont.)

The results

- ✗ Different projects for a same objective: biodiversity conservation.
- ✗ In Uganda, the nursery production capacity is 100,000 seedlings per year.
- ✗ 30,000-50,000 seedlings are used for alternative fuel plantations and 12,000-15,000 seedlings are used for rehabilitating the mined area.
- ✗ The local communities receive 30,000 to 50,000. The nursery projects employ more than 30 people.
- ✗ These actions, whilst helping Lafarge rehabilitate its former quarry, have also helped the company secure its operations in the region.

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Feedback...



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Session 9:

Brainstorming the business case (exercise)

Facilitators' notes

Slides 130-132 (cont.): 7 minutes

Option 2 Lafarge

Instructions:

Following the exercise feedback, the facilitator should talk through the case study company's response to the issue and the positive results of this response.

Case study 2: Lafarge

The results

In Uganda, the nursery has a production capacity of 100,000 seedlings per year including seedlings for alternative fuel: 30,000-50,000 seedlings are used for alternative fuel plantations and approximately 12,000-15,000 seedlings are used for rehabilitating the mined area.

The local communities, on average, receive around 30,000 to 50,000 seedlings depending on the applications made by the community members for seedlings each season. The nursery project itself employs more than 30 people.

These actions, whilst helping Lafarge rehabilitate its former quarry, have also helped the company secure its operations in the region.

Media/activity/handout guidance

Creating business value – Lafarge

The issue

Mitigating impacts and restoring biodiversity, critical steps for extractive industries.

- ✗ Lafarge is a French group operating in resources extraction and building materials.
- ✗ Worldwide operations, significantly in developing countries.
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- ✗ Managing and mitigating impacts very impact for corporate reputation and the acceptability of mining operations.

wbcsd business ecosystems training January 2012

Creating business value – Lafarge

The response

Plant nurseries as part of biodiversity restoration

- ✗ Lafarge has developed a biodiversity management system, including tools and best practices.
- ✗ Local nurseries important feature of rehabilitation as plants ensure soil stability and landscape integration. Local nurseries respect indigenous species, adaptation to the local biogeographical context, and avoid spread of invasive species.
- ✗ Specific rehabilitation programs in Uganda and the Philippines. Seeds and material for vegetative multiplication are collected directly in the vicinity of the quarry.
- ✗ Local know-how plays an important role by helping to choose the most adapted species and build the protocols for planting and care. Partnerships with botanical authorities the ultimate stage of the process.

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Creating business value – Lafarge (cont.)

The results

- ✗ Different projects for a same objective: biodiversity conservation.
- ✗ In Uganda, the nursery production capacity is 100,000 seedlings per year.
- ✗ 30,000-50,000 seedlings are used for alternative fuel plantations and 12,000-15,000 seedlings are used for rehabilitating the mined area.
- ✗ The local communities receive 30,000 to 50,000. The nursery projects employ more than 30 people.
- ✗ These actions, whilst helping Lafarge rehabilitate its former quarry, have also helped the company secure its operations in the region.

wbcsd business ecosystems training January 2012

Feedback...



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Brainstorming the business case (exercise)

Facilitators' notes

Slides 134-136: 7 minutes

Option 3 BASF

Instructions:

Following the exercise feedback, the facilitator should talk through the case study company's response to the issue and the positive results of this response.

Case study 3: BASF

The response

BASF implemented 3 different projects:

Project 1 – Testing methods of biodiversity enhancement on commercial farms (UK): BASF partnered with a commercial farm to implement and monitor new biodiversity methods suggested by the Farming and Wildlife Advisory Group and the Royal Society for the Protection of Birds (RSPB)

Project 2 – Planting trees for a more sustainable agriculture (Brazil): initiative based on the education of farming communities and action on biodiversity restoration and conservation. BASF partnered with local organizations and planted over half a million native Brazilian trees, covering around 300 hectares.

Project 3 – Protecting and preserving bees (France): Increasing mortality rates for pollinating insects such as bees has a direct impact on agriculture. BASF partnered with the French Bee Biodiversity Network to protect honeybees and other pollinators in France. Special 'bee pastures' have been set up on more than 2500 hectares every year.

Media/activity/handout guidance

Creating business value – BASF

The issue
BASF are a world leading chemical company. They operate a Crop Protection in order to work with farmers to enhance sustainable agriculture.

- ✗ BASF recognizes that the functioning of ecosystems is important for agriculture and the company's customers, the farmers.
- ✗ Acknowledge that competitive agriculture needs to be compatible with biodiversity, in order to be accepted by society.

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Creating business value – BASF

The response
BASF implemented 3 different projects:

- ✗ **Project 1 – Testing methods of biodiversity enhancement (UK):** partnered with a commercial farm to implement and monitor new biodiversity methods suggested by the Farming and Wildlife Advisory Group and the Royal Society for the Protection of Birds (RSPB).
- ✗ **Project 2 – Planting trees for a more sustainable agriculture (Brazil):** education of farming communities and action on biodiversity restoration and conservation. Partnered with local organizations and planted over half a million native Brazilian trees, covering around 300 hectares.
- ✗ **Project 3 – Protecting and preserving bees (France):** Increasing mortality rates for pollinating insects such as bees has a direct impact on agriculture. Partnered with the French Bee Biodiversity Network to protect honeybees and other pollinators in France. Special 'bee pastures' have been set up on more than 2500 hectares every year.

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Creating business value – BASF

The results
Three different methods – providing habitats and food supply to local species, reforestation and education programs.

The expected outcomes are:

- ✗ Demonstrate that modern and registered crop protection and good agricultural practices are compatible with biodiversity.
- ✗ Improve and strengthen the relationship with farmers, by providing solutions that are compatible with farming practices; and
- ✗ Enhance the reputation of the farming sector and BASF's industry as a provider of agricultural solutions.

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Feedback...

?

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Session 9:

Brainstorming the business case (exercise)

Facilitators' notes

Slides 134-136 (cont.): 7 minutes

Option 3 BASF

Instructions:

Following the exercise feedback, the facilitator should talk through the case study company's response to the issue and the positive results of this response.

Case study 3: BASF

The results

These three programs all share the common objective of improving a region's biodiversity, through different methods – whether it is through providing habitats and food supply to local species or reforestation and education programs. For BASF, the expected outcomes are multiple. They:

Demonstrate that modern and registered crop protection and good agricultural practices are compatible with biodiversity;

Improve and strengthen the relationship with farmers, by providing solutions that are compatible with farming practices; and

Enhance the reputation of the farming sector and BASF's industry as a provider of agricultural solutions.

Media/activity/handout guidance

The handout guidance section contains four cards from the 'wbcasd business ecosystems training' series, dated January 2012.

- Card 1 (top left):** Titled 'Creating business value – BASF'. It outlines 'The issue' (BASF as a world-leading chemical company operating crop protection to enhance sustainable agriculture) and lists two key points: 'BASF recognizes that the functioning of ecosystems is important for agriculture and the company's customers, the farmers' and 'Acknowledge that competitive agriculture needs to be compatible with biodiversity, in order to be accepted by society'.
- Card 2 (top right):** Also titled 'Creating business value – BASF'. It details 'The response' (BASF implemented 3 different projects):
 - Project 1 – Testing methods of biodiversity enhancement (UK):** Partnered with a commercial farm to implement and monitor new biodiversity methods suggested by the Farming and Wildlife Advisory Group and the Royal Society for the Protection of Birds (RSPB).
 - Project 2 – Planting trees for a more sustainable agriculture (Brazil):** Education of farming communities and action on biodiversity restoration and conservation. Partnered with local organizations and planted over half a million native Brazilian trees, covering around 300 hectares.
 - Project 3 – Protecting and preserving bees (France):** Increasing mortality rates for pollinating insects such as bees has a direct impact on agriculture. Partnered with the French Bee Biodiversity Network to protect honeybees and other pollinators in France. Special 'bee pastures' have been set up on more than 2500 hectares every year.
- Card 3 (bottom left):** Titled 'Creating business value – BASF'. It lists 'The results' (Three different methods – providing habitats and food supply to local species, reforestation and education programs) and 'The expected outcomes are':
 - Demonstrate that modern and registered crop protection and good agricultural practices are compatible with biodiversity;
 - Improve and strengthen the relationship with farmers, by providing solutions that are compatible with farming practices; and
 - Enhance the reputation of the farming sector and BASF's industry as a provider of agricultural solutions.
- Card 4 (bottom right):** Titled 'Feedback...'. It features a large red question mark icon.



Session 9:

Brainstorming the business case (exercise)

Facilitators' notes

Slides 137-140: 7 minutes

Option 4 Tata Chemicals

Instructions:

Following the exercise feedback, the facilitator should talk through the case study company's response to the issue and the positive results of this response.

Case study 4: Tata Chemicals

The Response

A team was constituted to work on alternative solutions and they came up with an innovative one: the use of bio fertilizers and bioremediation techniques to remediate the solid wastes and develop a green cover.

- ✧ TCL engaged the services of experts of TERI's Centre for Mycorrhizal Research, Biotechnology and Management of Bioresources
- ✧ Special microorganisms (that were observed) were identified and isolated
- ✧ Pure culture of the same was prepared in their laboratory.
- ✧ Similar compatible bacterial and mycorrhizal consortiums were also brought and inoculated to the root systems of saplings in their young age.
- ✧ Sediments were also treated the same way.

Media/activity/handout guidance



The results

The success of this bioremediation technique using mycorrhizal microorganisms has had a number of positive fallouts.

- ✧ Tata Chemicals has saved the Rs 120 million it would have spent on relocating the site.
- ✧ A lifeless dumpsite was converted into a new green ecosystem.
- ✧ The project gave a direct boost to the sustainability of synthetic soda ash manufacturing facilities.
- ✧ Of the 30-acre dump site, 22 acres have been transformed into lush green belts of plants and shrubs.
- ✧ More than 20,000 plants of as many as six different varieties are growing at Malara.



Session 9:

Brainstorming the business case (exercise)

Facilitators' notes

Slides 142-146: 7 minutes

Option 5 Rio Tinto

Instructions:

Following the exercise feedback, the facilitator should talk through the case study company's response to the issue and the positive results of this response.

Case study 5: Rio Tinto

The Response

- ✧ Biodiversity and regeneration initiatives
 - Baseline information on local flora and fauna was collected in 2007 and, in early 2011, the State Forest Research Institute, Jabalpur began a study to look at the environmental impact of drilling.
 - Organised a large-scale eradication drive of the invasive plant Lantana, in an area of more than 100 hectares.
- ✧ Water conservation activities included:
 - Harvesting of rain water at the Bunder camp and processing plant;
 - Use of waterless urinals and pour-flush toilets;
 - Use of drip irrigation for the camp gardens.
- ✧ Processing plant at Bunder is also designed to reduce water consumption through recycling and water harvesting. Waste water from the sample processing plant is monitored daily
- ✧ Processed water is released into the gardens, that have been established to reuse domestic and industrial waste water (medicinal plant garden, a kitchen garden and fruit trees planted around the camp premises)

Media/activity/handout guidance

Setting up a new benchmark for mine development in India – Rio Tinto

The Response

- ✧ Biodiversity and regeneration initiatives:
 - Baseline information on local flora and fauna was collected in 2007 and, in early 2011, the State Forest Research Institute, Jabalpur began a study to look at the environmental impact of drilling.
 - Organised a large-scale eradication drive of the invasive plant Lantana, in an area of more than 100 hectares.
- ✧ Water conservation activities included:
 - Harvesting of rain water at the Bunder camp and processing plant.
 - Use of waterless urinals and pour-flush toilets;
 - Use of drip irrigation for the camp gardens.

Source: Rio Tinto India
WBCSD Business Ecosystems Training
November 2012

Setting up a new benchmark for mine development in India – Rio Tinto

The Response (cont.)

- ✧ Processing plant at Bunder is also designed to reduce water consumption through recycling and water harvesting. Waste water from the sample processing plant is monitored daily
- ✧ Processed water is released into the gardens, that have been established to reuse domestic and industrial waste water (medicinal plant garden, a kitchen garden and fruit trees planted around the camp premises)
- ✧ Water monitoring studies initiated to better understand the availability of water in a region traditionally considered to be water-deficient
- ✧ To ensure that the rainwater that may overflow from the tailing pond in monsoon season is not contaminated, a garland drainage system has been constructed.

Source: Rio Tinto India
WBCSD Business Ecosystems Training
November 2012

Setting up a new benchmark for mine development in India – Rio Tinto

The Result

- ✧ The Bunder project has not reported a single environmental incident in the past five years
- ✧ These messages have been further reinforced in local communities through the organisation of clean-up campaigns
- ✧ The Bunder project teams working closely with the State Forest Department to assess the impact of its operations on the local environment.

Source: Rio Tinto India
WBCSD Business Ecosystems Training
November 2012

Feedback...

Source: Rio Tinto India
WBCSD Business Ecosystems Training
January 2013

- ✧ Water monitoring studies initiated to better understand the availability of water in a region traditionally considered to be water-deficient.
- ✧ To ensure that the rainwater that may overflow from the tailing pond in monsoon season is not contaminated, a garland drainage system has been constructed.

The results

- ✧ The Bunder project has not reported a single environmental incident in the past five years.
- ✧ These messages have been further reinforced in local communities through the organisation of clean-up campaigns
- ✧ The Bunder project teams working closely with the State Forest Department to assess the impact of its operations on the local environment.



Session 9:

Brainstorming the business case (exercise)

Facilitators' notes

Slides 148-150: 7 minutes

Option 6 Ambuja Cement

Instructions:

Following the exercise feedback, the facilitator should talk through the case study company's response to the issue and the positive results of this response.

Case study 6: Ambuja Cements Limited

The Response

Considering the ecological sensitivities of the region and needs of the surrounding communities, Ambuja undertook a holistic view of the situation while planning rehabilitation activities in consultation with local communities, natural resource management experts, non-governmental organizations and local authorities.

Ambuja has also adopted a landscape approach in addressing impacts of the quarrying activities. The scope of the rehabilitation activities, has thus been widened to include areas outside the quarries and has focused on the following key issues:

- ✧ Capturing and preserving freshwater: The Ambuja Cement Foundation, the corporate social responsibility wing of the company, has implemented several measures to improve water management in the area, primarily through rainwater harvesting, and converting the mined-out pits into artificial lakes and wetlands. 165 dams and small barriers have been built to reduce the loss of water through shallow rivers and streams. Other water resource management measures include interlinking rivers and streams, construction of percolation wells, renovation and deepening of ponds and runoff diversion systems.

Media/activity/handout guidance



- ✧ Quarry rehabilitation through tree planting: As a part of its restoration project, different tree species have been planted as part of the Van Vihar project, the Eco Park Project and the mini Gir project, in the mined-out areas and surrounding zone. Small patches of land are earmarked to grow medicinal plants and fodder-yielding plants. The company is also planning Jatropha plantations, which will serve as a source of bio-fuel in coming years.
- ✧ Conserving the flora and fauna of Gir: Under the “Mini Gir project”, a large number of tree species native to the Gir Forest are being planted in the reclaimed mines. The company has also supported the conservation of the Asiatic lion (*Panthera leopersica*), an endangered species.



Brainstorming the business case (exercise)

Facilitators' notes

Slides 148-150: 7 minutes

Option 6 Ambuja Cement

Instructions:

Following the exercise feedback, the facilitator should talk through the case study company's response to the issue and the positive results of this response.

Case study 6: Ambuja Cements Limited

The Response

- ✧ Protecting coastal zones through mangrove development: Since 2009, the company's Ambujanagar cement plant and Surat limestone grinding unit have been working with the Gujarat Ecology Commission to develop a mangrove area near Surat. State authorities have given 150 hectares of land to the company for the development of mangrove along the Gujarat Coast through the planting of three native tree species.
- ✧ •Sustaining local livelihoods: Local people are employed in rehabilitation activities such as pit preparation, watering, tree planting, nursery development and construction of water harvesting structures. Simultaneously, to create awareness of medicinal plants, a medicinal herb garden managed by local people has also been developed nearby. Some former pits are reclaimed with fodder cultivation in partnership with local villages, in order to provide feed for cattle. The water management and mangrove plantation projects have also improved the livelihoods of local people by helping to increase agricultural crop yields and fishing yields.ms.

Media/activity/handout guidance



The Results

- ✧ The water management program has raised the water table by eight meters, controlled the water salinity problem and made quality freshwater easily available to the communities. Wells, previously dry for at least seven months a year, now contain water all year round, which has made it possible for local farmers to grow two to three crops per year.
- ✧ By March 2012 the company had rehabilitated approximately 330 hectares of area and planted nearly 275,000 trees. It had also completed some special projects, such as the Mini Gir project, where barren and degraded land near the Gir forest has been planted with native trees;
- ✧ Artificially created water reservoirs have enhanced the wildlife of the area, becoming breeding grounds and visiting spots for a large number of migratory birds;
- ✧ The fish population has increased and Mugger crocodiles (*Crocodylus palustris*) have also been recorded;
- ✧ A planting density of 3,000 plants per hectare has been maintained in the mangrove plantation project, which will provide multiple benefits, such as flood protection, supporting marine life and climate regulation.



Session 10: Wrap up

Time guidelines

Time guidelines	Time
Wrap up – interactive	20 mins

Session objective

Session will review the key points of the module, compare it with the original needs of delegates (flip chart from icebreaker) and plan for next steps (delegates)

Session format

This session will be run by the two course facilitators – one will be leading the session and the second should facilitate material and/or address questions/queries from delegates/groups.

Handouts

Delegates course material desk pack – includes a handout with references for later study.

Session overview

Delegates will be reminded of the module's agenda, which will enable them to recognise the knowledge acquired throughout the different sessions (set the scene).

The session will then continue with a high level evaluation of the module's objectives and whether they have been achieved.

Finally, the session will conclude with delegates developing steps going forward, considering actions needed by them and/or their company/business.



Session 10:

Wrap up

Facilitators' notes

Slide 152: <1 minute

Total time for exercise: 15 minutes

Slide 153 & 154: 3 minutes

Objective: review the key points of the module, compare with original delegate needs (flip chart from icebreaker), plan for next steps

Instructions:

Facilitator to:

✂ **Recap:** review the key learning points, module summary.

Media/activity/handout guidance

Wrap-up

Module 1: Understanding the links between business and ecosystems



Module 1 objectives – recap

- ✂ Demonstrate an understanding of the key terms and concepts around biodiversity, ecosystems, ecosystem services, environment and sustainability.
- ✂ Identify the direct and indirect drivers and causes for biodiversity and ecosystem changes and impacts, and the impacts and dependency of companies on ecosystem services.
- ✂ Understand the link between ecosystem services and wider sustainability issues.
- ✂ Describe the business case for managing ecosystems and identify the specific business case for their own company from the perspective of both risk and opportunity.
- ✂ Understand some of the basic regulatory and policy frameworks currently in place as a key driver of change (expanded in module 4).
- ✂ Help participants gain knowledge that will help them add value to their organization.



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Module 1

- ✂ Understand the basics ✓
- ✂ Drivers for change and business impacts and dependencies ✓
- ✂ Links with sustainability ✓
- ✂ Business case for action ✓
- ✂ Policy and regulatory framework: ✓
- ✂ Gain useful knowledge ✓



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Session 10:

Wrap up

Facilitators' notes

Slide 155: 5 minutes

Slide 156: 5 minutes to note the ways that delegate companies may benefit

Instructions:

The facilitator should ask delegates to evaluate the extent to which their learning objectives and outcomes have been achieved, referring back to the learning objectives captured on the flip chart at the beginning of the session.

Interactive session: action planning

Facilitator to ask delegates to document 3 actions which they could take in relation to the potential risks and opportunities relevant to their own organisation. These actions should be as specific and time bound as possible. For example:

- ✧ Identify how ecosystem services relate to your own company's situation,
- ✧ Arrange meetings with site managers from our three largest facilities over the next 2 months to discuss potential risks and opportunities,
- ✧ Schedule a meeting this month with the Group Head of Risk to highlight impacts and dependencies on Ecosystems within our supply chain and review our management responses,
- ✧ Review the WBCSD Responding to the Biodiversity Challenge report this week and prepare a briefing note for the team the following week

Source: WBCSD, *Responding to the Biodiversity Challenge*, (2010)
<http://www.wbcd.org/web/nagoya/RespondingtotheBiodiversityChallenge.pdf>

The facilitator should gather responses from the delegates and consolidate them on a whiteboard/flipchart to share ideas for next steps.

Media/activity/handout guidance

Review... Have we achieved your objectives?  wbcd business ecosystems training January 2012 102	
	Action planning Identify how ecosystem services relate to your own company's situation.  wbcd business ecosystems training January 2012 103



Session 10: Wrap up

Facilitators' notes

Slides 157-158: 3 minutes

Instructions:

Facilitator to talk through what participants can do next to integrate biodiversity and ecosystem services thinking into their company and working life:

1. Build awareness within your company
2. Review WBCSD case study examples, publications and other publications
3. Consider joining the WBCSD's Ecosystems Focus Area and Water Project working groups, and making use of the WRI's ecosystems experts directory
4. Piloting the use of a specific tool e.g. The CEV and/or ESR for measuring impacts within a small project,
5. Contact the WBCSD's Ecosystems Work Program team for further information about implementing BET

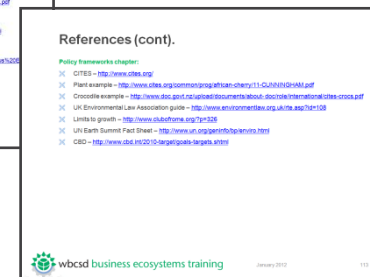
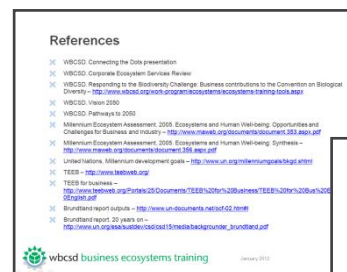
Facilitator will refer to the Action Planning slides within the delegates slide packs (as shown opposite)

Slides 159-160: 2 minutes [Optional slide]

Instructions:

Facilitator to refer to references provided in the main presentation. The facilitator can also signpost to alternatives/other materials that will help continue their learning journey. This is supported by the action planning slides in the main presentation.

Media/activity/handout guidance



A4 HANDOUTS

Module 1: Understanding the links between business and ecosystems



wbcSD business ecosystems training

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 <i>The goods or products obtained from ecosystems such as food, freshwater, timber, and fiber</i>	☐ Benefits	☐ Impacts	☐ Don't know
Regulating <i>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.</i>	☐ Benefits	☐ Impacts	☐ Don't know



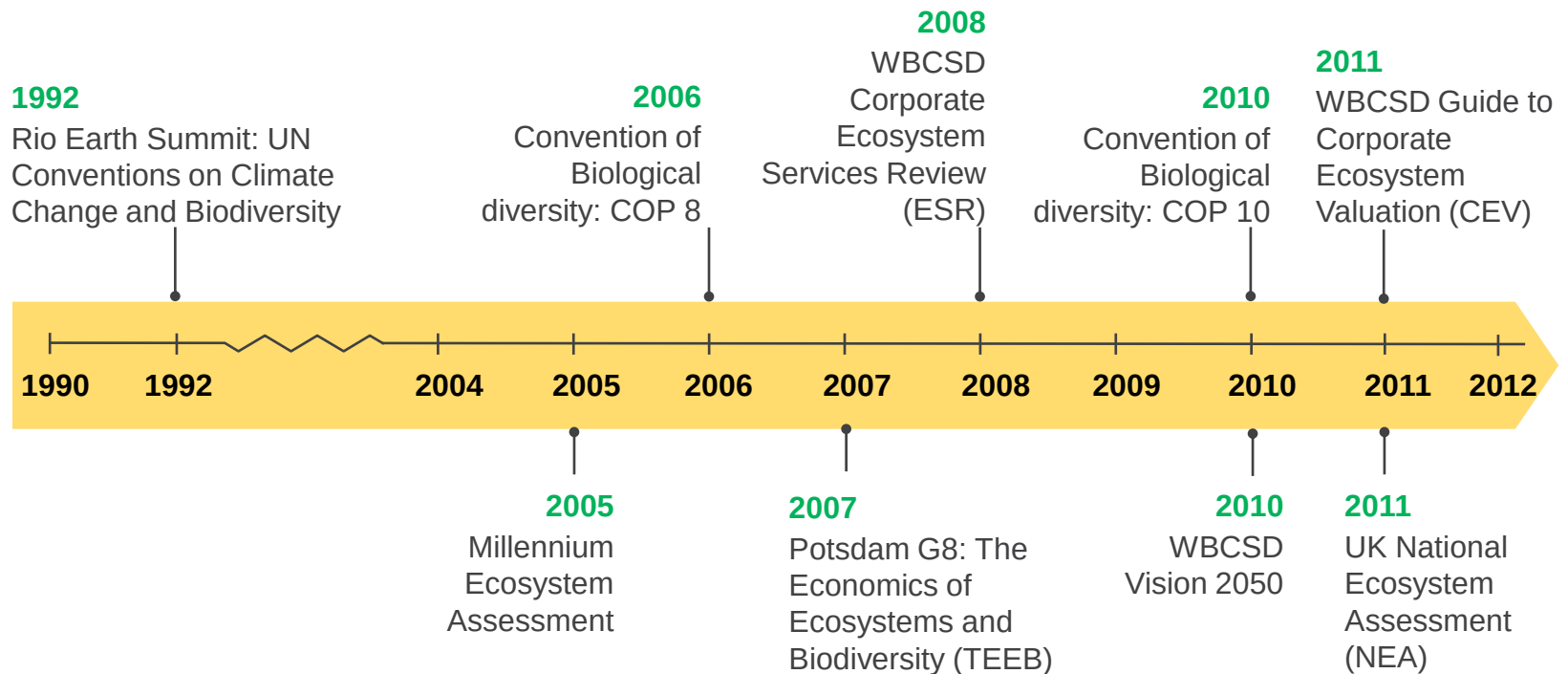
Discussion questions (cont.)

Business Ecosystems Training Score Card

My company has been affected by the following challenges:			
Cultural <i>The non material benefits obtained from ecosystems such as recreation, spiritual values and aesthetic enjoyment</i>	☐ Benefits	☐ Impacts	☐ Don't know
<i>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)</i>			
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?



Timeline of major global ecosystem developments



Creating business value – ArcelorMittal

The issue

Water dependency

ArcelorMittal owned operations in the Great Lakes basin.

- ✧ 9 facilities throughout USA and Canada surrounding the Great Lakes
- ✧ After iron and coal, water is the most important component in the steel making process.
 - Between 13,000 to 23,000 gallons of water per ton of steel.
- ✧ Also dependent on the Great Lakes to ship raw materials for manufacturing and for product distribution.
- ✧ 37 million people, including more than 25,000 ArcelorMittal employees, live and rely on the lakes for drinking water, recreation and food sources.



Creating business value – ArcelorMittal

The response

“Sustain Our Great Lakes” Public Private Partnership

- ✧ In 2007, ArcelorMittal joined the National Fish and Wildlife Foundation, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Forest Service and the National Oceanic and Atmospheric Administration.
- ✧ Collaborative ecosystem restoration. Partners work together to leverage resources and educate decision makers on the importance of the Great Lakes to the region's economic vitality and quality of life, the needs and priorities of the ecosystem, and to identify potential actions.
- ✧ Sustain Our Great Lakes program aims to restore the ecological integrity of the Basin. Financial gains:
 - Increase capacity and collaboration of environmental initiatives; and
 - Enable NGOs to provide on-the-ground impact toward restoration goals, thereby increasing the overall health of the Great Lakes.

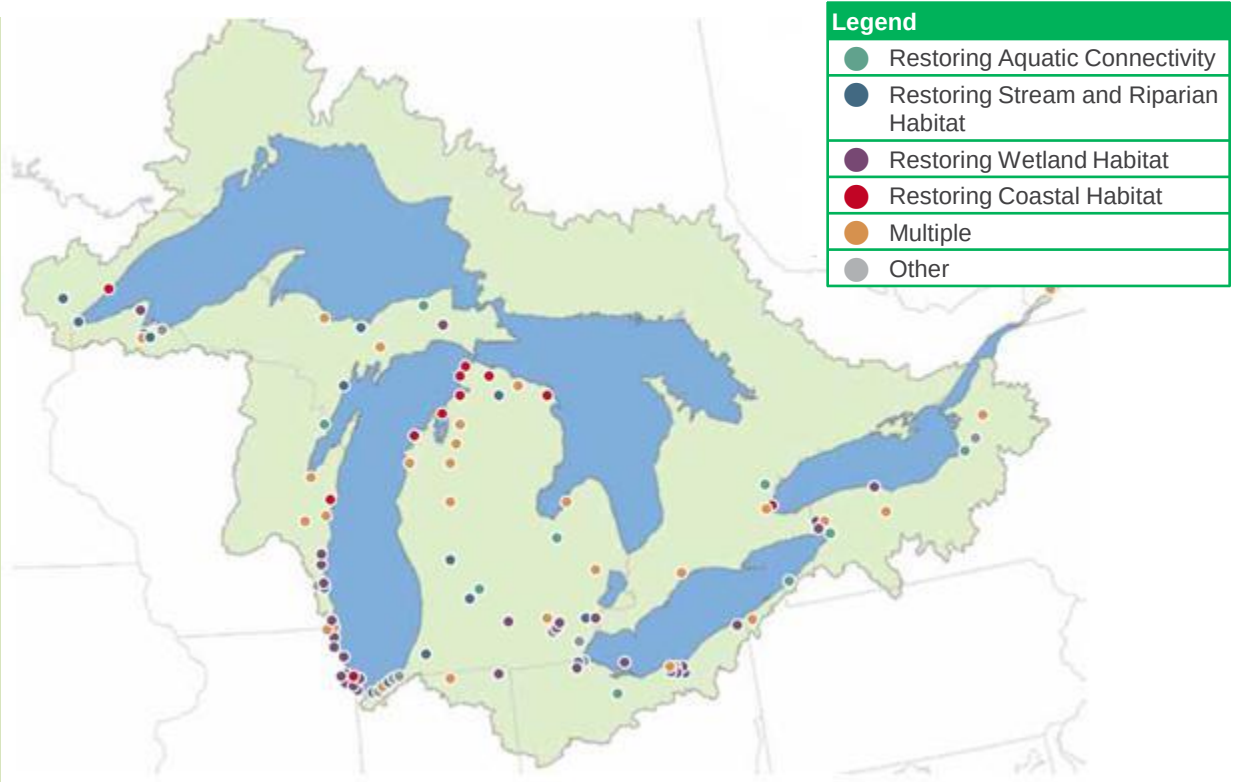


ArcelorMittal Case study

“Sustain our Great Lakes” Project Location by Focal Issue (2006-2010)

From 2006 through 2010, the program awarded 103 grants for projects across all eight Great Lakes states and both Great Lakes provinces.

All but nine of the 103 grants directly addressed one or more of the focal issue categories.



Note: Projects that address multiple focal issues are coded as 'Multiple.' Projects that did not fit any of the focal issues are coded as 'Other'.



Creating business value – ArcelorMittal (cont.)

The results

Different projects for the same objective: biodiversity conservation

- ✧ Public-private partnership model
- ✧ Grants are leveraged two to one
- ✧ Since 2006, 103 grants totalling \$29 million USD in conservation investment (\$12.1 million cash funded by the partnership, \$16.9 million provided in matching funds)
- ✧ Supports the implementation of the Great Lakes Restoration Initiative and is designed to protect, maintain and restore the basin's ecosystems
- ✧ In the long term, ArcelorMittal's involvement in these projects demonstrate its responsibility and strengthens its license to operate in the Great Lakes region



Creating business value – Lafarge

The issue

Mitigating impacts and restoring biodiversity, critical steps for extractive industries.

- ✧ Lafarge is a French group operating in resources extraction and building materials.
- ✧ Worldwide operations, significantly in developing countries.
- ✧ Several potentials for impacts, e.g. removal of soil and destruction of habitats.
- ✧ Managing and mitigating impacts very impact for corporate reputation and the acceptability of mining operations.



Creating business value – Lafarge

The response

Plant nurseries as part of biodiversity restoration

- ✧ Lafarge has developed a biodiversity management system, including tools and best practices.
- ✧ Local nurseries important feature of rehabilitation as plants ensure soil stability and landscape integration. Local nurseries respect indigenous species, adaptation to the local biogeographical context, and avoid spread of invasive species.
- ✧ Specific rehabilitation programs in Uganda and the Philippines. Seeds and material for vegetative multiplication are collected directly in the vicinity of the quarry.
- ✧ Local know-how plays an important role by helping to choose the most adapted species and build the protocols for planting and care. Partnerships with botanical authorities the ultimate stage of the process.



Creating business value – Lafarge (cont.)

The results

- ✧ Different projects for a same objective: biodiversity conservation.
- ✧ In Uganda, the nursery production capacity is 100,000 seedlings per year.
- ✧ 30,000-50,000 seedlings are used for alternative fuel plantations and 12,000-15,000 seedlings are used for rehabilitating the mined area.
- ✧ The local communities receive 30,000 to 50,000. The nursery projects employ more than 30 people.
- ✧ These actions, whilst helping Lafarge rehabilitate its former quarry, have also helped the company secure its operations in the region.



Creating business value – BASF

The issue

BASF are a world leading chemical company.

They operate a Crop Protection in order to work with farmers to enhance sustainable agriculture.

- ✧ BASF recognizes that the functioning of ecosystems is important for agriculture and the company's customers, the farmers.
- ✧ Acknowledge that competitive agriculture needs to be compatible with biodiversity, in order to be accepted by society.



Creating business value – BASF

The response

BASF implemented 3 different projects:

- ✧ **Project 1 – Testing methods of biodiversity enhancement (UK):** partnered with a commercial farm to implement and monitor new biodiversity methods suggested by the Farming and Wildlife Advisory Group and the Royal Society for the Protection of Birds (RSPB).
- ✧ **Project 2 – Planting trees for a more sustainable agriculture (Brazil):** education of farming communities and action on biodiversity restoration and conservation. Partnered with local organizations and planted over half a million native Brazilian trees, covering around 300 hectares.
- ✧ **Project 3 – Protecting and preserving bees (France):** Increasing mortality rates for pollinating insects such as bees has a direct impact on agriculture. Partnered with the French Bee Biodiversity Network to protect honeybees and other pollinators in France. Special 'bee pastures' have been set up on more than 2500 hectares every year.



Creating business value – BASF

The results

Three different methods – providing habitats and food supply to local species, reforestation and education programs.

The expected outcomes are:

- ✧ Demonstrate that modern and registered crop protection and good agricultural practices are compatible with biodiversity;
- ✧ Improve and strengthen the relationship with farmers, by providing solutions that are compatible with farming practices; and
- ✧ Enhance the reputation of the farming sector and BASF's industry as a provider of agricultural solutions.



Greening the Lands – Tata Chemicals

The issue: Waste Disposal

- ❖ Tata Chemicals soda ash plant was set up in Okhamandal, Gujarat in 1939 and is the second largest producer of soda ash(sodium carbonate) in the world.
- ❖ The manufacturing process is such that more than 400kg of waste is generated for every tonne of soda ash produced
- ❖ Production volume has grown (from 80 tonnes / day in 1944 to the current 2,400 tonnes / day), the volume of wastes generated from it's operation has also increased.
- ❖ Malara, a barren site, was used waste disposal.
- ❖ Solid waste disposal was building up as a big issue as the wind blew dry dust all around Malara.
- ❖ The problem escalated to such proportions, and the company having exhausted all different impact mitigation options that in 1999-00 the company considered relocating the entire site to another spot. However the cost was estimated to Rs120 million.



Picture credit: [Down to Earth](#)

Source: Tata Chemicals

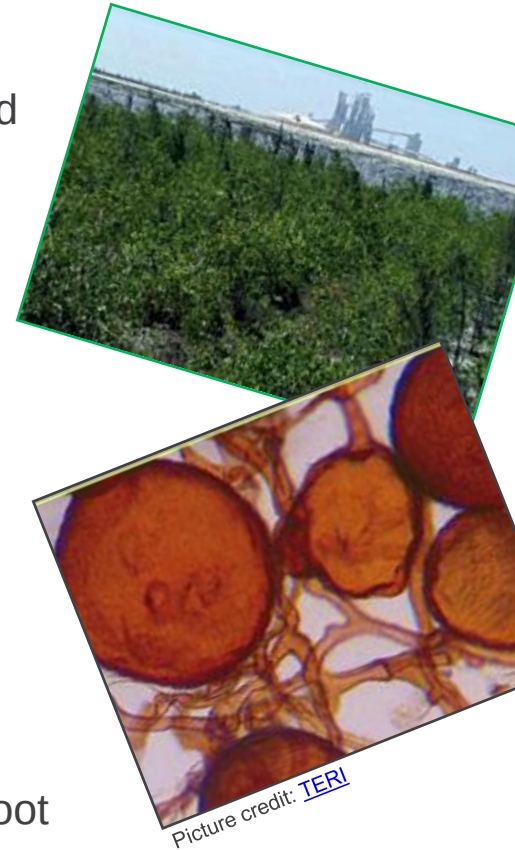
http://www.tata.com/pdf/tata_review_oct_09/innovista_tata_chemicals_greens_land.pdf



Greening the Lands – Tata Chemicals

The response

- ✧ A team was constituted to work on alternative solutions and they came up with an innovative one: the use of **bio fertilizers and bioremediation techniques to remediate the solid wastes and develop a green cover.**
 - TCL engaged the services of experts of TERI's Centre for Mycorrhizal Research, Biotechnology and Management of Bioresources
 - Special microorganisms (that were observed) were identified and isolated
 - Pure culture of the same was prepared in their laboratory.
 - Similar compatible bacterial and mycorrhizal consortiums were also brought and inoculated to the root systems of saplings in their young age.
 - Sediments were also treated the same way.



Greening the Lands – Tata Chemicals

The Results

- ✧ The success of this bioremediation technique using mycorrhizal microorganisms has had a number of positive fallouts.
 - Tata Chemicals has saved the Rs 120 million it would have spent on relocating the site.
 - A lifeless dumpsite was converted into a new green ecosystem.
 - The project gave a direct boost to the sustainability of synthetic soda ash manufacturing facilities.
 - Of the 30-acre dump site, 22 acres have been transformed into lush green belts of plants and shrubs.
 - More than 20,000 plants of as many as six different varieties are growing at Malara.



Picture credit: [ICIS](#)



Setting up a new benchmark for mine development in India – Rio Tinto

The Issue

- ✧ The Bunder project is Rio Tinto's first and most advanced diamond mining venture in India.
- ✧ Rio Tinto began exploration for diamonds in the central Indian state of Madhya Pradesh in late 2001.
- ✧ Diamond-bearing lamproite was discovered in the Bundelkhand region in 2004. The deposit – the first diamond discovery in India for over 50 years and one of only four new diamond mines globally that is likely to become functional in the next 10 years – consists of a cluster of eight diamondiferous lamproites (volcanic rock), the largest of which measures 18 ha.
- ✧ Construction is scheduled for 2014 and 2015, with the mine expected to be operational by 2016.



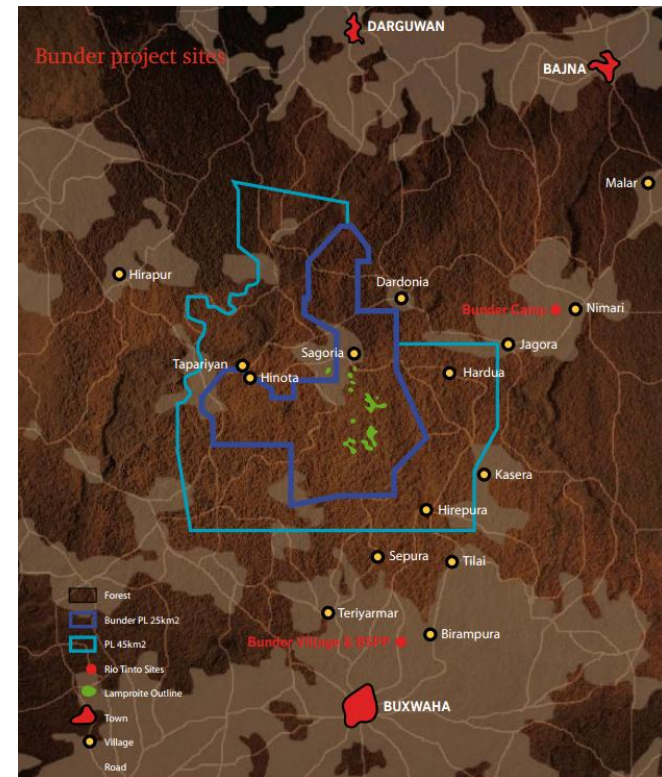
Source: Rio Tinto India,
http://www.riotintoindia.com/documents/Bunder_Project_Report.pdf



Setting up a new benchmark for mine development in India – Rio Tinto

The Issue (cont.)

- ✧ The region is poor, underdeveloped and drought-prone, with limited access to health, education and communication services.
- ✧ Fifteen villages with a population of around 6,000 people make up the Bunder community.
- ✧ Centuries-old water management practices can no longer keep up with people's growing needs.



Source: Rio Tinto India,
http://www.riotintoindia.com/documents/Bunder_Project_Report.pdf



Setting up a new benchmark for mine development in India – Rio Tinto

The Response

✧ Biodiversity and regeneration initiatives

- Baseline information on local flora and fauna was collected in 2007 and, in early 2011, the State Forest Research Institute, Jabalpur began a study to look at the environmental impact of drilling.
- Organised a large-scale eradication drive of the invasive plant Lantana, in an area of more than 100 hectares.

✧ Water conservation activities included:

- Harvesting of rain water at the Bunder camp and processing plant;
- Use of waterless urinals and pour-flush toilets;
- Use of drip irrigation for the camp gardens.

Source: Rio Tinto India,
http://www.riotintoindia.com/documents/Bunder_Project_Report.pdf



Setting up a new benchmark for mine development in India – Rio Tinto

The Response (cont.)

- ✧ Processing plant at Bunder is also designed to reduce water consumption through recycling and water harvesting. Waste water from the sample processing plant is monitored daily
- ✧ Processed water is released into the gardens, that have been established to reuse domestic and industrial waste water (medicinal plant garden, a kitchen garden and fruit trees planted around the camp premises)
- ✧ Water monitoring studies initiated to better understand the availability of water in a region traditionally considered to be water-deficient.
- ✧ To ensure that the rainwater that may overflow from the tailing pond in monsoon season is not contaminated, a garland drainage system has been constructed.



Source: Rio Tinto India,
http://www.riotintoindia.com/documents/Bunder_Project_Report.pdf



Setting up a new benchmark for mine development in India – Rio Tinto

The Result

- ✧ The Bunder project has not reported a single environmental incident in the past five years.
- ✧ These messages have been further reinforced in local communities through the organisation of clean-up campaigns
- ✧ The Bunder project teams working closely with the State Forest Department to assess the impact of its operations on the local environment.



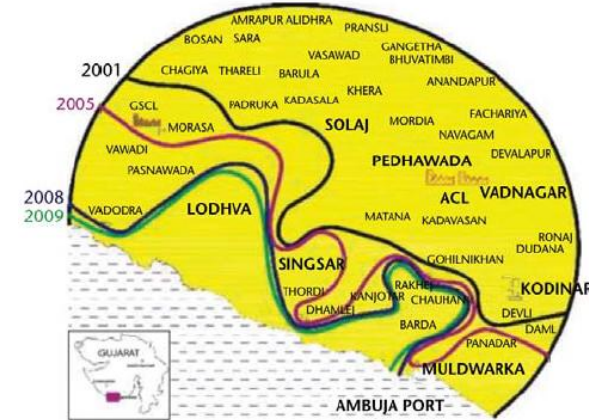
Source: Rio Tinto India,
http://www.riotintoindia.com/documents/Bunder_Project_Report.pdf



Sustaining the Ecosystem for Water, Wildlife and Community in India: Ambuja Cements Limited

The Issue

- ✧ Ambuja Cements Limited (Group company of Holcim), is a leading supplier of cement in India
- ✧ The company operates the Ambujanagar cement plant in the Kodinar region of Gujarat, India.
- ✧ The Ambujanagar facility is located between the Arabian Sea and the Gir Sanctuary and National Park (designated protected area).
- ✧ There have been critical problems of freshwater availability in the state of Gujarat since 1970.
- ✧ Owing to over-withdrawal of freshwater and intensive land-use in the Kodinar region, there has been marked depletion of the water table and an associated serious increase in water salinity from the ingression of seawater into the water table.



Sustaining the Ecosystem for Water, Wildlife and Community in India: Ambuja Cements Limited

The response

Ambuja has adopted a landscape approach in addressing impacts of the quarrying activities.

✧ Capturing and preserving freshwater

- Implementation of several measures to improve water management in the area, through rainwater harvesting, and converting the mined-out pits into artificial lakes and wetlands.
- Interlinking of fresh water wetlands/ water reservoirs (mined out pits) through link canals, construction of percolation wells, renovation and deepening of ponds and runoff diversion systems.

✧ Quarry rehabilitation through tree planting

- Different tree species have been planted as part of the Van Vihar project, the Eco Park Project and the mini Gir project, in the mined-out areas and surrounding zone.
- Small patches of land are earmarked to grow medicinal plants and fodder-yielding plants.

✧ Conserving the flora and fauna of Gir Under the “Mini Gir project”, a large number of tree species native to the Gir Forest are being planted in the reclaimed mines.

✧ Protecting coastal zones through mangrove development

- Mangroves Plantation in Coastal area near Surat, South Gujarat, India for protecting coastal zones , flood & salinity control , supporting marine flora & faunas , as well providing livelihood to local community.



Sustaining the Ecosystem for Water, Wildlife and Community in India: Ambuja Cements Limited

The Results

- ✧ The water management program has raised the water table by 8 meters, controlled the water salinity problem and made quality freshwater easily available to the communities.
- ✧ Wells, previously dry for at least 7 months a year, now contain water all year round, which has made it possible for local farmers to grow two to three crops per year.
- ✧ Other significant results of the project include:
 - By March 2012 the company had rehabilitated approximately 330 ha of area and planted nearly 275,000 trees
 - Artificially created water reservoirs have enhanced the wildlife of the area, becoming breeding grounds and visiting spots for a large number of migratory birds;
 - A planting density of 3,000 plants per hectare has been maintained in the mangrove plantation project, which will provide multiple benefits, such as flood protection, supporting marine life and climate regulation.



A1 Wall chart print outs

Module 1: Understanding the links between business and ecosystems



wbcSD business ecosystems training

BET Module 1: Understanding the Links between Ecosystem Services and business

Timetable

	Time	Duration (mins)	Session	Facilitator
→ →		45	Session 1: Icebreaker and introduction	
→ →		30-35	Session 2: Biodiversity, ecosystems and ecosystem services – the basics	
→		15	Session 3: Introduction to policy trends	
→		10-25	Session 4: Identifying key ecosystem services – activity	
		30	Coffee break	
→ →		25-30	Session 5: The global ecosystem challenge	
→		25	Session 6: Case study and exercise	
→		10	Session 7: Knowledge check	
→		10	Session 8 a: Re-cap – the business case for action	
→		5	Session 8 b: How can business respond?	
→		25	Session 9: Brainstorming the business case – activity	
→ →		20	Session 10: Wrap up	

Key: → Presentation
→ Exercise



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.



MA major findings regarding ecosystem services

60% of the world's ecosystem services are degraded

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

Source: Millennium Ecosystem Assessment, 2005.



Business risks and opportunities

Type	Risk	Opportunity
Operational		
Legal and political		
Reputational		
Market and product		
Financing		



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