wbcsd business ecosystems training

BET Module 1

Understanding the Links between Ecosystem Services and Business

Facilitator Notes

February 2012

Business Ecosystems Training – Contributors

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

BET curriculum and structure was designed by KPMG

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

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

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

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

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	Icebreaker and introduction	
	30-35	Biodiversity, ecosystems and ecosystem services – the basics	
	10	Introduction to policy trends	
	30	Identifying key ecosystem services – activity	
	10-25	Coffee break	
	25-30	The global ecosystem challenge	
	25	Case study and exercise	
	10	Knowledge check	
	10	Re-cap – the business case for action	
	5	Possible actions	
	30	Brainstorming the business case – activity	
	20	Wrap up	

Key: Presentation
Exercise

Time guidelines

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

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.

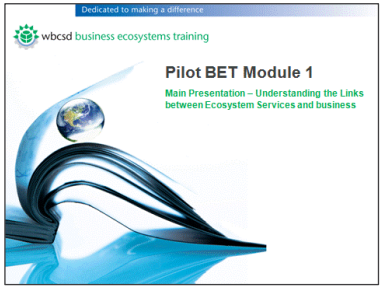
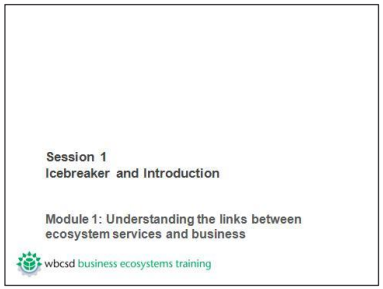
This session allows the course facilitators to introduce themselves and give delegates an overview of their career history.

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.

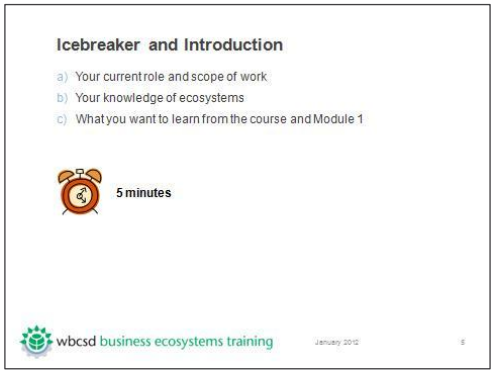
Session 1:

Icebreaker and Introduction

Facilitators' notes	Media/activity/handout guidance
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.	  

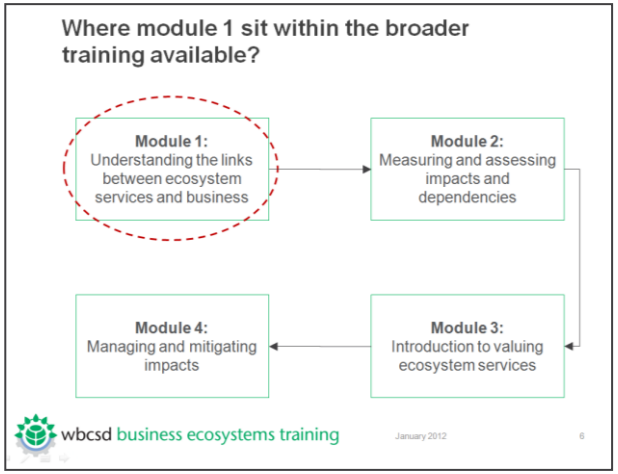
Session 1:

Icebreaker and Introduction

Facilitators' notes	Media/activity/handout guidance
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.	 

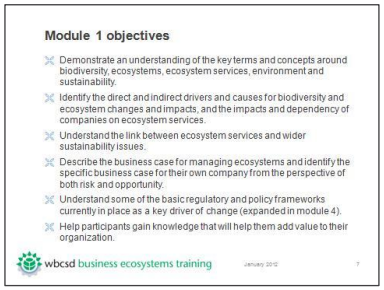
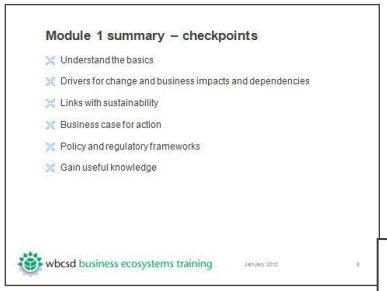
Session 1:

Icebreaker and Introduction

Facilitators' notes	Media/activity/handout guidance
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.	

Session 1:

Icebreaker and Introduction

Facilitators' notes	Media/activity/handout guidance
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]**	  

Session 1:

Icebreaker and Introduction

Facilitators' notes	Media/activity/handout guidance
Slide 10: 10 minutes + 5 minute group discussion **Source:** University of Minnesota, Institute on the Environment: https://www.youtube.com/embed/TartoYpK1yI **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.	

Session 1:

Icebreaker and Introduction

Facilitators' notes	Media/activity/handout guidance

Slides 11 & 12: 5 minutes

Sources: United Nations
http://www.un-documents.net/ocf-02.htm#I
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.

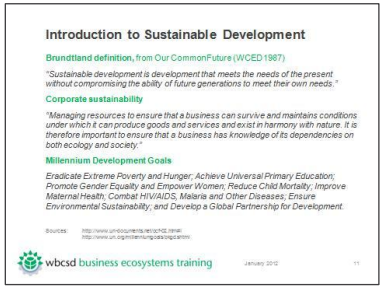
Brundtland report definition: "*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:*

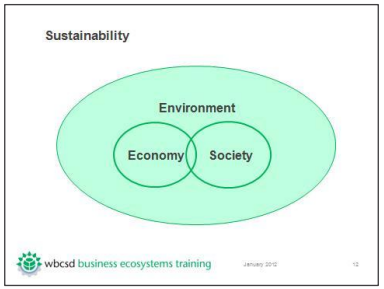
- *the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and*
- *the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs*"

– 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.





- 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	Media/activity/handout guidance
Slide 13: 1 minute **Instructions:** Facilitator to talk through these company quotes as examples of how companies are responding to sustainability issues. **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*"	 **Walmart:** "*Walmart de México to reduce water use by 20 percent by 2013 (2008 Baseline)*" **Source:** Walmart, *http://walmartstores.com/download/4887.pdf* In 2010: Walmart de México has reduced water use by 17 percent (calculated by dividing cubic meters of water used by square meters of building constructed). **Kimberly-Clark:** "25 percent reduction in manufacturing water use by 2015" **Source:** Kimberly-Clark, *http://www.cms.kimberly-clark.com/UmbracoImages/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."*

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

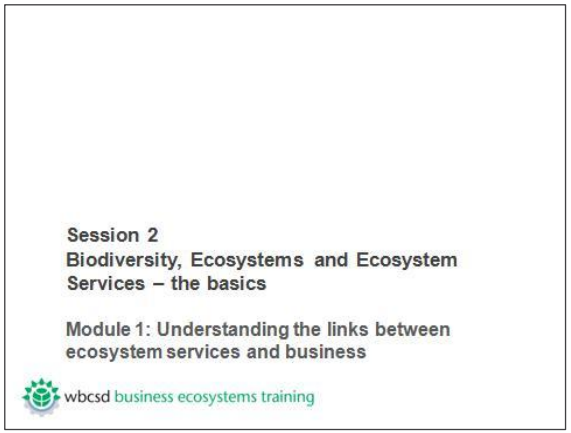
The primary focus of this session will be to provide delegates with the base language and terminology they will use for all the modules.

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:

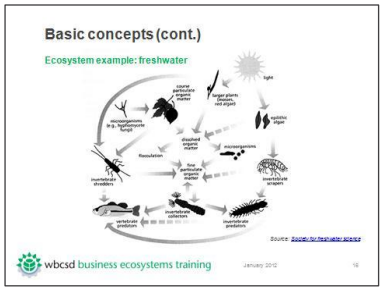
Biodiversity, Ecosystems and Ecosystem Services – the basics

Facilitators' notes	Media/activity/handout guidance
Slide 14: <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.	

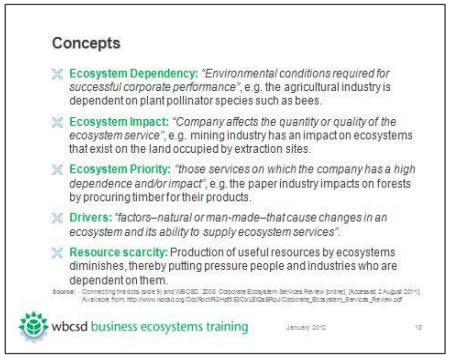
Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes	Media/activity/handout guidance
Slide 15: 1 minute **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:** 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	Media/activity/handout guidance
Slide 16 & 17: 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.	  **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	Media/activity/handout guidance
Slide 18: 2 minutes **Sources:** *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 **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.	 • **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	Media/activity/handout guidance
Slide 19: 3 minutes **Sources:** Slide 10 *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 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.	

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

Facilitators' notes	Media/activity/handout guidance
Slide 19 (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.	

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

Facilitators' notes	Media/activity/handout guidance
Slide 20: 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.	

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

Facilitators' notes	Media/activity/handout guidance
Slide 20 (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 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).	 **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	Media/activity/handout guidance
Slide 20 (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.	 ***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	Media/activity/handout guidance
Slide 21: 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 (CO_2 sequestration):	 **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	Media/activity/handout guidance
Slide 21: 3 minutes (cont.) **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 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	 - 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	Media/activity/handout guidance
Slide 21: 3 minutes (cont.) **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 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	 **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.)

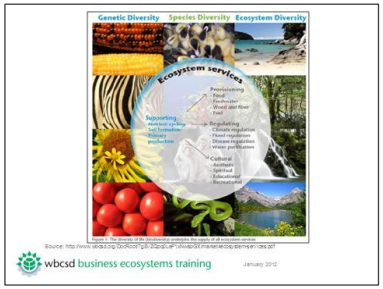
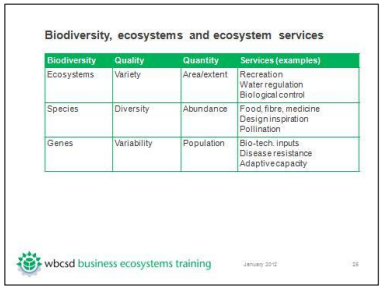
Facilitators' notes	Media/activity/handout guidance
Slide 22: 2 minutes **Sources:** Slide 13 *Connecting the dots* (2005), WBCSD http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true (link to connecting the dots at the bottom of the page). *Corporate Ecosystem Services 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 "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 ***Emphasize that biodiversity underpins all of these services***

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

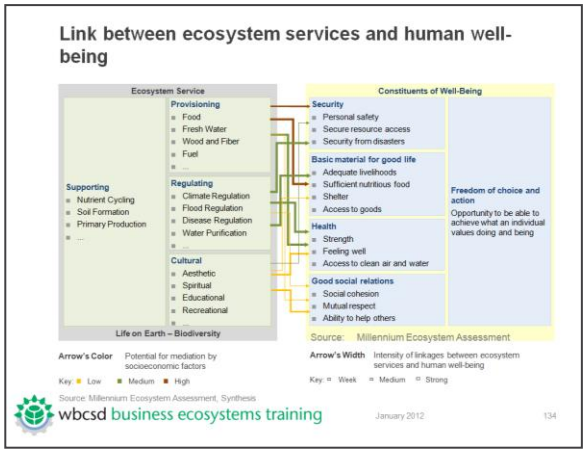
Facilitators' notes	Media/activity/handout guidance
Slide 23: 2 minutes **Sources:** Slide 14 *Connecting the dots* (2005), WBCSD http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true (link to connecting the dots at the bottom of the page). *Corporate Ecosystem Services 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	 **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**

Session 2:

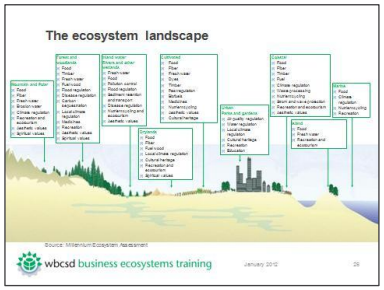
Biodiversity, Ecosystems and Ecosystem Services – the basics (cont.)

Facilitators' notes	Media/activity/handout guidance
Slides 24 & 25: 2 minutes **Sources:** Markets for ecosystem services: New challenges and opportunities (2007), WBCSD http://www.wbcsd.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).	  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	Media/activity/handout guidance
Slide 26: 2 minutes **Sources:** Slide 35 *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). *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.	

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

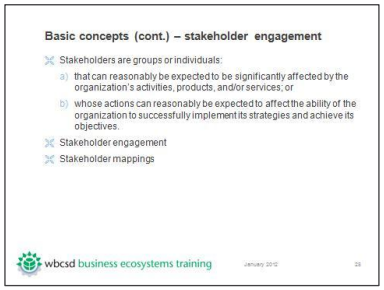
Facilitators' notes	Media/activity/handout guidance
Slide 27: 2 minutes **Sources:** Slide 11 *Connecting the dots* (2005), WBCSD http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true (link to connecting the dots at the bottom of the page) *Ecosystems and Human Well-being: 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.	 **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 28: 2 minutes **Sources:** Slide 11 *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) *Ecosystems and Human Well-being: Biodiversity Synthesis* [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.	

Session 2:

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

Facilitators' notes	Media/activity/handout guidance
Slide 29: 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.	

Session 2:

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

Facilitators' notes	Media/activity/handout guidance
Slide 30: 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 31: <1 minute **Instructions:** Facilitator to recap what has been covered in the module so far	

Time guidelines

Time guidelines	Time
Introduction to broader policy trends and examples of regulations	**10 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	Media/activity/handout guidance

Total Time: 10 minutes

Slide 32: <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 33: 2 minutes

Long history of environmental policy

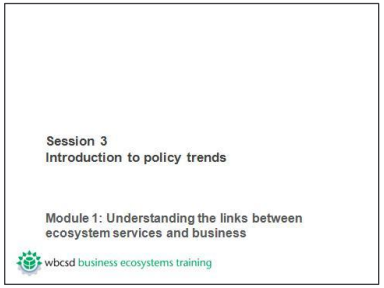
A. **Option: ask delegates to guess the year the UK introduced environmental restrictions relating to fresh water–** 1388 UK water pollution restrictions. This was one of the earliest environmental restrictions outlawing the dumping of animal waste, dung or litter in to rivers. Please refer to: *http://www.environmentlaw.org.uk/rte.asp?id=108*

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*



Session 3

Introduction to policy trends

Facilitators' notes	Media/activity/handout guidance

Slide 33 (cont.): 2 minutes

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…

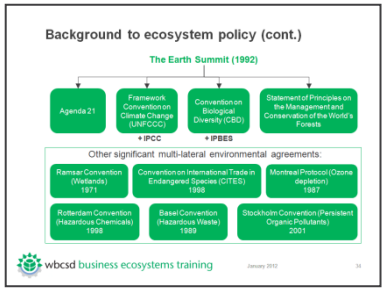
Over 250 multilateral environmental agreements exist – slide 34 shows just a few as examples.

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

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

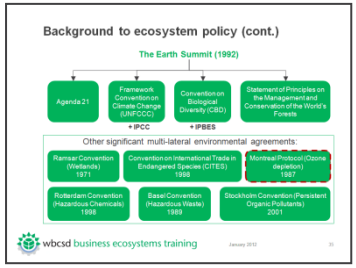
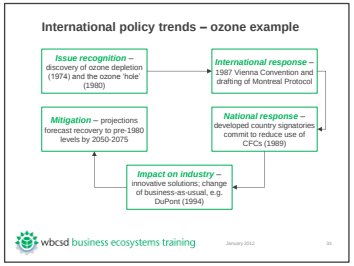
Slide 34: 1 minute

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



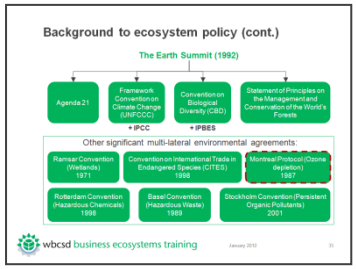
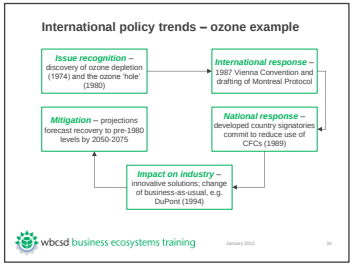
Session 3

Introduction to policy trends

Facilitators' notes	Media/activity/handout guidance
Slides 35 & 36: 3 minutes **Instructions:** Facilitator to choose either ozone or CITES as examples of a policy trend moving from issue recognition to mitigation, depending on the audience. The following slides provide background notes for both 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.** **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_Acheivements-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." **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."	 

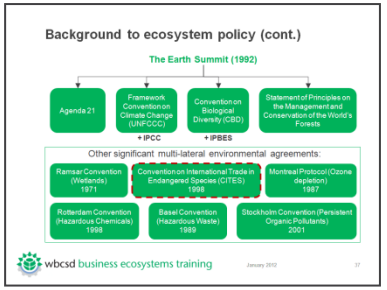
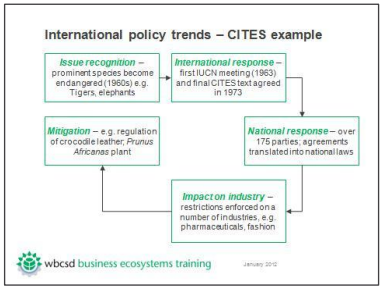
Session 3

Introduction to policy trends

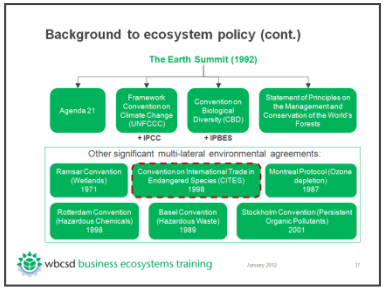
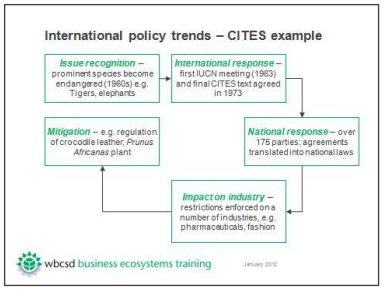
Facilitators' notes	Media/activity/handout guidance
Slides 35 & 36 (cont.): 3 minutes **Instructions:** Facilitator to describe the process by which issues are mitigated on an international policy basis, using the ozone layer as an example. **Source:** UNEP, *The Montreal Protocol on Substances that Deplete the Ozone Layer, Progress Report 1987-2007*, *http://ozone.unep.org/Publications/MP_Acheivements-E.pdf* **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. **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.	 

Session 3

Introduction to policy trends

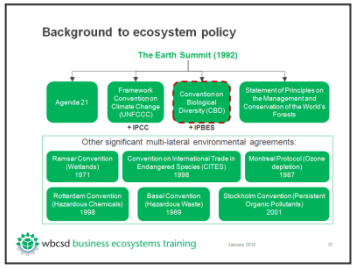
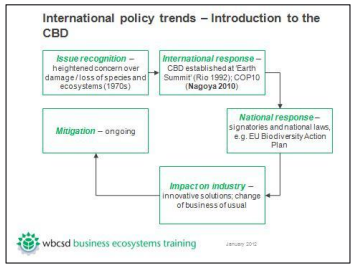
Facilitators' notes	Media/activity/handout guidance
Slides 37 & 38: 3 minute **Instructions:** Facilitator to pick either an example relating to ozone or an examples relating to CITES to show how issues are mitigated on an international policy basis. **Note: though the following facilitator notes begin 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.** **Option 2: CITES** **Sources:** CITES, *http://www.cites.org/* **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.	 

Introduction to policy trends

Facilitators' notes	Media/activity/handout guidance
Slides 37 & 38 (cont.): 3 minute **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/* **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. **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*	  **Mitigation:** Management and monitoring of plant and animal trade is an ongoing issue that requires continued international-level attention.

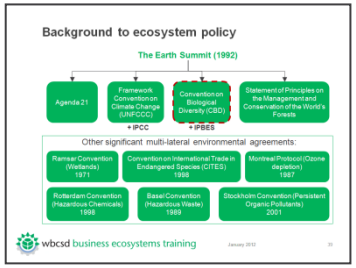
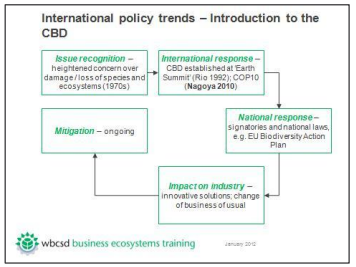
Session 3

Introduction to policy trends (cont.)

Facilitators' notes	Media/activity/handout guidance
Slide 39-40: 3 minutes **Source:** United Nations, *http://www.un.org/geninfo/bp/envirp2.html* Introduction to the Convention on Biological Diversity **Instructions:** 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). The Convention on Biological Diversity (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. 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.	  **Issue recognition:** heightened concern over damage / loss of species and ecosystems (1970s) **Aichi targets:** "*The Parties to the Convention on Biological Diversity, in 2010 in Nagoya, Japan, adopted the Strategic Plan for Biodiversity 2011-2020 with the purpose of inspiring broad-based action in support of biodiversity over the next decade by all countries and stakeholders. In recognition of the urgent need for action the United Nations General Assembly has also declared 2011-2020 as the United Nations Decade for Biodiversity.* *The Strategic Plan is comprised of a shared vision, a mission, strategic goals and 20 ambitious yet achievable targets, collectively known as the Aichi Targets. The Strategic Plan serves as a flexible framework for the establishment of national and regional targets and it promotes the coherent and effective implementation of the three objectives of the Convention on Biological Diversity*" 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	Media/activity/handout guidance
Slide 39-40: 3 minutes **Source**: **Source**: WBCSD CEV Helpdesk presentation (2011) (WBCSD members only: http://www.wbcsd.org/work-program/focus-areas/ecosystems/members-pages/conf-call-archives.aspx) **Instructions:** Facilitator to describe 2 of the targets as an example **Background:** **International response:** Convention on Biological Diversity established at UN 'Earth Summit' (Rio 1992); the 10th Conference of the Parties (COP10) in **Nagoya** in October 2010 set out the strategic goals, and the headline Aichi targets which include: **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 **Examples on national response (facilitator pick one dependant on time)** **National response:** signatories translate these targets into national laws, e.g. EU Biodiversity Action Plan Another potential example:	  **Brazil** *"Brazil launched a national consultation to develop National Targets for Biodiversity on 8 April 2011. The initiative entitled "Dialogues on Biodiversity: building the Brazilian strategy for 2020" is meant to engage Brazilian society in a process to strengthen the implementation of the agreements reached at the 10th Conference of the Parties on Biological Diversity (CBD CoP-10) which took place in October 2010 in Nagoya, Japan. "* https://www.cbd.int/nbsap/about/targets/ **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.

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

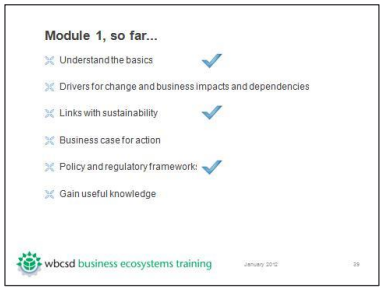
The session starts with an open question to enable discussion between the delegates, and initiate a dialog between them to think how ecosystem services link to their business.

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.

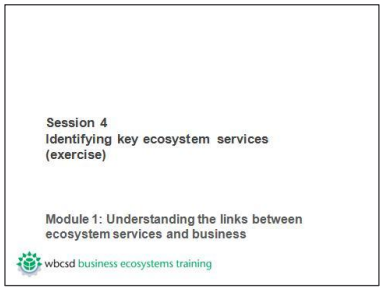
Session 4:

Identifying key ecosystem services (exercise)

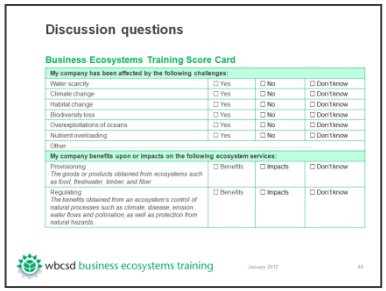
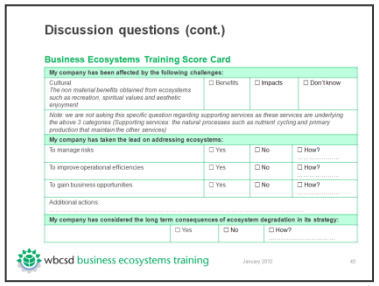
Facilitators' notes	Media/activity/handout guidance
Slide 42: 1 minute **Instructions:** Facilitator to recap what has been covered so far in the module	

Session 4:

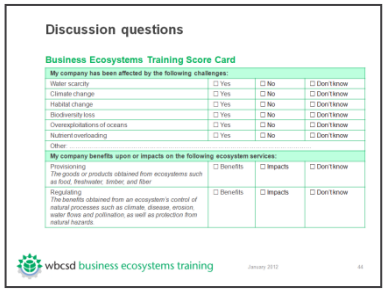
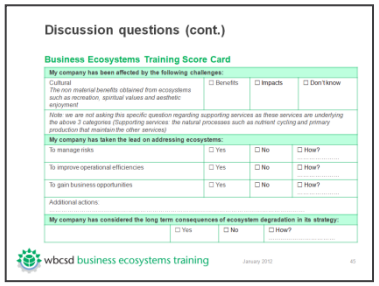
Identifying key ecosystem services (exercise)

Facilitators' notes	Media/activity/handout guidance
Slide 43: <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 (O1)** **If running the course in one block and short of time consider using OPTION 2 (O2)** **If running the course as a separate module consider using OPTION 3 (O3)]** **Background:** Get people thinking about which ecosystem services their employer may rely on or benefit from.	

O1: Identifying key ecosystem services (exercise)

Facilitators' notes	Media/activity/handout guidance
Slides 44-45: 14 minutes **OPTION 1:** **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 solid 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**	 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 ☐ Benefits ☐ Impacts ☐ Don't know Regulating ☐ Benefits ☐ Impacts ☐ Don't know wbcsd business ecosystems training  Discussion questions (cont.) Business Ecosystems Training Score Card My company has been affected by the following challenges: Cultural ☐ Benefits ☐ Impacts ☐ Don't know 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? wbcsd business ecosystems training

O2: Identifying key ecosystem services (exercise)

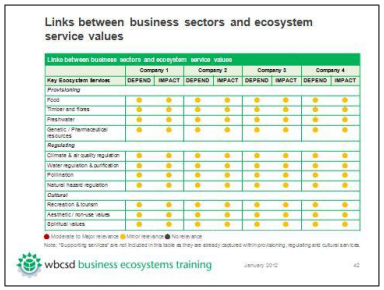
Facilitators' notes	Media/activity/handout guidance
Slides 44-45 (cont.): 5 minutes **OPTION 2:** **Background:** The BET Score Card is inspired by the Dilemma Assessment Card that was developed by the WBCSD's Future Leaders Team in 2007. The Card (as illustrated on the slide) was designed as a discussion 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 solid 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**	 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 ☐ Benefits ☐ Impacts ☐ Don't know Regulating ☐ Benefits ☐ Impacts ☐ Don't know wbcsd business ecosystems training  Discussion questions (cont.) Business Ecosystems Training Score Card My company has been affected by the following challenges: Cultural ☐ Benefits ☐ Impacts ☐ Don't know 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? wbcsd business ecosystems training

O2: Identifying key ecosystem services (exercise)

Facilitators' notes	Media/activity/handout guidance
Slide 46: 5 minutes **OPTION 2 (continued)** **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.	

Session 4:

O3: Identifying key ecosystem services (exercise)

Facilitators' notes	Media/activity/handout guidance
Slide 47: 5 minutes **Source:** WBCSD, *Guide to Corporate Ecosystem Valuation* (2011), http://www.wbcsd.org/Pages/EDocument/EDocumentDetails.aspx?ID=104&NoSearchContextKey=true **OPTION 3** 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.**	 Links between business sectors and ecosystem service values wbcsd business ecosystems training

Session 4:

Identifying key ecosystem services (exercise)

Facilitators' notes	Media/activity/handout guidance

Slides 48-49: 10 minutes for discussion, + 10 minutes to feedback
OPTION 3 (cont.)
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.
	
	 
	- 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.

Time guidelines

Time guidelines	Time
The Global Ecosystem Challenge – presentation and activity	**25 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.

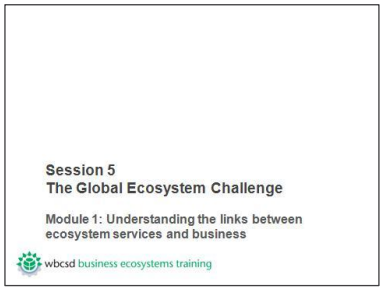
The session introduces the work of the Millennium Ecosystem Assessment (MA), Vision 2050 and The Economics of Ecosystems and Biodiversity (TEEB) among others.

Coffee Break

30 minutes

Session 5:

The global ecosystem challenge

Facilitators' notes	Media/activity/handout guidance
Slide 50: <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:** 45 minutes - 15 minutes presentation slides - 30 minutes interactive session **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 *Millennium Ecosystem Assessment*, *Vision 2050* and *TEEB* 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	Media/activity/handout guidance
Slide 51: 3 minutes **Source:** WBCSD, *Vision 2050* (2010), p2-3 [online]. Available from http://www.wbcsd.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.	

Session 5:

The global ecosystem challenge

Facilitators' notes	Media/activity/handout guidance
Slide 51 (cont.): 3 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.	

Session 5:

The global ecosystem challenge

Facilitators' notes	Media/activity/handout guidance
Slide 52: 2 minutes **Sources:** WBCSD, *Connecting the dots* (2005), Slide 31 http://www.wbcsd.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.wbcsd.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.	 **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 CO_2 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	Media/activity/handout guidance
Slide 53 : 5 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.	 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.

Session 5:

The global ecosystem challenge

Facilitators' notes

Slide 53 (cont.): 5 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.

Session 5:

The global ecosystem challenge

Facilitators' notes	
Slide 53 (cont.): 5 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”).

Session 5:

The global ecosystem challenge

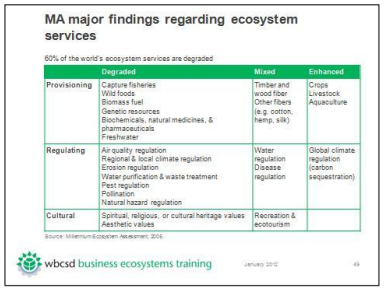
Facilitators' notes	Media/activity/handout guidance
Slide 54: 4 minutes **Sources:** WBCSD, *Connecting the dots* (2005), Slide 21 http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true (link to connecting the dots at the bottom of the page). Millennium Ecosystem Assessment (2005), *Ecosystems and Human Well-being: 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.	 ***"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

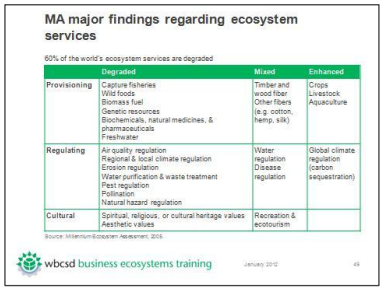
Facilitators' notes	Media/activity/handout guidance
Slide 54 (cont.): 4 minutes **Sources:** WBCSD, *Connecting the dots* (2005) , Slide 21 http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true (link to connecting the dots at the bottom of the page). Millennium Ecosystem Assessment (2005), *Ecosystems and Human Well-being: 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**	

Session 5:

The global ecosystem challenge

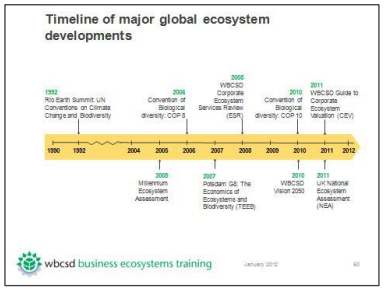
Facilitators' notes	Media/activity/handout guidance
Slide 55: 3 minutes **Sources:** WBCSD, *Connecting the dots* (2005) , Slide 24 http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=23&nosearchcontextkey=true (link to connecting the dots at the bottom of the page). Millennium Ecosystem Assessment, (2005), *Ecosystems and Human Well-being: 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.	

The global ecosystem challenge

Facilitators' notes	Media/activity/handout guidance
Slide 55 (cont.): 3 minutes **Sources:** WBCSD, *Connecting the dots* (2005) , Slide 24 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: 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).*	 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 wbcsd business ecosystems training 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."*

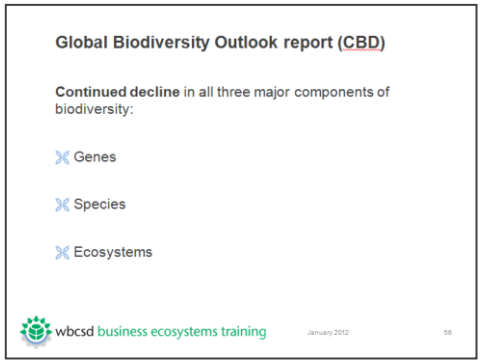
Session 5:

The global ecosystem challenge

Facilitators' notes	Media/activity/handout guidance
Slide 56: 2 minutes **Sources:** WBCSD, *Connecting the dots* (2005) , Slide 24 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: Opportunities and Challenges for Business and Industry [online].* Pp.6-9. Available from: http://www.maweb.org/documents/document.353.aspx.pdf The Economicy 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).]**	

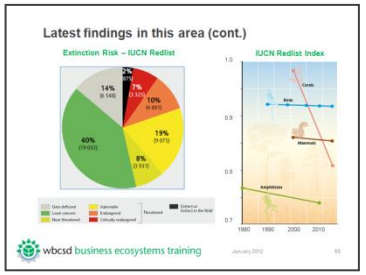
Session 5:

The global ecosystem challenge

Facilitators' notes	Media/activity/handout guidance
Slide 57: 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 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.	 • **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.

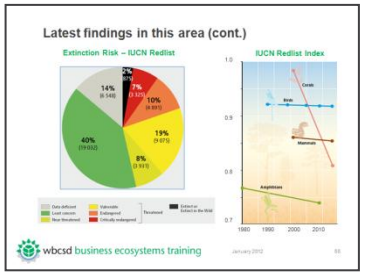
Session 5:

The global ecosystem challenge

Facilitators' notes	Media/activity/handout guidance
Slides 58-60: 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.	  

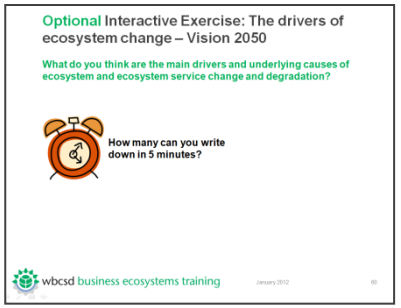
Session 5:

The global ecosystem challenge

Facilitators' notes	Media/activity/handout guidance
Slides 58-60 (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).	  

Session 5:

The global ecosystem challenge

Facilitators' notes	Media/activity/handout guidance
Optional: Slide 61: 5 minutes exercise, 2 minutes feedback **Source:** WBCSD, *Connecting the dots* (2005), Slide 34 http://www.wbcsd.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).	

Session 5:

The global ecosystem challenge

Facilitators' notes	Media/activity/handout guidance

Slides 62 & 63: 2 minutes

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

Instructions:

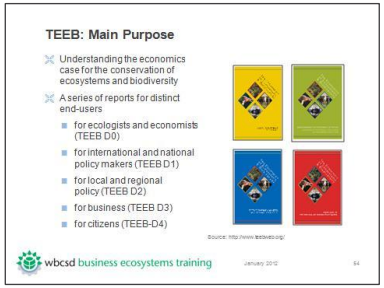
Facilitator to introduce TEEB – introduce the main aims but only discuss one in detail.

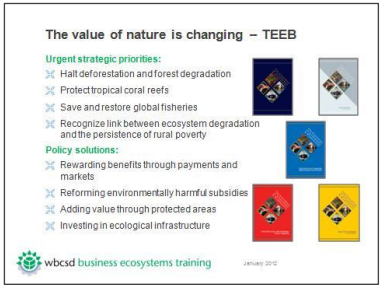
Background:

TEEB – 'The Economics of Ecosystems and Biodiversity'

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.

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.





History

The TEEB study is hosted by UNEP with financial support from the European Commission, Germany, the United Kingdom, Netherlands, Norway, Sweden and Japan. At the meeting of the environment ministers of the G8 countries and the five major newly industrialising countries that took place in Potsdam in March 2007, the following wording was agreed: "In a global study we will initiate the process of analyzing the global economic benefit of biological diversity, the costs of the loss of biodiversity and the failure to take protective measures versus the costs of effective conservation."

Session 5:

The global ecosystem challenge

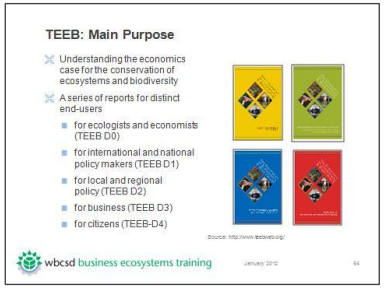
Facilitators' notes

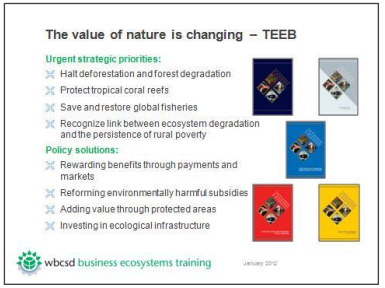
Slides 62 & 63 (cont.): 2 minutes

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

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





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

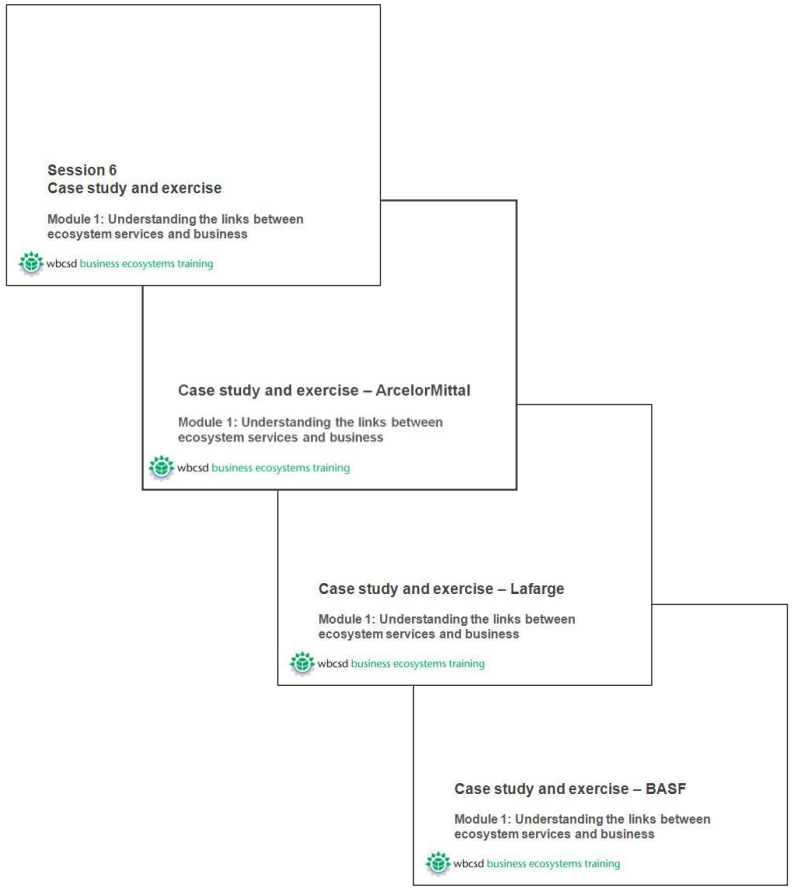
Session overview

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	Media/activity/handout guidance
Slide 64: < 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 65-73: 1 minute** **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 three case studies, facilitator to select appropriate case study]** **Case Studies:** - ArcelorMittal - Lafarge - BASF	

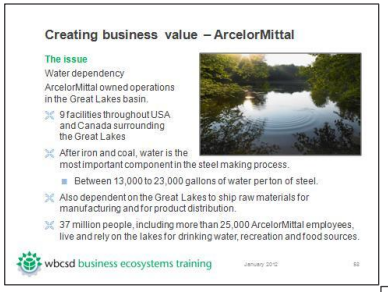
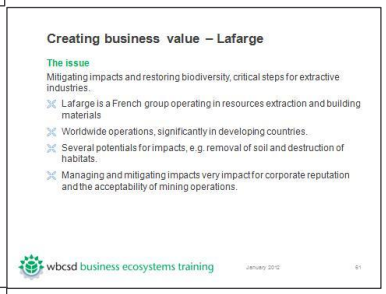
Session 6:

Case study and exercise

Facilitators' notes	Media/activity/handout guidance
Slides 65-73 (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.	 **Materials: Handouts:** - "The issue" slide, to be distributed at the discussion stage. . - 1x flipchart per group

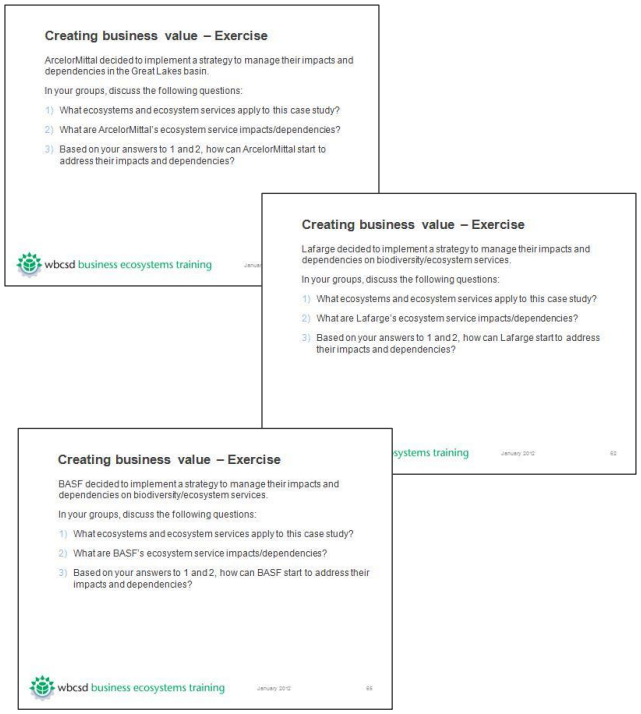
Session 6:

Case study and exercise

Facilitators' notes	Media/activity/handout guidance
Slides 66, 69, 72: 2 minutes **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 study:** **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.	  

Session 6:

Case study and exercise

Facilitators' notes	Media/activity/handout guidance
Slides 67, 70, 73: 10 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 73: 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.**	

Time guidelines

Time guidelines	Time
Knowledge check- activity	**15 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

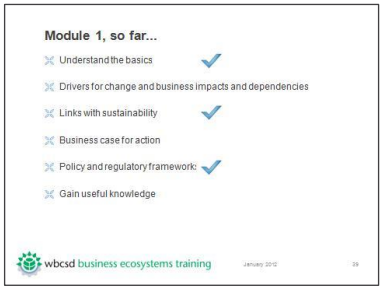
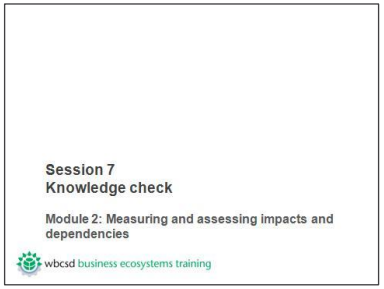
This session will be run by one course facilitator.

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 74: 1 minute **Instructions:** Facilitator to recap what has been covered so far in the module **Slide 75: 2 minutes** **Objective:** knowledge check **Total time for exercise:** 5 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
Slide 76: 7 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**

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

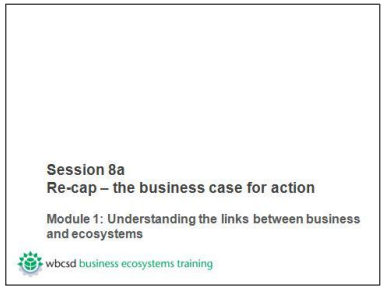
This session will be run by one course facilitator, who will talk through key concepts and definitions with delegates.

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.

Session 8a:

Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 77: <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.	

Session 8a:

Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 78: 1 minute **Source:** WBCSD,*Connecting the dots* (2005), http://www.wbcsd.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**.	

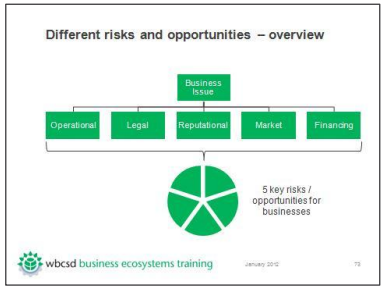
Session 8a:

Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 79: 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 polices on natural resource management or operational permitting - Traditional risk management processes do not always capture ecosystems risks/opportunities	 **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

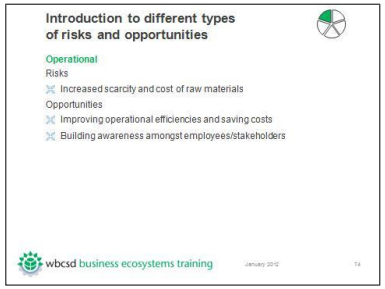
Session 8a:

Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 80: 1 minute **Source:** WBCSD, *Guide to Corporate Ecosystem Valuation* (2011). Detailed Presentation April 2011 p8 http://www.wbcsd.org/pages/adm/download.aspx?id=5921&objecttypeid=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.	

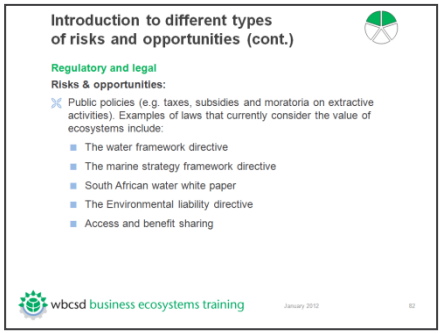
Session 8a:

Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 81: 1 minute **Source:** WBCSD, *Guide to Corporate Ecosystem Valuation* (2011). Detailed Presentation April 2011 p8 http://www.wbcsd.org/pages/adm/download.aspx?id=5921&objecttypeid=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.	

Session 8a:

Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 82: 1 minute **Source:** WBCSD, *Guide to Corporate Ecosystem Valuation* (2011). Detailed Presentation April 2011 p8 http://www.wbcsd.org/pages/adm/download.aspx?id=5921&objecttypeid=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.]**	

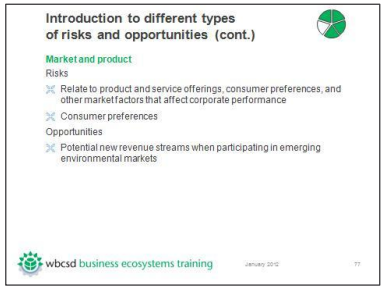
Session 8a:

Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 83: 1 minutes **Source:** WBCSD, *Guide to Corporate Ecosystem Valuation* (2011). Detailed Presentation April 2011 p8 http://www.wbcsd.org/pages/adm/download.aspx?id=5921&objecttypeid=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.	

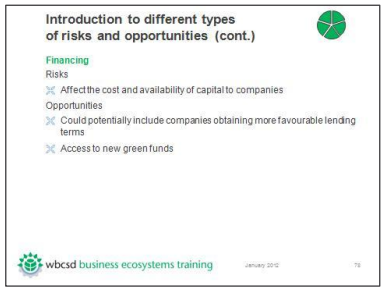
Session 8a:

Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 84: 1 minute **Source:** WBCSD, *Guide to Corporate Ecosystem Valuation* (2011). Detailed Presentation April 2011 p8 http://www.wbcsd.org/pages/adm/download.aspx?id=5921&objecttypeid=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).	

Session 8a:

Re-cap: The Business case for action

Facilitators' notes	Media/activity/handout guidance
Slide 85: 1 minute **Source:** WBCSD, *Guide to Corporate Ecosystem Valuation* (2011). Detailed Presentation April 2011 p8 http://www.wbcsd.org/pages/adm/download.aspx?id=5921&objecttypeid=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).	

Session 8b:

How can business respond?

Facilitators' notes	Media/activity/handout guidance

Slide 86: 1 minute

Instructions:

Facilitator to ask the audience How can business respond?

Slide 87: 1-5 minute(s)

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

Instructions:

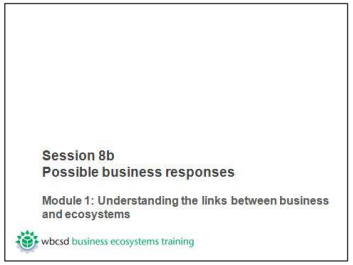
Facilitator to talk through slide content supported by the background notes.

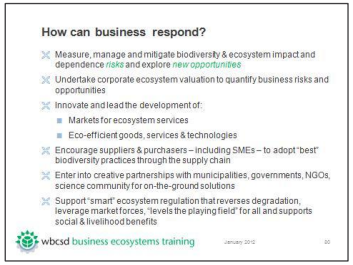
Background

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.

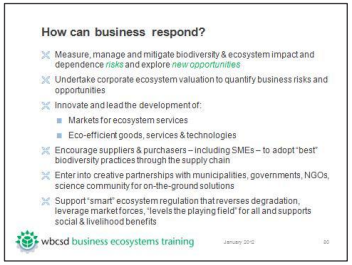




4. Encourage suppliers & purchasers to adopt best practices: Many big companies have large and complex value chains, which makes measuring and mitigating impacts challenging because often the most significant impacts are up- and downstream rather than in their direct operations. For example, Unilever 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.

Session 8b:

How can business respond?

Facilitators' notes	Media/activity/handout guidance
Slide 87: 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	 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

Time guidelines

Time guidelines	Time
Brainstorming the business case – activity	**30 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

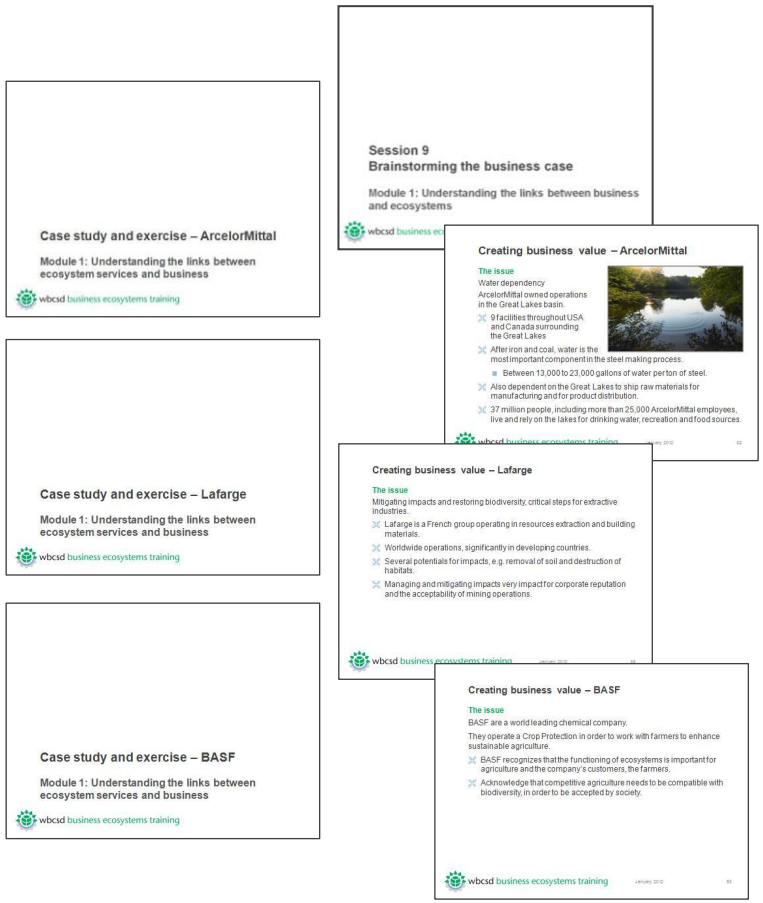
This session will be run as a group exercise, both facilitators will be available to answer questions during the session.

Handouts

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.

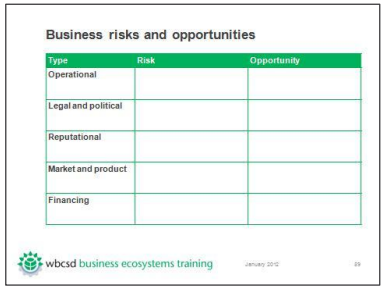
Session 9:

Brainstorming the business case (exercise)

Facilitators' notes	Media/activity/handout guidance
Slide 88: <1 minute **Instructions:** facilitator to introduce objectives for sessions. **Total time for exercise:** 20 minutes **Slide 89-94 (pick one from the three 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).	

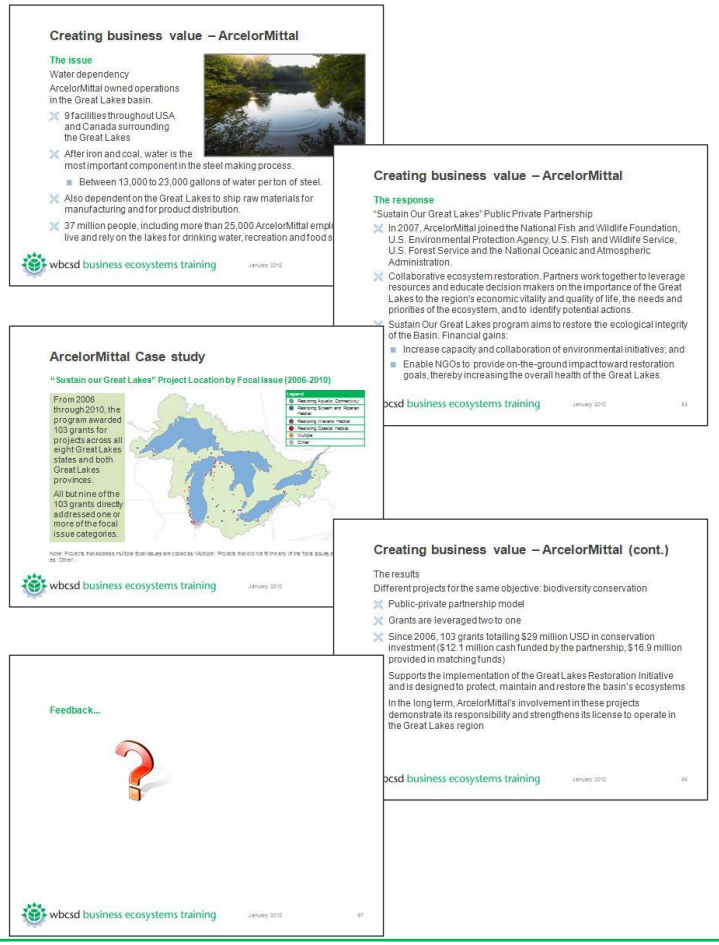
Session 9:

Brainstorming the business case (exercise)

Facilitators' notes	Media/activity/handout guidance
Slide 95: 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** and the results that were achieved.	

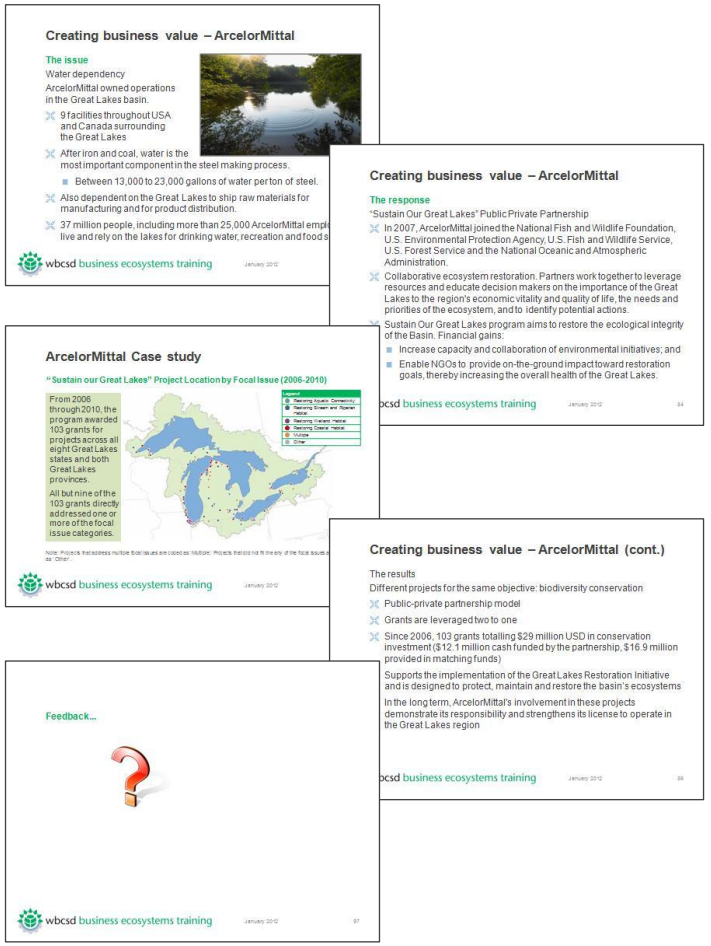
Session 9:

Brainstorming the business case (exercise)

Facilitators' notes	Media/activity/handout guidance
Slides 96-99 & 106: 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.	

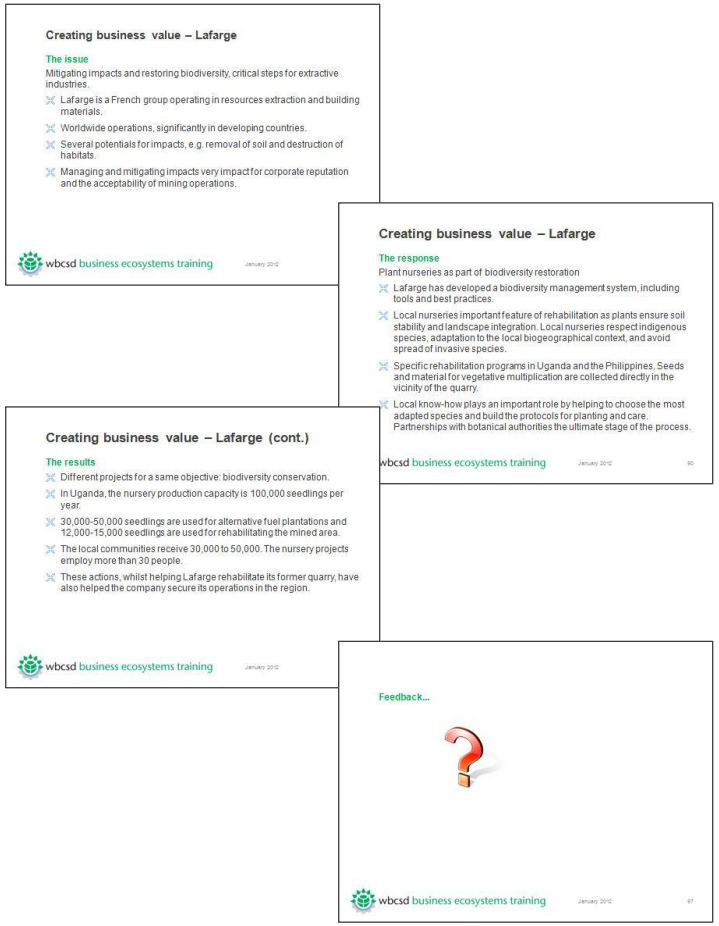
Session 9:

Brainstorming the business case (exercise)

Facilitators' notes	Media/activity/handout guidance
Slides 96-99 & 106 (cont.): 7 minutes **Option 1 Arcelor Mittal** **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.	

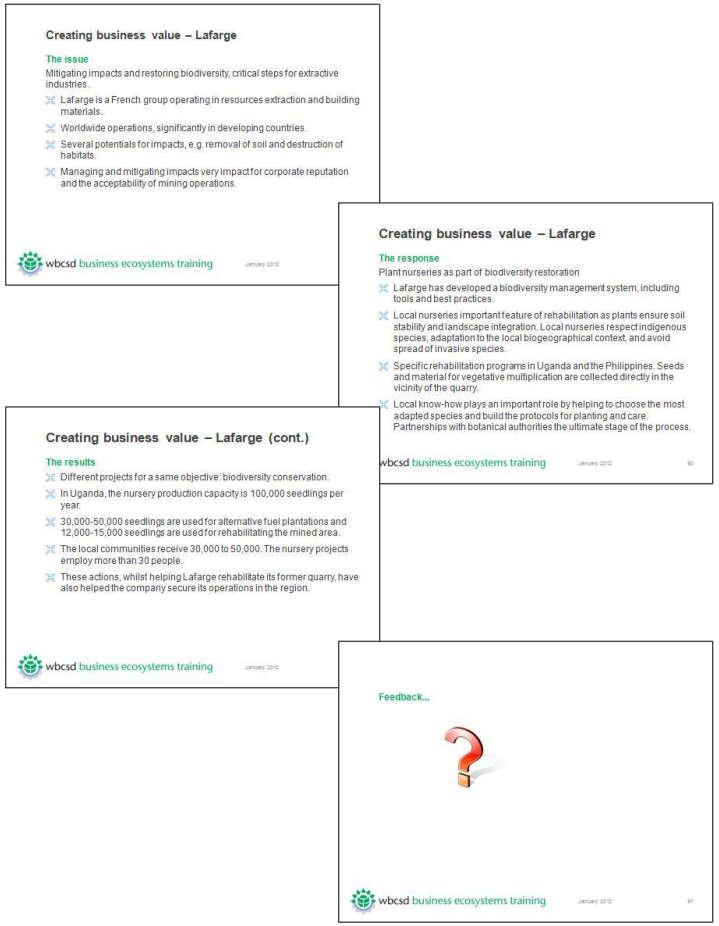
Session 9:

Brainstorming the business case (exercise)

Facilitators' notes	Media/activity/handout guidance
Slides 100-102 & 106: 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.	

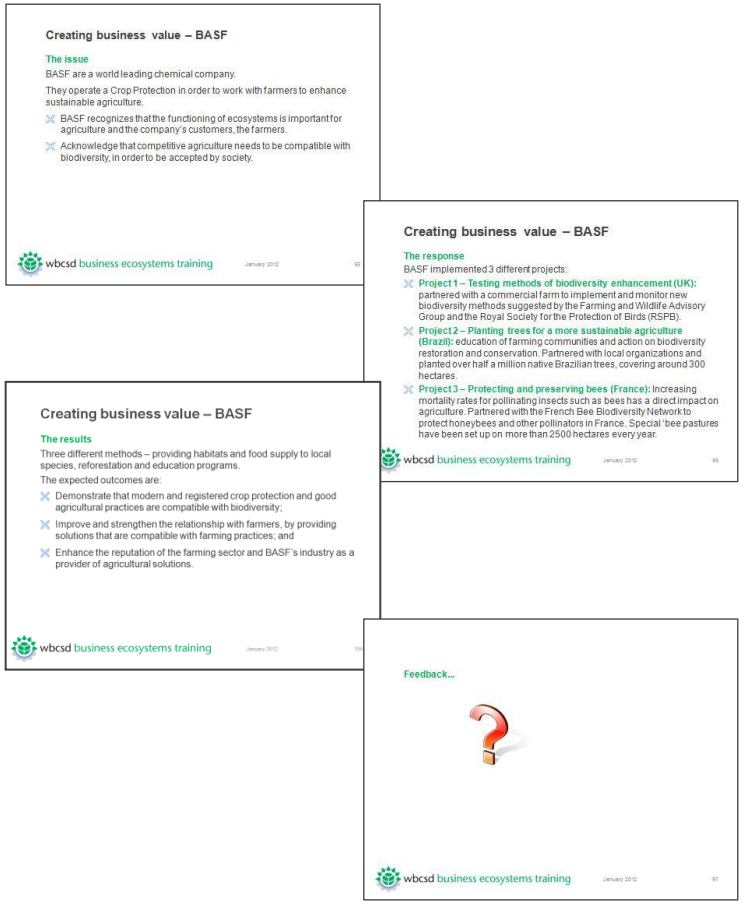
Session 9:

Brainstorming the business case (exercise)

Facilitators' notes	Media/activity/handout guidance
Slides 100-102 & 106 (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.	

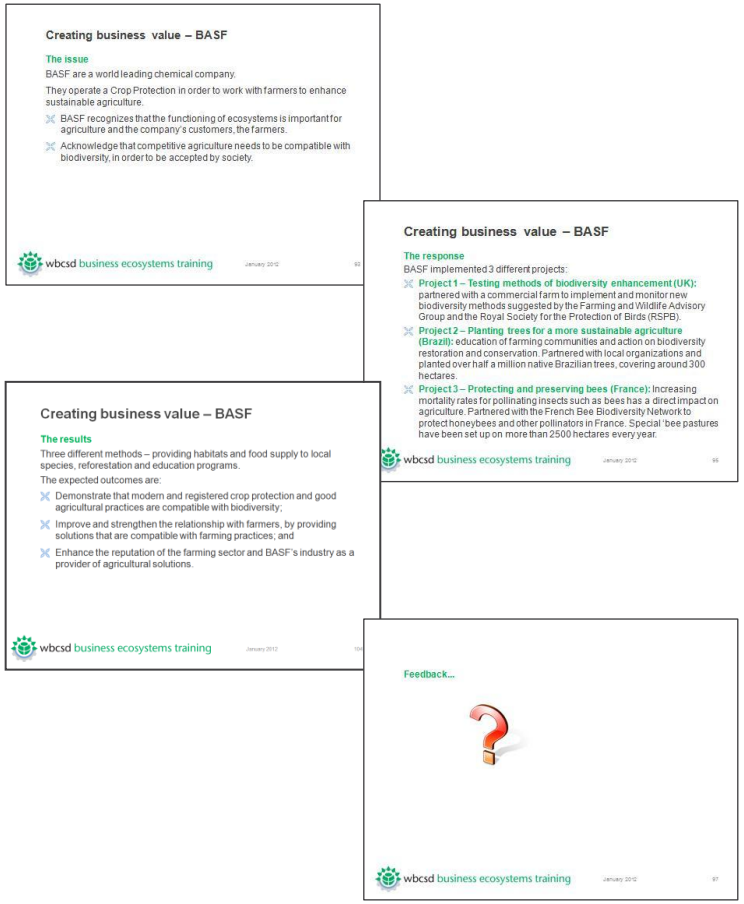
Session 9:

Brainstorming the business case (exercise)

Facilitators' notes	Media/activity/handout guidance
Slides 103-106: 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 2:** *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.	

Session 9:

Brainstorming the business case (exercise)

Facilitators' notes	Media/activity/handout guidance
Slides 103-106 (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 2:** *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.	

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

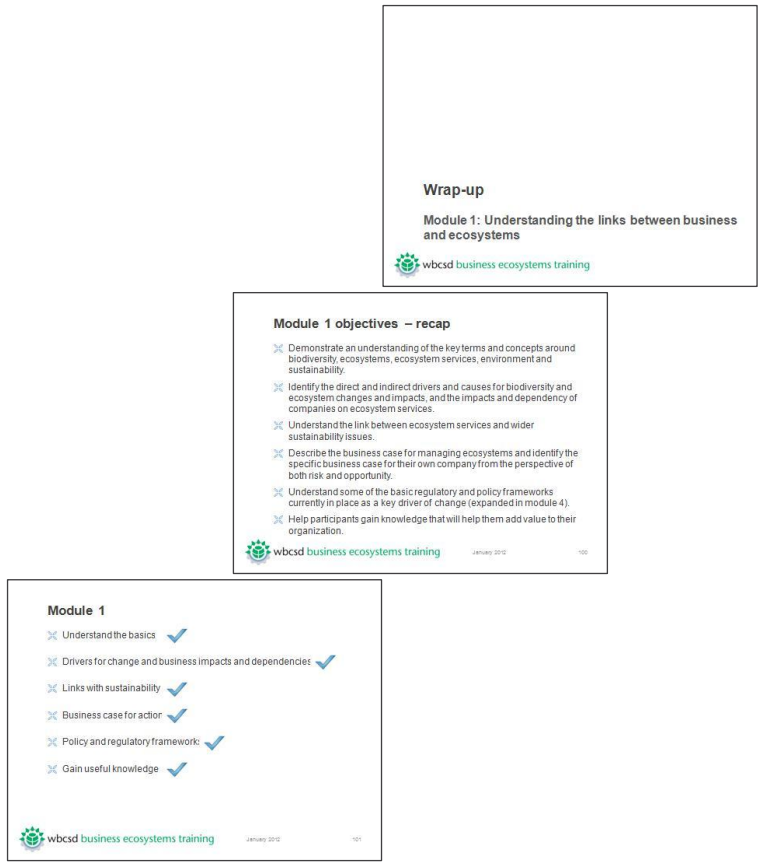
Delegates will be reminded of the module's agenda, which will enable them to recognise the knowledge acquired throughout the different sessions (set the scene).

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	Media/activity/handout guidance
Slide 107: <1 minute **Total time for exercise:** 15 minutes **Slide 108 & 109: 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.	

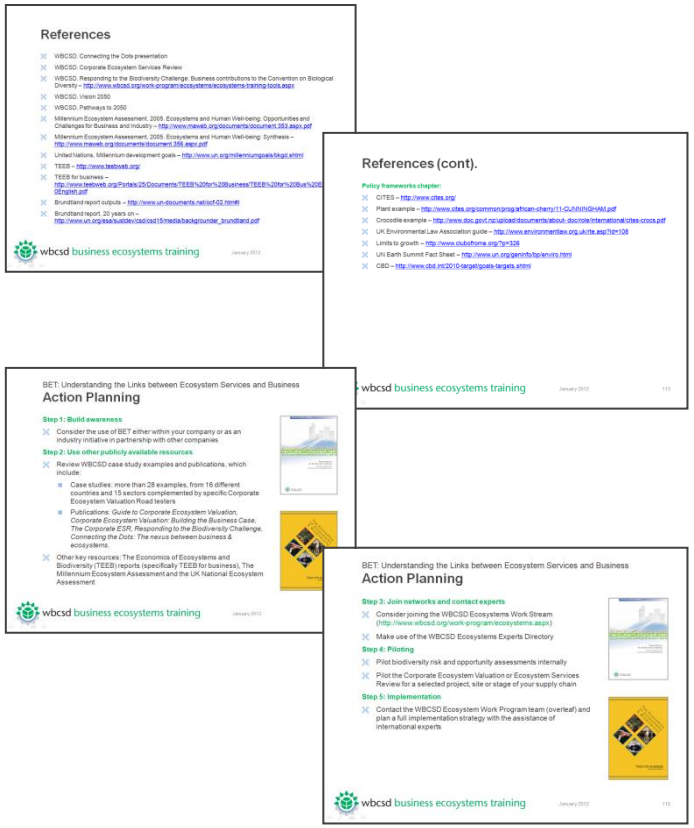
Session 10:

Wrap up

Facilitators' notes	Media/activity/handout guidance
Slide 110: 5 minute **Slide 111: 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.wbcsd.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.	 

Session 10:

Wrap up

Facilitators' notes	Media/activity/handout guidance
Slide 112-115: 3 minutes **Instructions:** **[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. 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)	

A4 HANDOUTS

Module 1: Understanding the links between business and ecosystems

wbcsd business ecosystems training

Discussion questions

Business Ecosystems Training Score Card

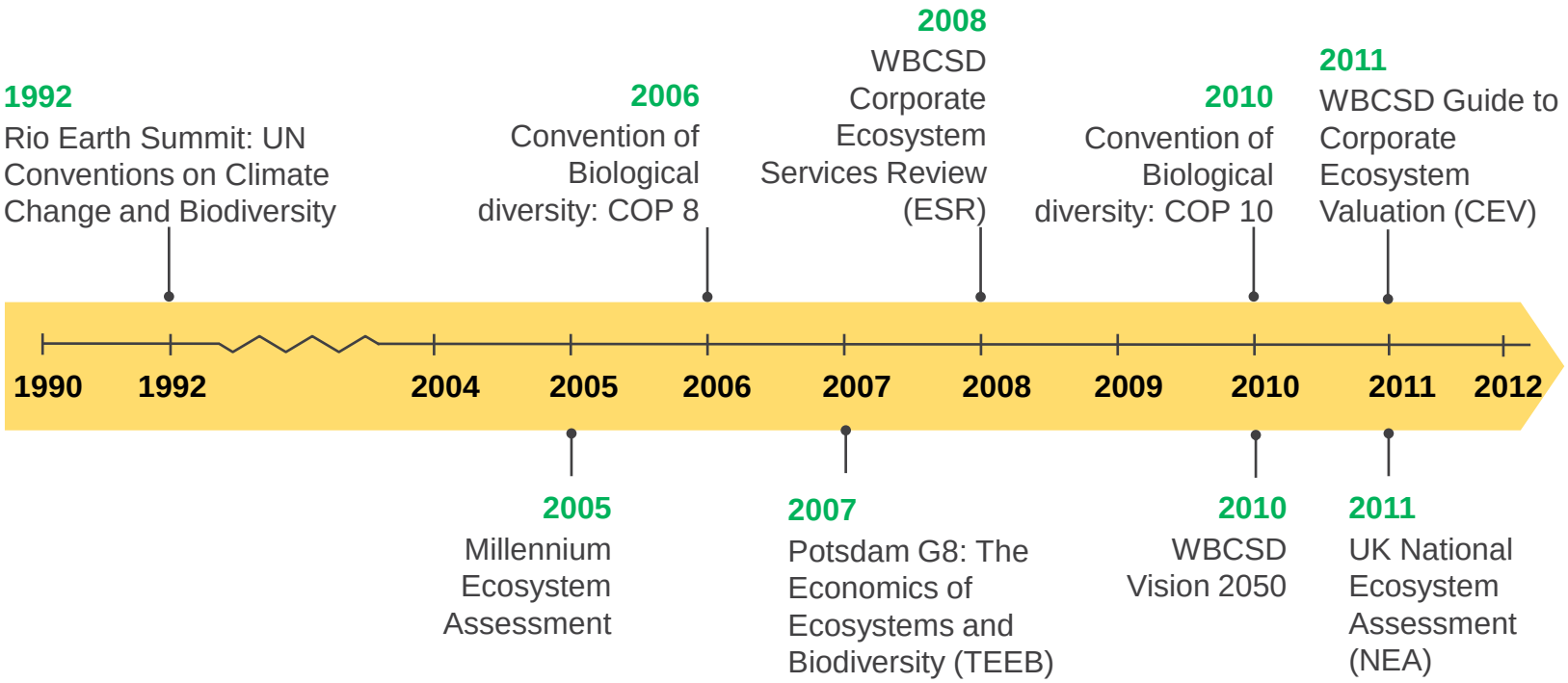
My company has been affected by the following challenges:			
Water scarcity	☐ Yes	☐ No	☐ Don't know
Climate change	☐ Yes	☐ No	☐ Don't know
Habitat change	☐ Yes	☐ No	☐ Don't know
Biodiversity loss	☐ Yes	☐ No	☐ Don't know
Overexploitations of oceans	☐ Yes	☐ No	☐ Don't know
Nutrient overloading	☐ Yes	☐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

Discussion questions (cont.)

Business Ecosystems Training Score Card

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

Timeline of major global ecosystem developments

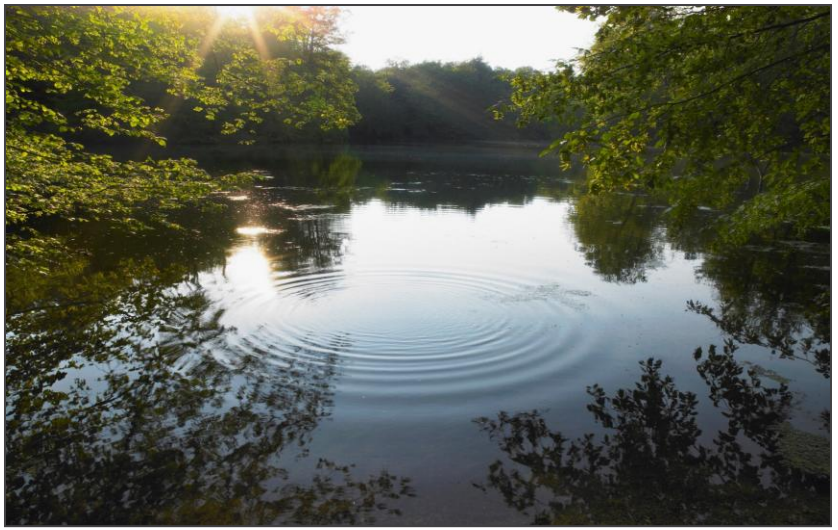


Creating business value – ArcelorMittal

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

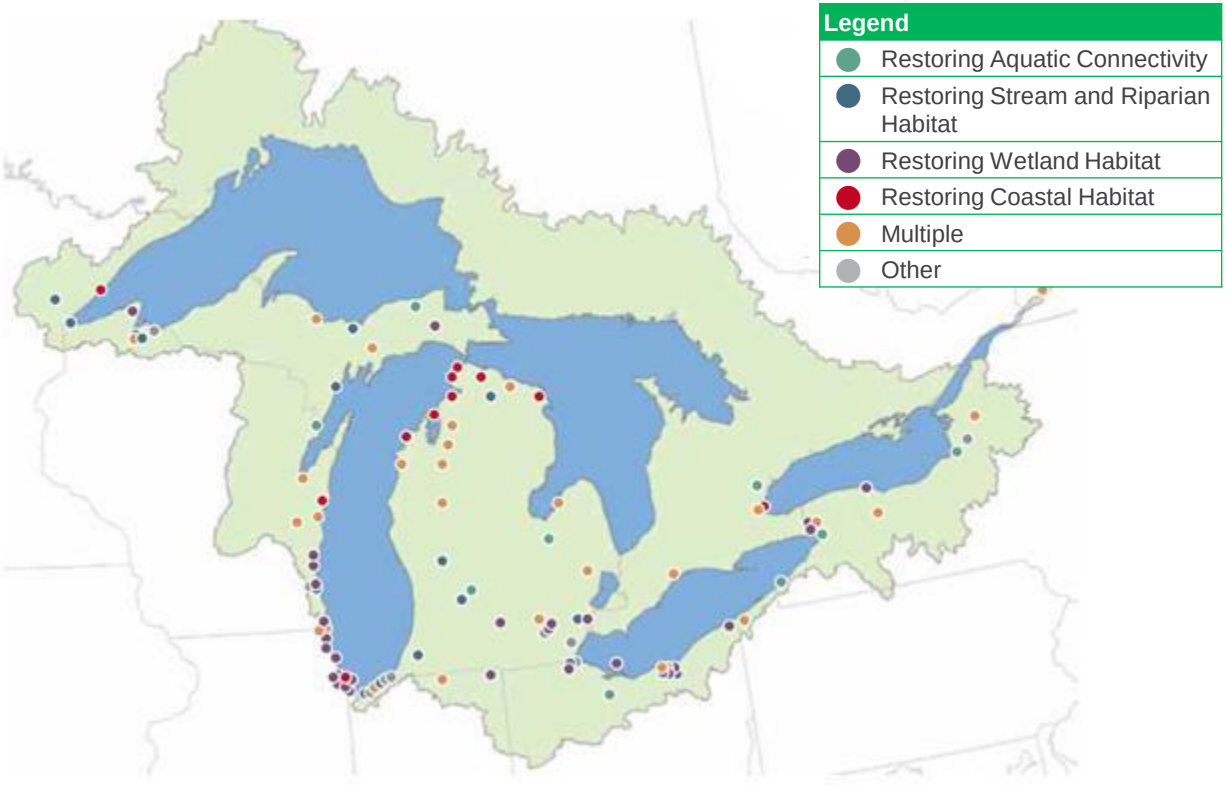
- In 2007, ArcelorMittal joined the National Fish and Wildlife Foundation, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Forest Service and the National Oceanic and Atmospheric Administration.
- Collaborative ecosystem restoration. Partners work together to leverage resources 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 the 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.

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	Icebreaker and introduction	
	30-35	Biodiversity, ecosystems and ecosystem services – the basics	
	10	Introduction to policy trends	
	30	Identifying key ecosystem services – activity	
	10-25	Coffee break	
	25-30	The global ecosystem challenge	
	25	Case study and exercise	
	10	Knowledge check	
	10	Re-cap – the business case for action	
	5	Possible actions	
	30	Brainstorming the business case – activity	
	20	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		

Disclaimer

Business Ecosystems Training (BET) is a capacity building program released in the name of the WBCSD. It is the result of a collaborative effort by members of the secretariat and senior executives from KPMG and an Advisory Committee composed of member companies, Regional Network partners, NGOs, UN and academic institutions, and others. A wide range of members reviewed drafts, thereby ensuring that BET broadly represents the majority of the WBCSD membership. It does not mean, however, that every member company agrees with every word.

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February 2012


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