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Environment, Nature Conservation
and Nuclear Safety



Corporate Biodiversity Management Handbook

A guide for practical implementation



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Contents

Foreword by Germany's Federal Environment Minister Dr. Norbert Röttgen	5
Preface	6
Summary	9
1 Introduction	10
2 Fields of action	12
3 Business cases for biodiversity	20
4 Operationalisation	26
4.1 Management cycle	26
4.2 Screen and identify fields of action	27
4.3 Set objectives, plan processes and activities	29
4.4 Methods and tools	38
4.4.1 Overview of management tools	38
4.4.2 Tools for biodiversity management	44
5 Conclusion	52
6 Endnotes	53
7 List of figures	54
8 List of tables	54
9 Literature	55
10 Appendix	58
10.1 'Biodiversity in Good Company' Initiative	58
10.2 Glossary	60



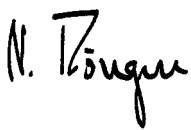
Foreword by Germany's Federal Environment Minister Dr. Norbert Röttgen

Ecosystems are the basis for all life. Their services are indispensable for mankind. Nevertheless, biological diversity in our world is disappearing at a disturbingly rapid pace. If we continue to destroy the environment, we will not only eliminate the basis of our future existence but also of our future economy.

It is essential that all players join forces and pool their efforts in order to combat the global loss of biodiversity. There is an urgent need for international and national cooperation. With the concerted efforts of politics, science, citizens and economic systems, progress towards this end can be made. Economy and ecology are not opponents, but rather they are interdependent. They are two sides of one coin.

During this International Year of Biodiversity, emphasizing the economic as well as ecological relevance of the constant loss of biological diversity is a top priority.

Therefore, I emphatically welcome the 'Biodiversity in Good Company' Initiative's handbook for corporate biodiversity management. For the first time, business and biodiversity are being dealt with from a practical economic perspective. This handbook gives enterprises concrete implementation tools for instituting biodiversity management practices. At the same time it introduces methods and tested instruments through best-practice examples from the 'Biodiversity in Good Company' Initiative members. I am pleased that, through a coordinated and innovative process between science and business, the first handbook of this kind has been successfully created.



Dr. Norbert Röttgen
Federal Environment Minister

Preface



Dear Readers,

With the increasing loss of biological diversity, there is an increase in risk for both society and business. The spectrum of risk is broad and extends from higher procurement costs, to restrictions, through government regulation to customer defection. However, reducing concerns about biodiversity to issues of risk would mean ignoring the considerable business opportunities that it offers. Biodiversity is laden with emotions and yet full of innovative potential, thereby offering businesses concrete opportunities. Until recently these possibilities have been largely ignored, yet they have the capacity to give companies a competitive advantage.

The purpose of the 'Biodiversity in Good Company' Initiative, which was initiated by the German Ministry for the Environment in 2008, is to increase the business community's awareness of the importance of biodiversity and to support them in their efforts to integrate aspects of biodiversity management into their corporate activities.

That is why we have written this handbook – to show you the reasons for taking advantage of and the potential fields of action for corporate biodiversity management. We will take a comprehensive view of management, one that offers specific starting points in a variety of industries and for businesses of different sizes. This perspective is illustrated with many best-practice examples that impressively demonstrate the current relevance of the issue.

With the handbook, you will see how to develop specific fields of action and how business success can be sustained and strengthened by implementing a professional biodiversity management system.



We would like to thank Rainer Kant, Martin Oldeland and Meike Strecker from B.A.U.M. e.V. (German Environmental Management Association). A special thanks goes out to Elena Brandes, Judith Winterstein, Lukas Rüttinger, Michiko Uchiyama, Nathan Droesch, Benedikt Schöneck, Alexander Lloyd and Sally Ollech, of the GTZ, as well as Jochen Flasbarth, who, as a former department head in the Federal Ministry for the Environment together with Nicola Breier and other associates, not only made this project possible, but also actively supported it. And finally we would like to express our greatest thanks to all of the people at the 'Biodiversity in Good Company' Initiative's member companies as well as the representatives of the environmental associations that enthusiastically and constructively supported our work.

We would appreciate your feedback and wish you every success in your corporate biodiversity management efforts.

Prof. Dr. Stefan Schaltegger

Centre for Sustainability Management (CSM),
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Uwe Beständig

Edgar Endrukaitis

Coordinator of the Biodiversity
in Good Company Initiative



Industrial production methods need ecological guiding principles (left)
Conservation of regional living spaces and traditional production methods (right)

Summary

The nexus between biodiversity and sustainable business development is multifaceted and complex. This handbook analyses biodiversity in business systematically and visually presents the findings in tables throughout the following chapters.

Table 1 Shows the impacts various corporate fields of action can have on biological diversity based on location development, raw material procurement or product (p. 28). Economic motivations that justify engaging in corporate biodiversity management are represented in Table 2 (p. 30).

Table 3 depicts the affects biodiversity has on the various corporate departments. After identifying these fields, business, functional and area-related objectives can then be formulated. They enable both sustainable business development and the conservation of biological diversity. Table 4 lists examples of such objectives (p.36).

The handbook then outlines a number of proven tools for use in biodiversity management as well as those that can be adapted to help achieve corporate biodiversity goals.

Throughout this guide there are illustrative best-practice examples from the 'Biodiversity in Good Company' Initiative. The handbook also offers a concrete, tangible introduction to corporate biodiversity management.

An online version of the handbook at www.business-and-biodiversity.com features checklists, extensive descriptions of the best-practice examples and further information on the topic "Business and Biodiversity".

1 Introduction

The preservation of biological diversity (biodiversity) has until recently been chiefly left to government agencies and conservation organisations. In business this topic has been largely ignored. Only a few pioneer companies have used a systematic approach to biodiversity management to reduce business risks and to take advantage of business opportunities.¹

Biodiversity as a business opportunity

The emotional character of biodiversity offers a great opportunity for businesses. For example, in the i-to-i trips offered by TUI, guests wanting to combine travel with a commitment to the environment or social issues can participate in volunteer trips and become actively involved in wildlife conservation projects protecting turtles or elephants.

Biodiversity as a way to reduce business risk

Biological diversity is also the basis for whole economic sectors such as the fishing or fish-processing industries. The future availability of fish and seafood is obviously an essential component of long-term business success. Deutsche See has taken on this responsibility. The company is continually reviewing its product line for endangered species and requires its suppliers to use sustainable fishing methods.

Corporate biodiversity management involves the methodical design of processes, products and projects to ensure business success while protecting biodiversity. It systematically analyses the impact of business activities on biodiversity as well as its structural and social conditions in order to find strategic measures that lead to sustainable development for both business and society.²

The implementation is carried out by corporate departments – such as procurement, production or marketing – which then develop measures aimed at conserving biodiversity in specific fields of action (Figure 1).

Fields of action are described in Chapter 2. They are the starting points for corporate biodiversity management as they can be used to influence the causes of biodiversity loss (impact factors).

The potential drivers behind a ‘business case for biodiversity’ are often influenced by the way a business behaves in the various fields of action. These drivers are economic factors that increase or decrease business success. They are described in Chapter 3. Moreover, the shaded boxes illustrate that beyond philanthropic reasons there are actually economic reasons for implementing corporate biodiversity management.

Finally, Chapter 4 specifies a variety of methods and tools for putting corporate biodiversity management into practice.

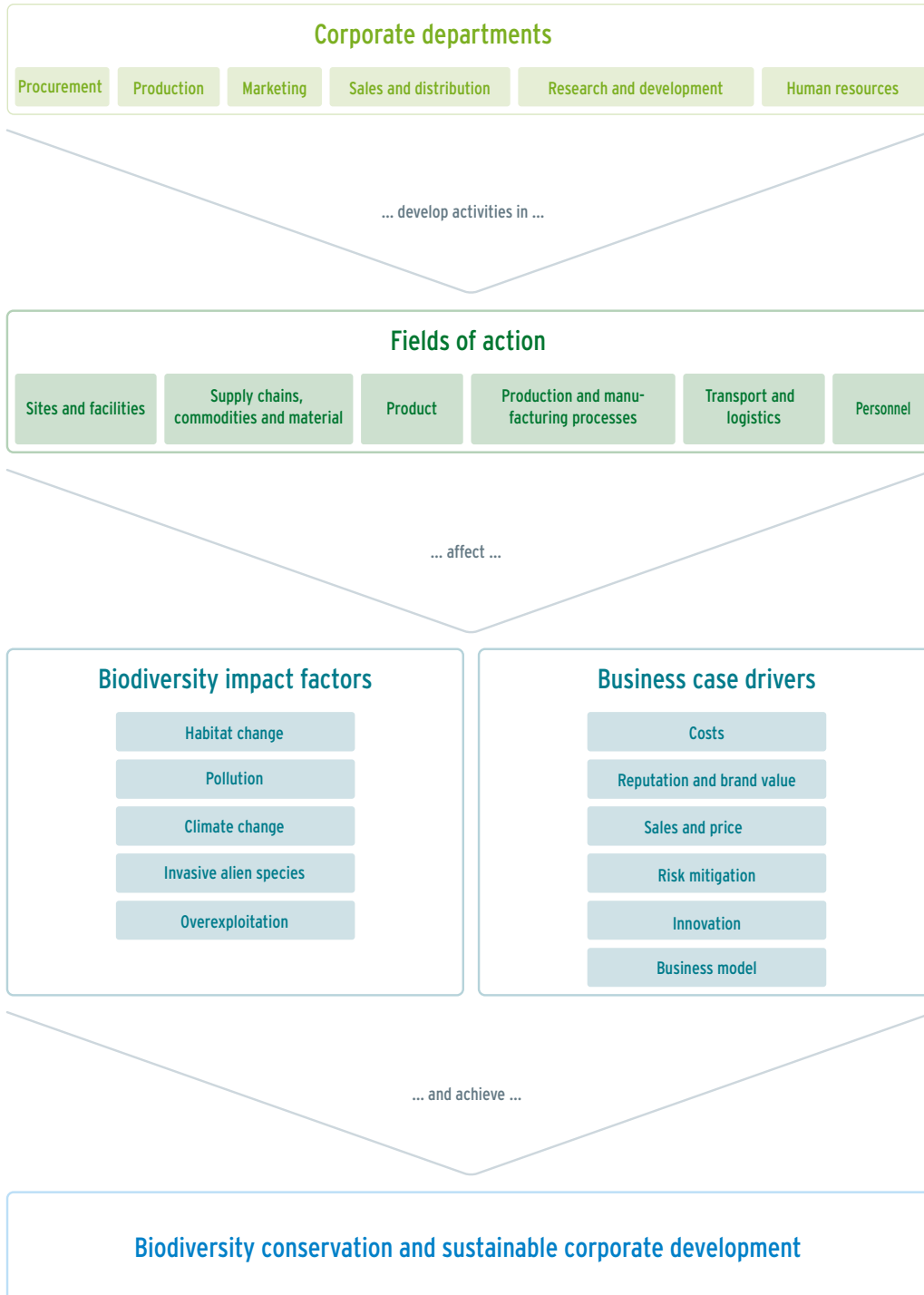


Figure 1: Corporate biodiversity management flow diagram

2 Fields of action

Through the development and use of company sites, buildings or through emissions, etc. businesses directly affect biological diversity. In fishing, farming and forestry, the shock on the environment is mostly direct as well. Often, however, there is an indirect change to the habitat caused, in part, by raw material suppliers and the supply chain.

In addition to location development and supply chain management, corporate biodiversity management encompasses further fields of action. Business success and impact factors on biodiversity can be managed by implementing the necessary strategies. The following is a list of the most important fields of action with descriptions for corporate biodiversity management:

• Sites and facilities

The construction and use of office buildings, production halls or car parks change the existing habitat and affect biodiversity. This applies to both manufacturing and service industries.³ The area used by the fishing, farming and forest industries is included in the list of sites. Facilities can directly and indirectly affect biodiversity, often damaging the surrounding area by carving into plant and animal habitats. Additionally, construction and use of commercial facilities acts as greenhouse gas sinks or sources. For instance, if a wetland is to be used as a company site and is drained and dried, vital ecosystems will be destroyed while greenhouse gases are emitted into the environment. Similarly, clear cutting a section of forest destroys the animal and plant kingdoms together with a natural CO₂ sink. In the initial transformation of raw materials to useable construction materials, extracting rock from quarries or ploughing grasslands heavily impact plant and animal habitats.

Green corridors in the plantation of Klabin

Klabin, a Brazilian paper and cardboard producer, manages its forests in a mosaic pattern. Planted trees intermingled with preserved forests stabilise the native woodlands' equilibrium. This model contributes to developing ecological corridors, thus contributing to the preservation of local biodiversity as well as helping regulate water flows and soil erosion.

Mitsui Sumitomo Insurance – Green oasis on the rooftop in a megacity

Mitsui Sumitomo Insurance constructed a rooftop garden on top of its head office in central Tokyo. Comprising over 7000 m² of green space, the garden provides a safe place for wild birds and is integrated in an ecological network of green public areas.

• Supply chains, commodities and materials

The types of commodities and raw materials used also impact biodiversity. For example the acquisition of minerals, energy, agricultural products, fish, wood, medicinal herbs or plants – genetically modified or not – impacts regions that often do not belong to the businesses benefiting from them. Such unintended consequences can be reduced or avoided altogether by implementing the appropriate supply chain management. The supply chain management is the starting point for regulating

extraction methods as well as the quantity and quality of purchased materials. Similarly, this approach is applicable to the service sector. To a great extent this industry also uses raw materials such as paper and goods whose production can positively or negatively impact biodiversity.

Supply of sustainable raw materials at Weleda

This producer of medicines and natural cosmetic products extracts its herbal raw materials largely from controlled organic cultivation or from certified wild plant collecting and integrates nature-orientated elements into its cultivable land. In order to ensure a long-term supply of wild plants, Weleda promotes the conservation of natural habitats through extensive care.

Supply chain management at the Otto Group

The Otto Group shows how commercial enterprises can have a positive impact on raw material production. For example, the company promotes the sustainable production of cotton in Africa by controlling its product line and ecologically managing their supply chain. In addition, for the production of furniture, the Otto Group procures its wood using a strategy that hinders the use of endangered wood species and timber illegally logged from forests.

Aleph – Supply chain management for “biodiversity-friendly rice”

The Japanese restaurant chain Aleph intends to launch a “biodiversity-friendly rice”. As part of this effort, Aleph has convinced rice producers to cultivate rice without the use of agrichemicals and to create natural biotopes in rice paddies. This effect on their supply chain has already led to an increase in the number of species in the rice paddies.

• Product

Depending on product or service design, the final product will have a greater or lesser impact on biodiversity. Negative impacts can be reduced in a number of ways, including changing the service design or by substituting, reducing and recycling materials used in the production. For example, substitutes can be found for phosphates in detergents or organic solvents still allowed in many countries; heavy metals can be reduced in paints; or travelling and other services can be sustainably organized. Positive effects can also be created by using raw materials in products that contribute to the conservation of biological diversity, such as the use of older types of grain or juices from traditional mixed-crop orchards

Product design can also be more than eco-design, especially when it is a part of “cause-related marketing,” a method that enables the manufacturer to combine products sales with donations for specific projects. Consumer protection aspects can also be combined with biodiversity protection. An example of this is the information a travel agency gives to its customers about illegal souvenirs from the Ivory Coast.

Use of water-based varnish at Faber-Castell

This maker of pencils has a raw material procurement strategy that involves buying wood harvested from certified forests, where biodiversity is protected. They are also the first company in this industry to exclusively use water-based varnish in its German production.

Bionade Quince – New product from a forgotten fruit

When developing a new organic beverage, Bionade decided in favour of quince. Regional contract growers once again cultivated this old, native and tasty but almost forgotten fruit variety. The introduction of this unusual flavour thus makes a contribution to the conservation of agricultural diversity.

Mori Building – Green structuring of public places

In the Toranomon and Roppongi areas of Tokyo, Mori Building is remediating intensively used land. With the concept “life surrounded by nature in the heart of the city” the Japanese company creates public areas and green spaces, revitalizing nature in the city by providing native species with natural vegetation. This project was the first in Japan to obtain the highest possible rating in the Japan Habitat Evaluation and Certification Program (JHEP).

• Production and manufacturing processes

Resource consumption and emissions, such as waste water, airborne pollutants or greenhouse gas, are generally hazardous for biological diversity. Therefore, optimising production processes is usually an effective contribution to protecting biodiversity. Additionally, an improved process design can reduce the necessary net input of raw materials and energy. This often results in lower production costs.

Processes that use animals, plants or bacteria can also be changed. For instance, using sustainably-run fish farms can have a more gentle impact on the environment than marine fishing.

Lowering water use at Audi

Water is essential for life – and it is a scarce good. In order to decrease the use of water, Audi recycles 96% of the water needed in its plant in Ingolstadt. It also gathers rainwater in underground cisterns and collecting tanks, which, over the last 20 years, has lowered the amount of water required per auto by almost 70%.

Native Organics’ new production systems increase the biodiversity on their sugarcane farms

The Brazilian producer of organic sugar developed a new production system, based on “green” cane harvesting in contrast to traditional burnt cane harvesting. Together with organic cultivation the new system leads to biodiversity levels 23 times higher than in conventional sugarcane farms.

New processing technique leads to better, more biodegradable products at Saraya

Saraya, a Japanese producer of hygiene products, developed a new fermentation process to fabricate surfactants from sustainable palm oil. The process allows the production of detergents which have better degradability than conventional market alternatives. This results in sustainable cleaning agents with less environmental contamination.

• Transport and logistics

Transporting raw materials and manufactured products as well as business travels leads to the emission of greenhouse gases and dust. Transportation infrastructure can fragment habitats, reducing their functionality and impeding natural genetic exchange. Furthermore, increasing goods transportation enables non-native species to invade new habitats, thereby displacing species native to the area.

• Personnel

A sustainable biodiversity management system will be all the more successful when the employees are convinced of it and are allowed to actively take part in achieving its goals. They are the ones who are taking the decisions on a day-to-day basis and who are implementing management strategies. In addition, employees volunteering time help protect biological diversity. When the necessary structures are created and volunteer programmes are promoted, it can strengthen employee corporate identity.

Biodiversity training at UPM-Kymmene

In order to conserve and increase biological diversity in the company's own forests, this Finnish forestry company has developed a global biodiversity programme. This programme involves training for all woodcutters and forest managers, focusing on what makes a habitat valuable, how it can be protected and how this can take place as part of a sustainable forestry management programme.

Fujitsu - tropical forest regeneration

Fujitsu group employees participate in the regeneration and reforestation of tropical forests in Thailand, Malaysian Borneo and in the mangrove forests in Vietnam. Today 1.18 million trees have been planted on 670 ha of land. The regeneration of the forests aims to support the rich biodiversity found in this area.

Depending on how these fields of action are developed, there can be a wide range of effects on biodiversity and business success.

Biodiversity and ecosystem services

What do biodiversity and ecosystem services (ESS) mean?

Biodiversity includes the diversity of ecosystems and species as well as the genetic variation within the species.⁴ Biological diversity is the basis for a number of different services for people and the economy. These ecosystem services can be classified as:⁵

- **Provisioning services:**

These include the production of elementary raw materials such as drinking water, food, sources of energy or medicines.

- **Regulating services:**

In addition, ecosystems play an elementary role in regulating the climate or extreme flood events, purifying water, acting as a buffer or breaking down harmful substances.

- **Cultural services:**

Cultural services include a great variety of civilisation-oriented service functions, such as giving aesthetic, emotional or spiritual inspiration, providing recreation opportunities or serving as a model for scientific discoveries (bionics).

- **Supporting services:**

Ecosystems support different production activities, by maintaining the water cycle and soil fertility as well as the production of biomass and foods.

Research shows that a decrease in biodiversity usually lowers the services and the stability of ecosystems.⁶

Reasons for the loss of biological diversity

Determining the extent of biological diversity loss is no easy task, assessments of known threatened species, such as the Red List, show that many of these are either endangered or critically endangered.⁷ The threat to biodiversity has increased over the past decades. The World Wide Fund For Nature (WWF) estimates that the number of species declined by 30% between 1970 and 2005.⁸ A number of studies also show that the loss of biological diversity is accompanied by high macro- and micro-economic costs.⁹

The factors with the highest impact on biodiversity are:¹⁰

• Habitat transformation

Both the extensive cultivation of natural habitats and their fragmentation force changes in existing ecosystems. This also involves the destruction of habitats in coastal and marine systems, for example, through the use of bottom trawling.

Sustainable use and maintenance of landscapes by South African winegrowers:

The Oak Valley Estate cultivates wine, fruits and greenhouse flowers in the Fynbos area of South Africa. These mountains are prone to continuous invasion by alien plant species, which may use up to 50% of the potential available water supply. By preventing these plants from spreading with an annual eradication programme, Oak Valley Estate contributes to biodiversity conservation and sustainable business development.

Sustainable cultivation of cocoa by Ritter Sport

Cocoa plants grow best in the shade of nutrient-rich rainforest trees. They are often planted together with coconut, banana and rubber trees. This is why Ritter Sport now has a programme to promote the mixed cultivation of cocoa in existing rain forests. Together with adequate levels of pay for small farmers, these practices discourage slash-and-burn agriculture and the destruction of the rainforest.

• Climate change

Climate change leads to an alteration of existing ecosystems. Examples include progressive desertification or the loss of high-alpine zones. But climate change also modifies species behaviour, reproduction, competitiveness and feeding relationships, which leads to shifts in their geographic range. This endangers those species whose original range shrinks or disappears.

Human adaptation strategies to climate change – for example, in flood and coastal defence or in agriculture and forestry – also affect biodiversity. The Intergovernmental Panel on Climate Change (IPCC) estimates that an increase in temperature of 1.5 – 2.5°C would threaten between 20 and 30% of plant and animal species.¹¹

- **Invasive species (Neobiota)**

With the help of humans, species can spread to new areas. For example, this can happen on purpose, when agricultural plants are imported, or unintentionally, when ballast water is discharged from ocean-going vessels. In new habitats the non-native species can displace native species, transmit disease or change the genetic pool.

Indigenous plants for humans and animals by Sekisui House

Sekisui House promotes the “Gohon no ki” gardening concept, which is designed to help maintain ecosystems by planting indigenous trees to attract local wildlife. Planting trees not only improves the aesthetics of the property, but it attracts wild birds and butterflies - creating a small ecosystem. This supports a network for interacting with the surrounding natural environment and has a positive effect on the quality of life for the local residents.

- **Overexploitation**

The greatest threat to marine systems is overfishing. Currently 50% of the commercially-fished stocks are being fully exploited and 25% overexploited.¹²

The specialisation and rationalisation that goes hand in hand with an intensification of agricultural and forestry production leads to a loss of biodiversity. This especially affects the diversity of cultivated plants and animal breeding (agro-biodiversity).¹³

Sustainable fishing at Deutsche See

To preserve global stocks of fish, Deutsche See has implemented procurement requirements that guarantee traceability and transparency. In addition the product line is regularly reviewed for endangered fish species as well as for the possibility of using fish from certified, sustainable fisheries, organic fish and fish from aquaculture.

- **Pollution**

Every company emits pollutants into the surrounding environment. Agricultural over-fertilisation is a prime example of the danger to biological diversity from pollution. This leads to the loss of nutrient-poor systems and to the displacement of species living in these habitats. The accumulation of persistent toxic substances and toxic pollutants, caused, for example, by shipwrecks, also endangers biodiversity.

• Protecting biodiversity

To limit the worldwide loss of genetic diversity, species and habitats, the United Nations Conference on Environment and Development (UNCED) enacted the Convention on Biological Diversity (CBD).¹⁴ This convention pursues the following goals (cf. Figure 2):

- The conservation of biodiversity;
- The sustainable use of biodiversity;
- The fair and equitable sharing of the benefits arising from the use of genetic resources.

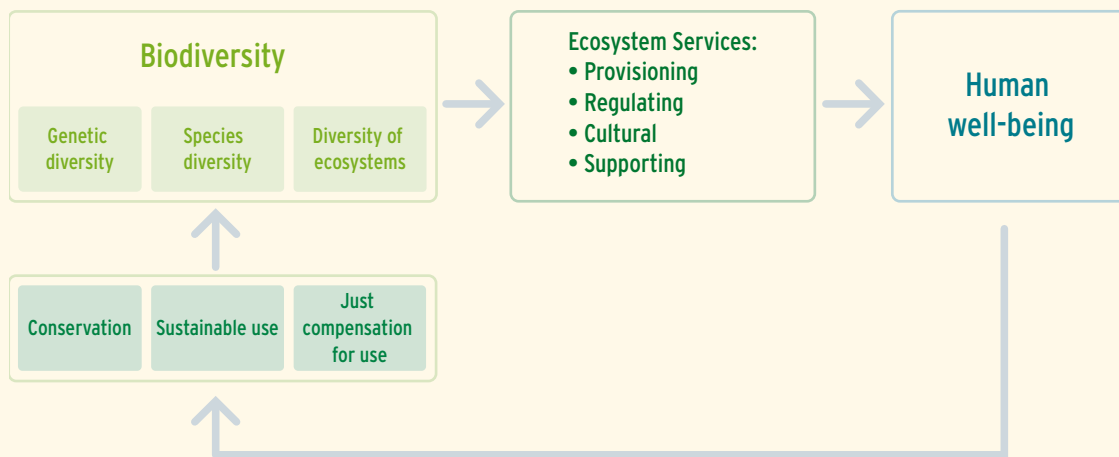


Figure 2: Biodiversity and its conservation

To reach these goals strong commitment on the part of the private sector is required. This recognition led Germany, as host of the ninth UN Conference of the Parties (CoP 9), to introduce the “Biodiversity in Good Company Initiative” in 2008. Companies, who have become members of the initiative, have all signed a Leadership Declaration and committed to integrating biodiversity into their corporate management systems.

3 Business cases for biodiversity

A starting point for corporate biodiversity management is often found in philanthropic projects, for example, making donations or setting up endowments. Such activities are generally welcome. However, as they have an additive character to the core business, they are largely dependent on the economic success of the company. More permanent measures are those that simultaneously make a direct contribution to the company's success. A "business case for sustainability" or, more specifically, a "business case for biodiversity" occurs when the conservation of biological diversity is combined with strengthening a company's competitive advantage and success.

The goal of a business case for biodiversity is both to conserve biodiversity and to increase the economic success of the company.¹⁵ This goal can be achieved through targeted, voluntary biodiversity conservation measures that go beyond the legal requirements. This is often aided by intelligently and efficiently complying with existing government regulations, such as waste water limits.

When developing a business case for biodiversity it is important to note that the processes impacting business success can contain both a market and a non-market component.

Since a business case is the result of a strategic management process and does not occur automatically, it is crucial to carefully set up a biodiversity management programme. With a systematic analysis of the business case drivers, there can be a search for specific opportunities to combine the conservation of biological diversity with business success. Depending on how corporate activities are developed, they can positively or negatively influence a business case. Drivers of a business case for biodiversity include the following variables:



Burdens on biodiversity: bulk goods and long distance transport (left)

Regional products: short transport routes and promoting diversity of local species (right)

• Costs

Approaches to cost cutting can be found, above all, in site maintenance extensification, in the reduction of energy and resource use, and in the reduction of emissions and waste that are subject to charges. There are a number of environmental cost accounting methods that can make a valuable contribution to identifying such opportunities. In addition, costs can be reduced by positively changing intangible aspects, such as work morale.

Driver mix at HeidelbergCement

Biodiversity management at HeidelbergCement has a combination of drivers. To ensure that they are able to continue mining raw materials, the company is committed to active stakeholder dialogue. Through efficient biodiversity management and an open dialogue with conservation agencies, NGOs and neighbouring communities about the standards the company applies, HeidelbergCement has been able to save costs (normally incurred by expensive cultivation efforts and long approval processes) and enhance its reputation.

Environmental ground care at Axel Springer protects biodiversity and lowers maintenance costs

Axel Springer showed that economics and ecology are not mutually exclusive when they redesigned the company grounds at their printing facility in Ahrensburg. An award-winning renaturation programme lowered the maintenance costs while increasing the ecological value of the grounds.

• Sales and price

An increase in sales is possible when buyers recognise an increase in value for themselves or for something important to them. Depending on the market, such an increase in value can be achieved through ecological or biodiversity-related product differentiation. Possible methods include product and production innovations as well as brand differentiation.

The added value of ecological baby food from HiPP

HiPP, a producer of baby food, is committed to using raw materials from organic farms. This leads to a product-related increase in consumer value that is rewarded by customer and brand loyalty.

Saraya – Adding value with “Cause-related marketing”

Saraya, a Japanese detergent producer, shows that differentiation is possible by creating additional social value. With the sale of their Yashinomi washing agents, the company raises awareness and consumer-driven support for Saraya’s active environmental policy and their investment in rainforest conservation and reparation projects.

• Risk mitigation

Corporate biodiversity management can be part of business risk management.¹⁶ This includes ensuring legal certainty, implementing anticipatory management of the internal and external business environment and using sustainable capital procurement methods.¹⁷

Examples include securing long-term access to raw materials in the mining industry and preserving necessary ecosystem services, such as drinking water supplies or the protection of pharmaceutically active plants. Alongside such objective risks, there are also social risks, such as community protests. Risk mitigation can also be considered an economic driver of biodiversity management.

Sustainable cultivation as a condition of growth at Mars

The cocoa tree is a sensitive plant that only grows in tropical undergrowth. It needs pollinating insects and trees that supply shade and nutrients as well as retain water in the soil. In order to secure an adequate, long term supply of cocoa, Mars has set itself the goal of sourcing 100% of its cocoa from sustainable cultivation.

Centroflora - botanical extracts based on biodiversity

The Brazilian Centroflora Group produces botanical extracts for the pharmaceutical, cosmetic and food industries. To ensure long term production and product development, the sustainable use of biodiversity is essential. Thus, Centroflora encourages the organic production of herbs and the sustainable extraction of Brazilian biomass for its supply chain, while promoting fair incomes for rural societies.

• Reputation and brand value

Nature and nature conservation are important to most people.¹⁸ This can be used to promote a company's reputation and brand. One way to address this common interest is to develop a marketing campaign including biodiversity. In order to ensure that these efforts remain credible, there should be responsible ecological, social and legal activities supporting the communication campaign. Otherwise the campaign may be recognised as "greenwashing", which would damage the company's reputation.

Frosch protects frogs

The Werner & Mertz brand Frosch (frog) makes ecological and environmentally friendly household cleaners. To strengthen their product philosophy, the company is involved in the renaturation of river meadows to actively support the local frog population and the natural resettlement of frogs in a number of places in Europe. As frogs are an indicator of high water quality, the company is combining reputation enhancement with practical conservation activities.

Ecology as a part of a brand name – Biodiversity in oekom verlag

oekom verlag has specialised in publishing works on the environment and sustainability. In a move to strengthen the company's philosophy on ecology it exclusively uses recycled and FSC certified paper, purchases green power and organic farm food catering services for its employees, and is environmentally conscious in its business travel. These efforts are all part of an authentic concern about preserving the environment, which, in turn, improves the company's reputation company.

Reputation at Precious Woods Holding

Precious Woods harvests tropical wood in Gabon and South America. To maintain its reputation, the company conducts its business in full compliance with FSC rules and reforests abandoned pastures. Precious Woods also invests in training its employees, who are mainly from the surrounding region.

Support of reforestation project through Mitsui Sumitomo Insurance

Mitsui Sumitomo, a Japanese insurance company, promotes the reforestation of illegally logged rainforest in Indonesia. This commitment contributes to the recovery of destroyed ecosystems and creates new income opportunities for the local community while improving Mitsui Sumitomo's reputation.

• Innovation

Innovations are also important drivers of business cases for biodiversity. Examples can be found in the pharmaceutical or cosmetic industries, where discoveries of medicinal and natural care substances create new possibilities to increase sales or differentiate products. In the service sector, integrating biodiversity concepts into existing offerings creates similar opportunities.¹⁹ Nature also provides ideas for the development of innovative technology products (bionics).

Development of financial products considering biodiversity – Sumitomo Trust and Banking

Sumitomo Trust & Banking has launched a loan product that applies a preferential lending rate to enterprises with a high environmental rating. This rating is based on a bank analysis that includes biodiversity as a criterion. Furthermore, Sumitomo is scheduled to launch the new Sustainable & Responsible Investment (SRI) fund of Japanese equities, which only includes shares in companies taking care of biodiversity.

New mobility concepts made by VW

Three out of five new vehicles in Germany are fleet vehicles. VW Leasing, together with the Nature and Biodiversity Conservation Union (NABU), has helped its major customers directly combine cost cutting with climate protection and species conservation. "Fleet Competence eCo₂" bundles extremely fuel efficient vehicles and fuel efficiency training with the financing of selected projects – such as the renaturation of drained wetlands.

Kajima Corporation – Japanese honeybee as bioindicator

Kajima Corporation, a Japanese construction company, is continuing to investigate how indigenous honeybees could be used as an indicator for human quality of life, because they support and stabilise biodiversity by means of pollination. The idea behind this initiative is that native honeybees are vulnerable to agricultural chemicals and that they need plants as a source of nectar.

Business models

A fundamental driver of a business case for biodiversity is the development of new business models. By building on the conservation of biodiversity, a value proposition for customers can be developed. The customers' resulting willingness to pay ensures the economic viability of the company as well as the conservation of biological diversity. Examples include zoos or travel agencies specialising in nature trips.

Travel-to-nature: Biodiversity as a magnet for new customers

An example for the integration of biodiversity into a business model is travel-to-nature. This CSR certified travel organisation is specialised in exotic nature travel programmes. Additionally, it promotes contact between tourists and the native people. Such meetings help the local population to appreciate biodiversity and its conservation.

Raising public awareness to develop new markets – Publications and campaigns by Dentsu

Products and services that promote conservation or the sustainable use of biodiversity can only be successful if they are sought after by consumers. Through both its own publications and by serving as a secretariat of government campaigns, Dentsu, a Japanese advertising agency, contributes to raising the public's awareness of biodiversity. This in turn leads to developing new markets for biodiversity-friendly products.

After identifying the fields of action that are relevant to a business and analysing the opportunities to create a business case for biodiversity, practical questions on how to operationalise corporate biodiversity management still remain.



Real estate as sealed off areas poor in biodiversity (left)
Roof and façade greening promotes biodiversity (right)

4 Operationalisation

The management cycle can help a company develop a process to operationalise its biodiversity management strategy. This orientation enables a company to develop measures that will have a positive impact both on biodiversity and on sustainable corporate development in each corporate department. It is necessary for each company to analyse its own processes in a particular field of action in order to determine what influences there might be on the drivers of a business case.

4.1 Management cycle

We recommend using a systematic management “plan-do-check-act” cycle when implementing a corporate biodiversity management process, for example, as part of the Eco-Management and Audit Scheme (EMAS) or ISO 14000 (Fig. 3)

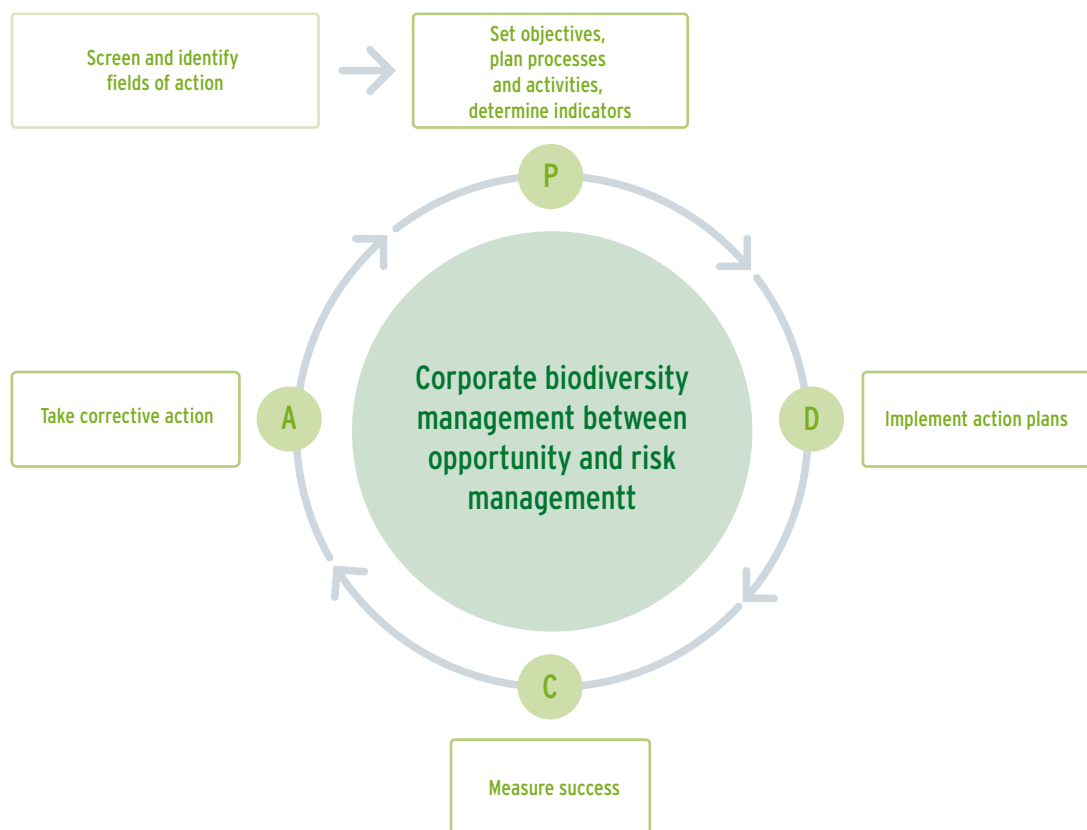


Figure 3: Plan-do-check-act cycle

The management cycle pictured in Figure 3 is structured in clear stages. The starting point is a screening of the fields of action and an analysis of possible objectives. After setting objectives, the management cycle enters the planning stage (P – plan), followed by the development of measurement and action plans and the selection of indicators. After implementing the measures (D - do) the success is measured (C - check) and corrective actions taken (A - act). The sequence of these four steps forms a continuous process. After every cycle there are new possibilities for improvement.

4.2 Screen and identify fields of action

The basis of corporate biodiversity management is the business-specific relationship between the company and biodiversity.

Finding these relationships is, however, made more difficult by the complexity and extent of the three levels of biodiversity (ecosystem, species, and genetic pool). Additionally, “diversity”, defined as the “varieties of or within something”, needs a referential system to gain meaning.²⁰ This can be a reference to a geographic space (local, continental, global) or the same type of ecosystem (within a defined geographic space).

For larger spatial units the criteria “endangered” and “rare” are an orientation that the “Red List”²¹ helps to define more clearly. Other possibilities for orientation come from the European Union’s Habitats Directive and the Birds Directive. A further point of reference is the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Finding the business-specific relationships between a company and biodiversity can require some scientific expertise. This presents an opportunity to work together with environmental and conservation organisations.

Table 1 provides an overview of possible relationships between corporate fields of action and impact factors on biological diversity. With their help, business-relevant fields of action can be systematically analysed for a given company.

In order to more clearly illustrate these relationships, multiple entries of an item in a table – for example, heated waste water can be interpreted as a change in the physical habitat as well as an emission – have largely been avoided.

		Impact factors on biological diversity				
		Habitat transformation	Climate change	Invasive species (Neobiota)	Overexploitation	Pollution
Fields of action	Sites and facilities	Space required for buildings Habitat fragmentation	Power demand and CO ₂ emissions of buildings Ground storage of CO ₂	Location of site may accommodate invasive species (for example, ragweed)	Drainage of wetlands Erosion caused by agriculture	Release of climate gases from depletion of forests and drainage of wetlands Dust Building shadows
	Supply chains, commodities and materials	Space required for production	Power demand and CO ₂ emissions Reduction of carbon sinks in production of raw materials	Cultivation of new, non-native resources	Overfishing Monoculture Homogenization of agriculture	Overfertilisation Waste water
	Product	Area and volume requirements of the project	Power demand and product CO ₂ emissions Ozone-depleting substances in products	Product design may lead to spreading of invasive species	Service features and product attributes can have an impact on biodiversity	Product usage may cause emissions (for example, waste water, noise, air pollutants) Product as waste
	Production and manufacturing processes	Land needed for production facilities Discharge of heated waste water	Power demand and CO ₂ emissions Need for ozone-depleting substances in production	Production processes may promote spreading of invasive species	Excessively sized facilities may generate increased demand for resources and lead to overexploitation	Wastewater Emissions caused by production
	Transport and logistics	Space required for roads and storage Roads and pipelines cross migratory species routes	Power demand and CO ₂ emissions caused by transportation	Spreading of invasive species by transport of resources and products	Parking space management	Separation of oil Detergent and waste water Particulate matter
	Personnel	Habitats constructed in an employee volunteering project	Employee behaviour impacts power demand and therefore greenhouse gas emissions	Employee behaviour has impact on spreading of invasive species	Employee behaviour has impact on biodiversity	Emissions caused by employee business travel

4.3 Set objectives, plan processes and activities

In the next step, the identified fields of action are evaluated. Such an evaluation is an opportunity for an intensive dialogue with external stakeholders. This enables a company to take into account external concerns for the company, avoid risks to the company and develop options to take action.

Next business-specific objectives must be set and action plans made. Along with precise descriptions of activities and objectives, these plans should include details on the budget as well as scheduling. In addition the project managers need to be identified and their relationship to the existing plans, for example, research planning or product planning, described.

In order to convince top management, it is important to clearly show what results will be achieved, especially those that represent benefits to the company.

To help a company evaluate its strategic options, Table 2 shows the relationships between the fields of action and the drivers of a business case for biodiversity. It is important to note that the analysis in this table is company and case specific.

In the evaluation questions may arise as to:

- the cost of the activity,
- the success of the activity,
- the relationship between cost and success and
- the existing risks as well as the expected changes in risk level.

This evaluation takes into account:

- potential market developments,
- expected social and political developments as well as
- available resources.

Along with these “hard” business factors there are also “softer” elements such as business ethos, culture and identification that need to be taken into consideration when making decisions.

		Drivers of business cases for biodiversity		
		Costs	Sales and price	Risk mitigation
Fields of action	Sites and facilities	<p>Need for new space due to degradation or other costs from lower productivity rates</p> <p>Decreasing maintenance costs through new site development</p> <p>Decreasing restoration costs and/or decreasing offset costs</p>	Appreciation or retention of real estate value (for example, by avoidance of contaminated sites, etc.)	Risk of increasing operational costs (for example, due to higher energy prices)
	Supply chains, commodities and materials	<p>Cost reduction by long-term supplier relationships (biodiversity-oriented supply chain management)</p> <p>Cost reduction by taking advantage of new sources of income (for example, subsidies for using resources from traditional cultivation)</p>	Increasing sales by passing on lower costs	Risk of rising costs or the loss of non-renewable production factors such as fertile ground or fresh water
	Product	Reduced product cost by altering product design	Increasing sales by improving differentiation (new product lines with value added biodiversity protection)	Risk of company-damaging NGO campaigns against the product
	Production and manufacturing processes	Decreasing production costs (for example, by means of energy efficiency, processes enabling the substitution of rare resources)	Sales from new by-products	<p>Risk of rising energy costs</p> <p>Production breakdown caused by NGO blockade</p>
	Transport and logistics	Decreasing costs for transport and storage (for example, by increasing energy efficiency)	Increasing sales by passing on lower costs	Risk of rising fuel costs
	Personnel	Decreasing personnel costs by encouraging long-term commitment and higher levels of employee motivation	Increasing sales brought on by sales activities of confident employees	Reduction of accident risks through higher employee motivation and less dangerous production

	Reputation	Innovation	Business model
	Reputation improvement by constructing buildings that preserve biodiversity	Working environment can enhance employee creativity	Site development as business model (for example, "green roofs")
	Reputation gain due to the usage of biodegradable materials	Chance for usage of new (and cheaper or better) materials	New financial models in the finance sector through differentiation or region
	The ecological performance of the product may cause a gain in reputation	Development of new innovative products	New product-service combinations as basis for new business model
	Reputation gain by reconfiguration/optimizing of production	Innovative production processes (for example, through the use of micro-organisms instead of chemical processes)	
	Reputation gain through climate friendly local production with short transport routes	Development of new packaging systems or product distribution channels	
	Reputation gain due to higher employee loyalty	Interesting work content as employee motivation	Employee volunteering as part of business model

A company must determine whether it is possible and necessary to take steps in the various fields of action. Additionally, it must consider which corporate departments to involve and select suitable individuals for the operative implementation. Table 3 shows possible relationships between the fields of action and the following corporate departments:

- **Procurement**

This department includes all business activities that involve the cost-effective procurement of the needed quantity of materials, machines or services in the necessary quality for production and sales. Procurement has a close relationship to the action field of commodities and raw materials procurement.

- **Production**

This department is responsible for the production of all the products and services of a company. A production programme determines the production quantities, the capacities, the output as well as the production processes. Thus, there is a large variety of methods available for use in this functional area of corporate biodiversity management. They range from the design of the production site and the optimisation of the product and production processes to the transport between the individual production locations.

- **Marketing**

As a corporate department and management philosophy, market research and positioning include the planning, coordination, implementation and monitoring of all company activities orientated towards the market. The goal of marketing is the orientation of a company's activities to satisfy the needs and desires of market participants. This gives marketing a key role in the development of new products, their positioning in the market and the company's public image.

- **Sales and distribution**

This department involves the planning for and organisation of the provision of goods and services for the business and the final buyer. The goal is to be able to offer products and services in the right amount at the right time and in the right place. In this department the reduction of emissions and actions to help prevent the introduction of invasive species to new habitats could be part of a corporate biodiversity management strategy.

- **Research and development (R&D)**

Through innovation and development, this department both generates and uses new knowledge about introducing new products to the market. This gives it a key role in the development and innovation of products and production processes. As part of a risk assessment, research and development has a special responsibility towards products, production processes and research. An example would be field testing new plant types.

- **Human resources**

Alongside organisational and administrative tasks, this department is involved in strategic activities increasing individual employee's work satisfaction and performance. A further connection to corporate biodiversity management can be found in health and work safety issues. For example, by reducing the amount of hazardous materials in a workplace, the danger of their release is also minimised.

This analysis shows the possibilities for cooperation across departments and illustrates the characteristic interdisciplinary nature of corporate biodiversity management. After evaluating its options, a company is able to set itself business-orientated biodiversity goals. A number of examples are given in Table 4.

		Corporate departments		
		Procurement	Production	Marketing
Fields of action	Sites and facilities	Building construction, purchase and management	Production site	Use of buildings for representational purposes
	Supply chains, commodities and materials	Supply of materials and services	Location of material use	Marketing of used materials or services of product
	Product	Effect of design on procurement decisions	Product as result of production Development of services	Product and service marketing
	Production and manufacturing processes	Energy supply	Production	Marketing of production methods
	Transport and logistics	Product storage	Transport between different production sites Storage of (intermediate) products Transport as service product	Short and climate friendly transport routes as competitive differentiation ("From the region for the region")
	Personnel	Further training for employees in procurement	Employee behaviour in production	Human resource marketing

	Sales and distribution	Research and development	Human resources
	Storage facilities	Research buildings Outdoor research areas	Employee identification with location
	Delivery of materials	Material optimisation	Avoidance of allergy-causing materials
	Delivery of products	Product optimization through research	Employee identification with product
	Transport between different production sites Storage of intermediate products	Production optimization through research	Health and safety in the workplace
	Transport und logistical processes	Development of new transport and packaging systems	Health and safety in the workplace
	Employee behaviour in sales and distribution	Code of ethics for R & D workers	Development of employee incentive systems

		Corporate departments		
		Procurement	Production	Marketing
Fields of action	Sites and facilities	Cost reduction through reduced building maintenance	Reduction of remediation costs through avoidance of contaminated sites	Better public relations through design of the company buildings and premises
	Supply chain, commodities and materials	Long-term security of raw materials supply Reduction of procurement costs through new materials Long-term relationships with suppliers	Substitution of previous raw materials with ecologically sustainable materials Lowering of raw material costs through dematerialisation Reduction of juvenile fish catch so that enough fish reach maturity	Reputation und product design as arguments in procurement marketing
	Product	Increase in the number of possible suppliers through the substitution of scarce resources	Gain in reputation through co-operation with company-external stakeholders	Reach new target groups by marketing ecological products
	Production and manufacturing processes	Reduction in production costs through the subsidies for ecological production methods	Lowering costs for greenhouse certificates through lowering CO ₂ emissions Decrease of waste water or other emissions	Gain in reputation through cooperation with external company stakeholders
	Transport and logistics	Reducing storage costs through just-in-time procurement	Reducing transport costs	Gain in reputation through energy-saving transportation systems
	Personnel	Prevention of public protests over biodiversity damaging procurement policy by more cautious employee actions	Reducing health hazards and costs through training	Development of biodiversity relevant events and communication messages

	Sales and distribution	Research and development	Human resources
	Reduction of energy-related storage costs	Avoidance of protests in outdoor research areas	Increase employee motivation through design of buildings and premises Elimination of allergy causing alien species (for example ragweed)
	Combat the dispersal of alien species in order not to preserve company's own agricultural, forestry and fishing production	Substitution of previous raw materials through ecologically sustainable materials in order to acquire new customers New fishing methods to reduce bycatch so that catch quota are not exhausted	Reduction of accident risks through the minimisation of hazardous materials
	Simplification of logistics through sustainable design	Development of raw material / product lifecycle to reduce procurement costs	Greater employee motivation through employee identification with production
	Gain in reputation through energy saving transport systems	Develop new production methods through research cooperation partnerships with external stakeholders such as NGOs	Sensitising employees for reducing material use
	Lowering transportation costs through driver training	More efficient cooling systems	Lowering personnel costs and brain drain through better employee involvement
	Reduction of wildlife accidents in transport	Liability reduction in research activities	Enhanced reputation and motivation through employee volunteering

4.4 Methods and tools

4.4.1 Overview of management tools

Corporate biodiversity management not only requires scientific and planned approaches, but also environmental management business methods.²² For instance, the biological diversity of an area can be modelled with the help of regional surveys and field mapping. These evaluations can then become part of a business' decision-making and management processes.

Specific methods for corporate environmental management have not been readily available in the past. Furthermore, these tools can only be roughly assigned to phases of the management cycle (cf. Chapter 4.1), because some of them can be used in more than one of the phases. For example, “indicators and key ratios” are both an important part of determining the current state of biodiversity (for screening and success measurement) but are also the basis for planning future programmes.

The selection and usability of a tool depends on the function of the departments involved, the business case driver and the intended effect on the impact factors that, in turn, affect biodiversity.

Tables 5 and 6 exhibit a selection of management tools that can be modified for use in corporate biodiversity management. The tools are roughly assigned to the phases of the management cycle.



Town houses designed with little regard for biodiversity (left), Innovative biodiversity and climate friendly concept for residential estates (right)

		Fields of action	
		Site and facilities	Supply chains, commodities and materials
Tools	ABC analysis	P	P
	Incentive systems and budgeting	D / A	D / A
	Biodiversity audit	S / C	S / C
	Biodiversity benchmarking	P / C	P / C
	Brochures and leaflets	D / A	D / A
	Checklists	S / C	S / C
	Corporate volunteering	–	–
	Efficiency analysis	–	–
	Indicators and key ratios	S / C	S / C
	Internal trade in building sites and/or emissions	D / A	D / A
	Corporate policies, codes of conduct, guidelines and instructions	D / A	D / A
	Supplier evaluation	–	S / C
	Supplier agreements	–	D / A
	Material and energy flow accounting	–	S / C
	Offsets, compensation measures	D / A	D / A
	Eco-labelling	–	–
	Environmental accounting	S / C	S / C
	Chain-of-custody certificates	–	D / A
	Training	–	–
	Sponsoring	–	–
	External stakeholder dialogue	S / P / D / C	S / P / D / C
	Scenario analysis	P	P
	Green supply chain management	–	D / A
	SWOT analysis	P	P
	Environmental impact assessment (EIA)	S	S
	Suggestion programme	–	–

S: Screen (identification fields of action); P: Plan (set objectives, plan processes and activities, determine indicators);

D: Do (implementation of action plans); C: Check (success measurement); A: Act (corrective action)

	Product	Production and manufacturing processes	Transport and logistics	Personnel
	P	P	P	P
	–	D / A	D / A	D / A
	S / C	S / C	S / C	S / C
	P / C	P / C	P / C	–
	D / A	D / A	D / A	D / A
	–	S / C	S / C	S / C
	–	–	–	D / A
		S / C	S / C	
	S / C	S / C	S / C	S / C
	–	D / A	–	–
	–	D / A	D / A	D / A
	–	–	–	–
	–	–	–	–
	S / C	S / C	S / C	–
	–	–	–	–
	D / A	–	–	–
	S / C	S / C	S / C	–
	D / A	–	–	–
	–	–	–	D / A
	D / A	–	–	–
	S / P / D / C	S / P / D / C	–	–
	P	P	P	–
	D / A	–	–	–
	P	P	P	P
	–	S	–	–
	–	–	–	S

		Phases of the management cycle		
		Screen (identification of fields of action)	Plan (set objectives, plan processes and activities, determine indicators)	Do (implementation of action plans)
Fields of action	Sites and facilities	Indicators and key ratios Checklists and biodiversity audit Environmental impact assessment	Biodiversity benchmarking ABC analysis Stakeholder dialogue Scenario analysis	Incentive systems and budgeting for raw material use Internal trade in building sites and/or emissions Offsets
	Supply chains, commodities and materials	Checklists and biodiversity audit Supplier evaluation Environmental impact assessment	Biodiversity benchmarking ABC analysis Stakeholder dialogue Scenario analysis	Supplier agreements Procurement guidelines Offsets
	Product	Indicators and key ratios Checklists and biodiversity audit Efficiency analysis Product line analysis	Biodiversity benchmarking ABC analysis Stakeholder dialogue Material and energy flow accounting	Sponsoring Eco-labelling
	Production and manufacturing processes	Indicators and key ratios Checklists and biodiversity audit Efficiency analysis Environmental impact assessment	ABC analysis Stakeholder dialogue Material and energy flow accounting	Internal trade in emissions
	Transport and logistics	Indicators and key ratios Checklists and biodiversity audit Efficiency analysis	ABC analysis Stakeholder dialogue Scenario analysis	Incentive systems and budgeting for raw material use
	Personnel	Suggestion programme	Dialogue	Management letter Code of ethics Guidelines Brochures and leaflets Incentive systems and budgeting for raw material use Corporate volunteering Training

	Check (success measurement)	Act (corrective actions)
	<p>Indicators and key ratios</p> <p>Checklists and biodiversity audit</p> <p>Environmental accounting</p> <p>Stakeholder dialogue</p>	<p>Internal trade in building sites and /or emissions</p>
	<p>Indicators and key ratios</p> <p>Checklists and biodiversity audit</p>	<p>Supplier agreements</p> <p>Procurement guidelines</p>
	<p>Indicators and key ratios</p> <p>Checklists and biodiversity audit</p> <p>Product line analysis</p> <p>Stakeholder dialogue</p>	<p>Sponsoring</p> <p>Eco-labelling</p>
	<p>Indicators and key ratios</p> <p>Checklists and biodiversity audit</p> <p>Efficiency analysis</p>	<p>Internal trade in emissions</p>
	<p>Indicators and key ratios</p> <p>Checklists and biodiversity audit</p> <p>Efficiency analysis</p>	<p>Incentive systems and budgeting for raw material use</p>
		<p>Management letter</p> <p>Guidelines</p> <p>Work instructions</p> <p>Incentive systems and budgeting for raw material use</p> <p>Training</p>

4.4.2 Tools for biodiversity management

The following specifies a number of examples of how tools can be adapted for use in biodiversity management.

• Audit

An audit is, strictly speaking, a checklist-based monitoring tool in the form of a gap analysis. There are several functional types:

- Legal-compliance audit: determines the legal framework and compliance.
- Performance audit: examines the success of performance objectives and whether company goals have been reached.
- System audit: tests the functionality of a management system.

A “biodiversity audit” for instance could combine the first two functions.

• Brochures and leaflets

Information can be targeted at internal and external stakeholders, such as company employees, suppliers, distributors or customers.

TUI's Guide to souvenirs and endangered species

TUI's “Little Guide to Protecting Species”, produced together with the German Federal Agency for Nature Conservation, gives information about illegal souvenirs that are made from protected plants and animals. It gives tips for buying fair souvenirs that will also strengthen the local economy. This brochure additionally helps to protect the consumer, as buyers of illegal souvenirs are often subject to fines or even imprisonment.

• Checklists

Checklists serve to evaluate the actual situation while offering the possibility to examine the effects a company has on biodiversity. They can thus form the basis for corporate biodiversity management. An example is the list of fields of action described in this handbook, which must then be adapted to a particular industry, company or product. A more detailed adaptation to specific departments of a company can also be undertaken.

• Corporate volunteering

Corporate volunteering, also known as employee volunteering, is a non-profit engagement in which employees of a company donate their working time to certain activities. These actions can support diverse projects such as environmental and nature conservation. Such a commitment can enhance the reputation of a company, improve the social competence of employees, help develop a positive atmosphere at work and strengthen employee identification with the company.

• Indicators and key ratios

The analysis of the effects of business activities on biological diversity can be carried out using indicators or key ratios. With their help, situations can be defined in advance, systematically tracked and then presented in aggregate form. Biodiversity-related indicators usually have a relative character. That means that they place two values in relation to each other.

There are two kinds of indicators: those that show a particular state of biological diversity and those that show the impact of a particular business activity on biodiversity.

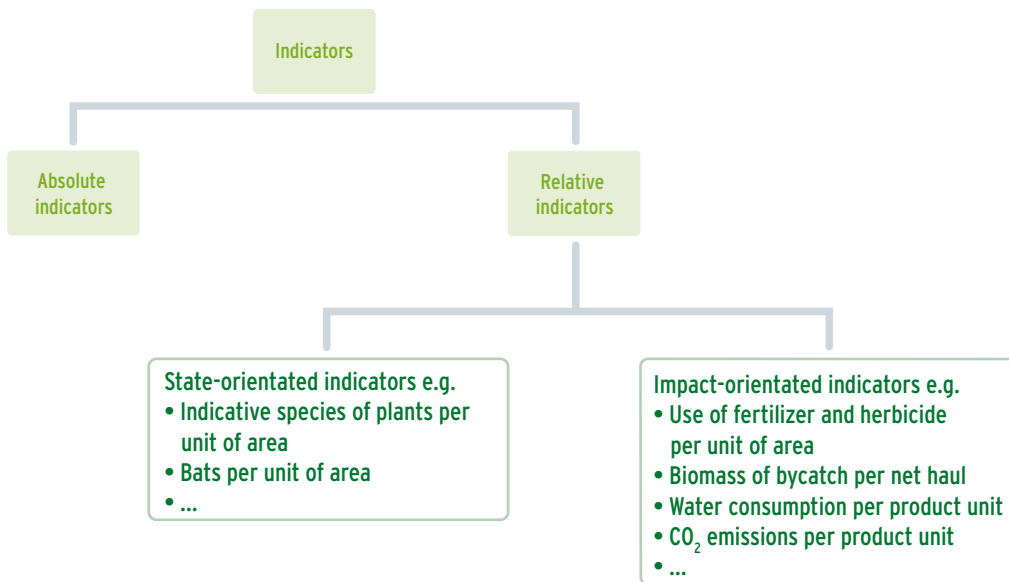


Figure 4: Classification of indicators

Indicators at HiPP and HeidelbergCement

An example of a sustainability indicator is a company's CO₂ footprint, which HiPP has introduced for its baby food product, "Pure Early Carrots". They used the following indicators in their calculation: raw material production, the availability of adjuvants and packaging, energy consumption in production, transport, the use by the customers as well as disposal or recycling of waste. This forms the basis for carrying out a CO₂ accounting analysis of the whole product cycle.

A further example is the nature conservation indicators that HeidelbergCement has developed for their quarrying sites. With their help it is possible to determine and forecast the conservation value of the quarries as well as the effect of the conservation activities both during and after the mining.²³

Kajima Corporation – Innovative evaluation methods in the building industry

Kajima Corporation, a Japanese construction company, uses innovative planning and evaluation methods to analyse whether a sufficient quality and quantity of green space is available for key (indicator) species. In addition to using a geographic information system (GIS), Kajima employs high resolution satellite data and digital surface models. This shows that with the proper planning these species' habitats can be saved.

• Cooperation with environmental and conservation organisations

Protecting biodiversity is an important part of the work of many environmental and conservation organisations. Thus, they often have large networks of biodiversity experts. In joint projects, these organisations can make use of their networks to contribute new information, lines of argumentation or even ideas for new products. In addition, the excellent reputation of these organisations can be used to inform customers and users about biodiversity-friendly products.

Sekisui House – Cooperation on the development of the "Fairwood" procurement directive

The Japanese construction company Sekisui House developed, in close cooperation with different non-governmental organisations, guidelines for the procurement of "Fairwood". With this guideline Sekisui House avoids using illegally logged wood, integrates biodiversity aspects into its supply chain management system and supports sustainable regional development.

- **Labels**

In general, eco-labels are a marketing tool. They are meant to help the customer see that a company has taken on a responsibility for adhering to specific production processes or standards. Along with this external effect, the managerial decision to introduce, acquire or make greater use of the label also affects internal company processes and structures. Examples include procurement guidelines or company decisions to produce its own raw materials.

Eco-labels and biodiversity labels

Labels that signal an ecologically sustainable and resource friendly management include:



Developing a label specific to biodiversity has proven to be difficult. This is, however, possible when management policies serve to conserve cultural landscapes or otherwise protect biodiversity. For example:



- **Corporate policies, codes of conduct, guidelines and instructions**

Policies, codes, guidelines and instructions all attempt to influence the behaviour and actions of employees. They can be distinguished according to how binding they are and how precisely they are formulated. However, the overall categorical differences often remain blurred.

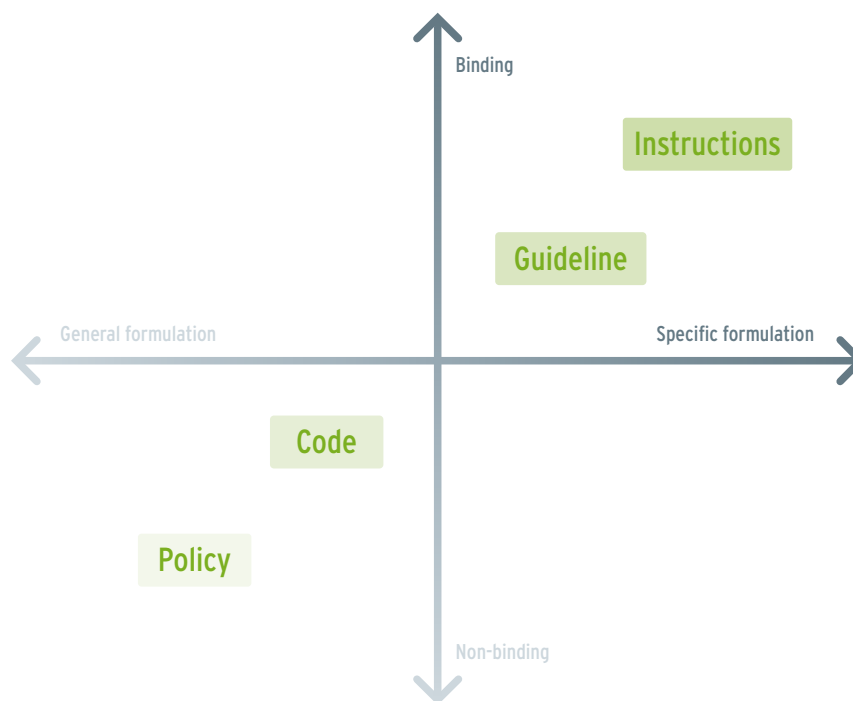


Figure 5: Positioning of policy, code, guideline and instructions

On the other hand, guidelines and instructions can also relate to areas external to a company, the best known example being supplier agreements and instruction manuals.

Biodiversity as business targets at Ricoh

Businesses depend on ecosystem services, and ecosystems depend on biodiversity. To conserve biodiversity Ricoh, a Japanese company, adopted an internal biodiversity policy. At the same time the producer of technical office systems set ambitious medium (2020) and long-term (2050) targets accompanied by concrete actions for reducing energy and resource consumption and pollution prevention.

Access and Benefit Sharing (ABS) policy at Centroflora Group

Centroflora Group, a Brazilian producer of botanical extracts, established an internal policy on access and benefit sharing for new products based on Brazilian biodiversity. The policy reflects the principles of the Convention on Biological Diversity.

• Supplier evaluation

Supplier evaluations use selection criteria to help the company choose the best suppliers. Such selection criteria allow for ecological standards to be integrated into the supplier selection process.

Green supply chain management at Axel Springer

As part of its supply chain management programme, Axel Springer, a German publisher, uses ecological criteria to select its suppliers. For paper manufacturers, the criteria specify that they:

- must not harvest more wood than can be grown again,
- must use the forest in a way that does not endanger animal and plant species,
- should, as a timber buyer, conduct eco-monitoring,
- should provide the necessary ecological expertise for example, for forestry workers,
- respect the native population for example, the Sami,
- should instruct the public about ecological progress and problems.

• Sustainable supply chain management

Supply chain management is more a concept than a tool. It describes the systematic cooperation of a company with its suppliers at every level of the value chain. The goal is to optimise business processes both within the company and with the other partner companies. The cooperation's starting point is consumer-driven demand for ecological products or the production of products that creates the necessary customer demand.

From the forest to printing products

An example of such a sustainable supply chain management policy is the cooperation between the Otto Group, Axel Springer, and UPM, a forestry company. This allows wood to be traced back from the finished printing product to the forest the wood came from.

• Sustainability management systems

The purpose of sustainability management systems is to coordinate and systematise business activities. With the aid of predefined and documented management and control mechanisms, management systems aim at optimising business processes and organisation structures. Furthermore, they strive to ensure that the company's development is sustainable and that its activities comply with the law. Standards such as ISO 26000 (standard for corporate responsibility) or the EU norm EMAS (Eco-Management and Audit Scheme) show that aspects of biodiversity conservation can be an integral part of a company's management system.

• Offset measures and programmes

Biodiversity offsets are programmes intended to compensate for residual, unavoidable damage to biodiversity. Such programmes strive to avoid an overall net loss of biodiversity.²⁴

For some countries compensatory programmes for particularly wearing activities, such as building production halls, are legally regulated. One example is Germany, where offset measures are supported through nature conservation laws, building codes governing mitigation, and compensation regulations. In countries without obligatory regulations, companies can voluntarily participate in such programs in order to gain the support of local authorities and NGOs.

Innovations in the finance sector - Investment fund for offsets at Caixa

Caixa, a Brazilian bank, set up an investment fund for ecological offsets for companies that are required to invest in the maintenance or creation of conservation units as compensation for their business' negative environmental impacts.

• Product chain-of-custody certification

Product chain-of-custody certifications allow raw materials to be tracked from the final product to the original raw materials, ensuring transparency. Such certificates can be a part of sustainable supply chain management.

• Biodiversity SWOT

A SWOT analysis can help identify possible courses of action that correspond with a business' strengths and weaknesses, opportunities that biodiversity presents, and the threats resulting from a loss of biodiversity.²⁵

• Environmental impact assessment

Environmental impact assessments (EIA) serve to systematically identify, predict and evaluate the environmental impacts of proposed projects in a timely manner. The EU has established EIA guidelines, which must be implemented into member states' national laws. Projects subject to EIA standards have been catalogued and made available to the public to check if planned ventures fall into a compliance category. Accordingly, for planned actions not subject to EIA guidelines, companies have the opportunity to voluntarily submit to such an assessment. The "voluntary guidelines on biodiversity-inclusive environmental impact assessments",²⁶ published by the Executive Secretary of the United Nations Convention on Biological Diversity, contains recommendations on how the effects of a project on biodiversity can be integrated into such an impact assessment.

- **Consumer information**

The topic of biodiversity is an opportunity to address a very emotional issue for customers. Because many people find nature and conservation important issues²⁷, there is an opportunity to contribute to the conservation of biodiversity while enhancing the company's own brand or product value. Businesses should keep the public informed about their actions and publicise their attempts to contribute to biodiversity preservation. For instance, a business could write on its product, "These apples originate from natural orchards. By purchasing this juice, you are helping to preserve natural growing and harvesting methods." Other examples include companies pointing out that they refrain from particularly damaging activities or a retailer informing customers about a change in the product line to protect threatened fish species.



Day-to-day work without any relation to nature (left)

Eco-volunteering and biodiversity training: progressive employee motivation (right)

5 Conclusion

Corporate biodiversity management combines business success with the conservation of biological diversity. To reach this goal, businesses must organise their biodiversity management system in such a way that it affects both the impact factors and the drivers for a business case for biodiversity.

This can take place by developing measures in the different company departments described in this handbook. To identify such measures, the handbook shows the connections between the fields of actions, business success, and biological diversity. These associations are illustrated with best-practice examples from companies in the 'Biodiversity in Good Company' Initiative.

The handbook then presents the fundamental process of corporate biodiversity management and gives advice on how to operationalise it by relating it to the stages of the management cycle and by identifying potential tools for its implementation.

In order to achieve broad-based application, the handbook has taken on a cross-company and cross-industry perspective. As a result each company must find its own individual activities to support biodiversity. The digital version of the handbook can be found at www.business-and-biodiversity.com.

For the conservation of our biological diversity it is important to have a broad-based integration of biodiversity management in business decision-making. This handbook aims to offer companies support in that process.

6 Endnotes

- 1 Cf. WBCSD et. al. 2008: iv
- 2 Schaltegger 2008a: 2
- 3 IUCN 2008a.
- 4 Art. 2 CBD
- 5 Cf. Millennium Ecosystem Assessment 2005: 30ff; EASAC 2009
- 6 Worm 2008; Hector & Bagchi 2007; Millennium Ecosystem Assessment 2005: 18ff; Tilman 1997
- 7 Cf. IUCN 2008b
- 8 WWF 2008: 8
- 9 Sukhdev 2008
- 10 CBD 2006a: 33; Millennium Ecosystem Assessment 2005: 8
- 11 IPCC 2008: 64; Cf. Thomas et al. 2004
- 12 Millennium Ecosystem Assessment 2005: 8
- 13 Cf. Scherf 2000
- 14 Cf. www.cbd.int
- 15 Cf. Schaltegger 2008b: 22; Schaltegger & Hasenmüller 2006
- 16 Cf. WBCSD et. al. 2008; Eurosif & Oekom Research 2009; UNEP FI 2008
- 17 Mulder 2007
- 18 Wippermann et al. 2008: 35
- 19 Cf. UNEP FI 2007
- 20 Prieß 2004
- 21 www.iucnredlist.org
- 22 An overview of instruments and methods of business sustainability management cf. Schaltegger et al. 2007
- 23 Tränkle et al. 2008
- 24 Cf. ten Kate et al. 2004: 13; Darbi et al. 2009
- 25 Cf. Bishop et al. 2008: 119
- 26 CBD 2006b
- 27 Wippermann et al. 2008: 35

7 List of figures

1	Corporate biodiversity management flow diagram	11
2	Biodiversity and its conservation	19
3	Plan-do-check-act cycle	26
4	Classification of indicators	45
5	Positioning of policy, code, guideline and instructions	48

8 List of tables

1	Contextual examples on how fields of action can affect biodiversity impact factors	28
2	Possible effects from the fields of action on corporate biodiversity management drivers	30
3	Approaches for developing fields of action through corporate departments	34
4	Exemplary goals of corporate biodiversity management	36
5	Possible tools for corporate biodiversity management related to fields of action and assigned to management cycle phases	40
6	Tools of corporate biodiversity management related to key activity phases of the management cycle	42

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10 Appendix

10.1 'Biodiversity in Good Company' Initiative

Background

Approximately 60 percent of all the ecosystems in the world are in danger while ever more species are threatened by extinction. The world community has recognized the ever-increasing loss of biodiversity as a problem. In 1992, at the United Nations Conference on Environment and Development, the Convention on Biological Diversity (CBD) was agreed upon. The three main goals of the CBD are:

- Conservation of biodiversity
- Sustainable use of biodiversity
- Fair and equitable sharing of the benefits arising from the use of genetic resources.

In May 2008, Germany hosted the ninth Conference of the Parties to the CBD. This conference sent a clear message to the business sector that these three goals and the conservation of nature for future generations can only be achieved with coordinated efforts and business sector support because both the loss of biological diversity and its protection is, in many ways, connected with a company's economic activities.

The Initiative

Businesses both depend on ecosystems and ecosystem services and affect them.

Committing to the conservation of biological diversity thus leads to several economic benefits: improved corporate management systems, ecologically-orientated process optimisation and efficiency gains, sustainable production methods, and farsighted product development coupled together with proactive anticipation of future legal requirements. Together these results increase the competitiveness of a business and improve its overall image.

In Bonn, in 2008, within the framework of the German CBD-Presidency, the 'Biodiversity in Good Company' Initiative was founded as the first international programme dedicated to biodiversity in the private sector. Since its creation over 40 companies from Germany, Japan, Brazil, Switzerland and South Africa have signed the Leadership Declaration. They have committed themselves to integrating biodiversity protection and conservation into their corporate policies and management systems. Additionally, they have taken on the task of raising their suppliers' awareness of biodiversity and publishing best-practice examples that demonstrate their commitment to biological diversity.

Corporate connection and support

The initiative supports the member companies with the implementation of the Leadership Declaration in a multifarious manner. It represents an international networking platform around the topic of biodiversity, advances the discussion and handling of various problems through regular workshops and encourages the exchange of experiences. To accomplish this the initiative invites experts from science and non-governmental organisations.

The Centre for Sustainability Management (CSM) at the Leuphana University of Lüneburg developed this handbook on corporate biodiversity management together with the initiative member companies. Companies adept in biodiversity preservation have been able to contribute their know-how to this handbook, thereby making their valuable input available to other businesses just starting to implement corporate biodiversity management systems.

Creating public awareness

Alongside the practical work of implementing the Leadership Declaration, the ‘Biodiversity in Good Company’ Initiative actively engages with the public and the business world to promote understanding for the topic of biodiversity. It explains to businesses the opportunities and risks surrounding environmental protection. To achieve its ambitious goals, the initiative has a number of communication tools at its disposal: from appearances at international conferences, through a regularly updated website and newsletter, to a touring exhibition “Without Biological Diversity, No Economic Diversity”, which is touring throughout Germany and Japan.

After two years of successful work and a number of coming events for the 2010 International Year of Biodiversity, the ‘Biodiversity in Good Company’ Initiative will be presenting the results from its endeavours at the CBD Conference of the Parties tenth meeting in Nagoya, Japan this October 2010.

Members (as of 2010)



Annotation for 3rd edition (2012) of this handbook: Relaunch of the Initiative in 2011

When public funding was phased out, the member companies, paying tribute to the importance of biological diversity, decided to continue and sustain the Initiative on their own, intent upon ensuring the continued and active pursuit of its aims. For this purpose, they founded a new, non-profit registered association in the summer of 2011. The Initiative still actively cooperates with the Environment Ministry. For more information on membership and activities please see www.business-and-biodiversity.de

10.2 Glossary

Alien species

These are species that, whether directly or indirectly as a result of human intervention, occur in a geographic space in which they were not native previously (for more information see: www.europe-alien.org).

Birds Directive (directive on the conservation of wild bird species)

The European directive 79/409/EEC is a protection scheme for all wild bird species native to the European area of the member states. The convention also lists in an appendix the species needing special protection regarding their habitats.

Biodiversity / biological diversity

Article 2 of the → **CDB** describes biodiversity as “the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.”

Bionics

Bionics tries to generate new and innovative approaches to technology through the decryption of natural processes and/or structures.

Biotopes

The living space of a → **biological community (biocoenosis)**. A biotope can contain a number of → **habitats** (living space of a species).

Biocoenosis

Community of species living together at the same time and in the same space.

Business cases

A business case describes the predicted or actual economic value for a company resulting from a particular course of action. There is a business case for biodiversity when through the conservation of biodiversity, or the business activities promoting biodiversity, the → **drivers** of a business case are influenced so that both the long-term success of the company and the conservation of biodiversity are ensured.

Convention on Biological Diversity (CBD)

The Convention on Biological Diversity is an environmental regime that was signed in Rio de Janeiro in 1992. It has three goals of equal importance: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources (www.cbt.int).

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

The Washington Convention on International Trade in Endangered Species is a regime with the goal of regulating international trade so that the survival of wild animal and plant species is not endangered. The Convention has three appendices with species listed according to the degree of protection they need. Depending on their category, trade in these species is subject to different levels of restriction. This makes the Convention a guide to importing raw materials of plant or animal origin. However because the list of endangered species is not complete, further research may be necessary.

Driver (of a business case)

Variables that, depending on the kind of business activities, have a positive or negative effect on business success, or may create a → **business case**.

Ecosystem

Article 2 of the CBD defines ecosystems as “a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.” An ecosystem is made up of → **biotope** and → **biocoenosis**.

Ecosystem services

The concept of ecosystem services refers to the interface between ecosystems and human well-being. Services that are provided for humans by ecosystems range from basic services to supply services to regulation services and even to cultural ones.

EMAS (Eco Management and Audit Scheme)

A system developed by the European Union with components of environmental management and environmental auditing. The goal of the system is to continuously improve the environmental performance of organisations.

Employee volunteering

A form of business involvement in the community in which employees are released from work for a period of time in order to do community service.

Genetic resources

Genetic resources are genetic material of actual or potential value (Art. 2 CBD).

(Green) genetic engineering / green gene technology

Green gene technology subjects genetic material and so the biochemical control processes in plants to specific changes. When these organisms are released a variety of risks for biodiversity could arise. There are now a number of national and supranational guidelines in order to minimise these risks.

Habitat

Place where a microorganism, a plant or an animal lives.

Habitats Directive

A directive of the European Union (92/43 EEC) with the goal of contributing “towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States” (Art. 2 Para. 1 92/43 EEC).

Impact factors

In this context, conditions that affect → **biodiversity** such as habitat transformation, climate change, invasive species, overexploitation and pollution.

Monoculture

One meaning of the term is a large area covered by a single species of plant. From an experimental perspective however monoculture means human cultivation of a single species of plant.

Offsets

Offsets are programmes intended to compensate the residual, unavoidable harm to biodiversity. Their objective is to ensure no net loss of biodiversity.

Primary production

The primary economic sector supplies most raw materials for a product. Industries belonging to the primary sector include agriculture and forestry, fishing and mining.

Pollution

A harmful factor that affects the environment (people, animals, plants, soil, water, atmosphere).
Examples for pollution are air or water pollution, noise, light, heat or overfertilisation.

Red list

This list is published by the International Union for Conservation of Nature and Natural Resources (IUCN) and individual countries of animal and plant species that are facing global extinction (www.iucnredlist.org)

Supply chain management

System of suppliers of goods and/or services at several levels that have agreed to work together to serve customer needs along the value chain.

Sustainable use

The term sustainable use is defined by the CBD as “the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations (Art. 2 CBD).

Notes

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