EMAS & BIODIVERSITY

How to address biodiversity protection through environmental management systems

AUTHORS

Marion Hammerl (LCF): marion.hammerl@bodensee-stiftung.org
Stefan Hörmann (GNF): hoermann@globalnature.org

CONTRIBUTORS

Sebastién Paquot, EU Commission / DG Environment: Sebastien.PAQUOT@ec.europa.eu
Lars Müller, EU Commission / DG Environment: lars.mueller@ec.europa.eu
Marco Dri, Ioannis Antonopoulos, Paolo Canfora, Pierre Gaudillat; European Commission / Joint Research Centre: Pierre.GAUDILLAT@ec.europa.eu

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"There can be no Plan B, because there is no Planet B."

UN Secretary-General Ban Ki-moon

Global Nature Fund

Bodensee Stiftung
Lake Constance Foundation

PERFORMANCE
CREDIBILITY
TRANSPARENCY

EMAS
GEPRÜFTES

UMWELTMANAGEMENT

FOREWORD

Together with climate change, biodiversity preservation is one of the major challenges currently faced by humanity. It directly influences our economy, health and wellbeing. The air we breathe, the water we drink, the food that feeds us and most of the material we use in our daily life directly depend on biodiversity.

According to the EU Biodiversity Baseline Report published by the European Environmental Agency in 2010, up to 25 % of European animal species were facing extinction. The European Commission responded to this situation by adopting an EU biodiversity strategy to 2020, with the objective to 'halt the loss of biodiversity and ecosystem services, to restore ecosystems in so far as is feasible, and to step up the EU contribution to averting global biodiversity loss'.

In its mid-term review published in 2015, the Commission reported that although many local successes demonstrate that action on the ground delivers positive outcomes, biodiversity loss and the degradation of ecosystem services have continued. This review also highlighted that the opportunity cost of not reaching the 2020 EU biodiversity headline target is estimated at up to EUR 50 billion a year, while one in six jobs in the EU depends to some extent on nature.

The EU Eco-Management and Audit Scheme (EMAS) has the potential to help any organisation improve its performances related to biodiversity. By integrating references to biodiversity in the initial environmental review and in the final reporting of registered organisations, EMAS clearly demonstrates the ambition to address biodiversity aspects in an inclusive manner. However, identifying and addressing these environmental aspects related to biodiversity can be complex for an organisation. This is on the one hand due to the broad diversity of potential aspects and on the other hand to the difficulty in identifying the correct indicators to measure them.

This guidance contributes to making the best out of EMAS' potential to assure better management of issues related to biodiversity. It complements EMAS' overall management and reporting features by identifying key issues and related indicators for most of the core activities that can impact on biodiversity. These specific and actionable elements will undoubtedly help organisations to identify and better manage such impacts.

For this reason, the Commission welcomes the work undertaken by Lake Constance Foundation and Global Nature Fund that has resulted in the publication of this guidance. This is a very positive contribution that should encourage any organisation to contribute to a more effective protection of our biodiversity through the implementation of EMAS.

Kestutis Sadauskas
Director for Circular Economy and Green Growth
DG Environment, European Commission

Humberto Delgado Rosa
Director for Natural Capital
DG Environment, European Commission

1 INTRODUCTION

Biological diversity, also known as 'biodiversity', is a term that is applied to the wide array of different forms of life and represents a fundamental aspect of existence on this planet. It is only if we manage to preserve our ecosystem and a wide diversity of species that present and future generations will be able to enjoy a high quality of life. In addition, it is only then that we will be able to rely on the 'services' provided by nature on which we and the economy depend: clean water, healthy food, sustainable resources, an appropriate living environment and attractive natural surroundings, to name just a few of these aspects.

Experts worldwide agree that, in addition to climate change, the loss of biological diversity poses one of the greatest challenges to our society and our planet. Over the past few decades, significant impairment has occurred to 60% of the services provided by our ecosystem (MEA 2005). The rich biodiversity of the EU has been rapidly deteriorated over the last centuries: About 60% of EU species assessments indicate an unfavourable status, of which 18% are "unfavourable – bad". More than ¾ of habitats are "unfavourable", of which 30% are "unfavourable – bad" (EU Commission Report 2015, State of Nature in Europe). In densely populated countries, the situation is even more dramatic. In Germany for instance, approximately 72.5% of all natural habitats are endangered.

Businesses make use of and depend on biodiversity and ecosystem services in many forms, thereby depending on their functioning. This is why businesses both suffer from and represent part of the cause of the loss of biological diversity. The continuing loss of biological diversity is thus not only an environmental topic, but also has serious economic consequences. The economics of ecosystems and biodiversity have been explored in-depth in recent years inter-alia in the TEEB (The Economics of Ecosystems and Biodiversity) reports, such as the ´TEEB in Business and Enterprise' report. The TEEB for Business Coalition was created in 2012 and became the Natural Capital Coalition (NCC) in 2014.

In some economic branches, such as the food and beverage sector, wood and fibre related industries or the extraction of raw materials, dependencies and impacts are material to business activities, while in other sectors dependencies are attributable to the upstream supply chain or the impacts of using the product.

From an economic point of view, it is particularly important to be aware that ecosystem services as a traditional natural commodity can neither be fully quantified, nor are their costs truly reflected in the market (see also Chapter 3.1 "Preserving ecosystem services as an important economic goal"). It is of equal importance to realise that biological diversity involves complex interactions and can often only be protected by means of non-intervention. At this point of time, we don´t have all knowledge regarding the consequences of the lack of certain components in the complex relations between ecosystems and species. However, gaps in our knowledge and a lack of long-term, practical experience do not justify ignoring biodiversity as a significant environmental aspect in corporate and political decision-making.

From a private business perspective it is vital to generate trusted, credible, and actionable information that business managers need to make truly informed decisions. The aim of these guidelines is to encourage and enable EMAS registered businesses and other organisations to integrate the complex protection of biological diversity in their environmental management on a step-by-step basis in order to continuously and systematically reduce any negative effects they may be having on biodiversity.

Thanks to its transparent reporting (EMAS Environmental Statement) and the inclusion of the potential harm to biodiversity as one of the formal criteria to assess the environmental aspects of organisations, EMAS is clearly one of the most suitable systems to manage the impacts of organisations on biodiversity. However, businesses and organisations with (environmental) management systems other than EMAS will find useful guidance.

This publication has a practical orientation and does not seek to 're-invent the wheel'; it makes reference to projects, instruments and experiences of businesses that have been dealing with the topic of 'business and biodiversity' for some considerable time. One of the main difficulties faced by organisations when reporting on biodiversity is the selection of relevant indicators. In particular, EMAS registered organisations are required to report on relevant performance indicators addressing the specific environmental aspects of their activities. To support organisations in this task this guidance provides different sets of issues and related indicators covering the areas where environmental aspects can impact on biodiversity.

As explained in the chapter "Scope", this publication is a cross-sectoral guideline and all recommendations should be complemented by sector specific measures and indicators. Especially when it comes to the potential impacts on biodiversity related to "Procurement and Supply Chain", a SME or a small organization can be easily overstrained with recommendations such as a risk analysis of the most important raw materials with regard to biodiversity.

Furthermore it is not very efficient, if every company / organisation does its own risk analysis or studies. To close information gaps regarding the supply chain of a specific sector, should be the task of the business or sector association as a "service" towards a sustainable economic future for their members. Therefore companies should request the support of their sector association regarding open questions related to biodiversity.

An ever-increasing number of organisations are dealing with the economic aspects of biological diversity and new studies, instruments and practical examples are appearing all the time. For this reason, it is the intention of the authors to revise this publication accordingly in the near future. The team of authors welcomes any feedback and information on practical experience from users of this guideline, which will be incorporated in the planned revision.

2 SCOPE

While these guidelines mainly target EMAS registered organisations, they also provide useful advice to other types of organisations, which aim to integrate biodiversity into their environmental or sustainability management system. Many of the recommendations are applicable to all kinds of organisations.

A special focus of these guidelines are businesses - private and public, of all sizes and operating in all economic sectors, as long as they have an (environmental) management system and operate in the European Union and beyond. It is thus not possible to go into detail with regard to a particular branch of business. The guidelines are designed to be process-oriented and provide information on aims, measures and key data / indicators that are relevant to all business sectors. The aspects outlined here are initial recommendations that require further sector-specific analysis and the definition of relevant activities. References are provided where examples of the implementation of activities are already available, such as the Natural Capital Protocol and its sectoral guides (at this stage there are sector guides available for food-beverage and apparel).

The risks and opportunities associated with biodiversity will also be outlined. The avoidance of negative effects reduces the risks to businesses. Quite often, measures to promote biodiversity result in cost savings and enhance a business's public image and its reputation among its clients. All contributions that businesses make towards preserving biodiversity and maintaining a healthy ecosystem will benefit them too by ensuring their future commercial vitality.

Businesses have direct and indirect effects on biodiversity. The guidelines discuss both aspects and places emphasis on the avoidance and reduction of the negative effects on biological diversity, as well as on the measures to enhance their positive influences.

The majority of businesses structure their (environmental) management system in accordance with the functional units within the organisation. These guidelines consider the main functional units and their influence on biodiversity.

Biodiversity is all about the complex interaction of ecosystems, animal and plant species and genetic variety. Not all of these interactions have been scientifically researched and there are still many gaps in our knowledge, especially when it comes to demarcating and evaluating ecosystem services. However, researchers all over the world agree about the main causes of the loss of biodiversity (MEA 2005);

- ◗ Conversion, degradation and destruction of ecosystems
- ◗ Excessive exploitation of natural resources
- ◗ Introduction of invasive alien species
- ◗ Climate change
- ◗ Pollution/emissions.

The following chapters thus provide recommendations for the ways in which businesses can contribute towards the elimination of the main causes of the loss of biodiversity. Environmental management systems traditionally cover the main aspects of climate change (energy consumption, transport, emissions, etc.) and environmental pollution (waste production, chemicals, etc.). This is the reason why these guidelines are primarily concerned with counteracting the effects of the degradation and destruction of ecosystems, the excessive exploitation of natural resources and the proliferation of invasive alien species.

At this point, it is again worth stressing that all measures designed for climate protection and the reduction of pollution also contribute towards protecting biodiversity.

Ecosystem services are not the main focus of this publication. Biodiversity has a value of its own, which must be preserved beyond its mere functionality. In the same way, protecting biodiversity is mainly about preserving the ecosystems – and only intact ecosystems can provide important services over the long term.

3 BACKGROUND

Concerns about the loss of biodiversity provided the incentive for 168 nations to sign the 'Convention on Biological Diversity (see 16.2 International Conventions), the objective of which is to put an end to the loss of biodiversity by 2020 (CBD 2010). The biodiversity policies of the European Union are in line with these ambitious goals and the member states have also promulgated national biodiversity strategies.

All biodiversity strategies emphasise the special significance of the economy and the fact that the goals can only be achieved by 2020 if businesses integrate the protection of biodiversity into their entrepreneurial activities.

The Sustainable Development Goals (SGDs), published by the United Nations in September 2015, also highlight the importance of biodiversity, for example in "Zero hunger" (Goal 2), "Clean water and sanitation" (Goal 6), "Responsible production and consumption" (Goal 12) and especially in "Life below water" (Goal 14) and "Life on land" (Goal 15). The SDGs aim to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years. For the goals to be reached, everyone needs to do their part: governments, the private sector and civil society.

For some years, two other concepts have been in discussion with the aim to highlight the significance of biodiversity for corporate activities and to integrate biodiversity into the mindset of the economic sector: Ecosystem services and natural capital. These concepts are briefly explained below.

3.1 Ecosystem services

The preservation of biodiversity and the ecosystem services that biodiversity provides is of fundamental importance to human existence. The availability of clean drinking water, protection against natural disasters and ensuring that soil remains fertile form the basis of our quality of life, while natural resources provide the basis for industry in many branches of the economy.

Against this background, the concept of ecosystem services assumes that functioning ecosystems provide numerous fundamental services.

The internationally authoritative definition of ecosystem services was compiled as part of the 'Millennium Ecosystem Assessment' project (MEA 2005). According to this definition, ecosystem services are goods and services provided by nature that are of benefit or advantage to humans, but that also constitute services essential for survival, such as the provision of food and drinking water of a good quality.

Ecosystem services can normally be divided into the following four categories:

1. Provisioning services, such as food, genetic resources, water, wood and fibres

2. Regulatory services, such as protection against natural disasters, climate regulation, the securing of water quality, waste removal

3. Cultural services, such as recreation and the enjoyment of nature

4. Supporting services, such as the maintenance of the nutritional cycle and soil formation. And in a wider sense: Scientific discoveries and innovation in processes, products and materials (biomimetic etc.)

The availability of ecosystem services is a basic requirement for the functioning of industrial processes, services and the economic environment. Thus the preservation of biodiversity is also a subject of prime importance to businesses and their management decisions.

3.2 Natural capital

The term 'natural capital' is increasingly being used in discussions about the preservation of natural resources. In the narrower sense of the term, it can be understood to mean biodiversity (capital stock) and ecosystem services (dividends), which jointly make up the natural capital. In a wider

Preserving ecosystem services as an important economic goal

The purpose of introducing the concept of 'ecosystem services' is to consider ecological services more readily in decision-making processes, estimate their (economic) value and motivate decision makers to reduce the excessive use and degradation of the natural basis providing those ecosystem services. A loss of biodiversity results in the reduction of the quality of the assets and services provided by nature, thus impinging on businesses in almost every branch of industry. Major businesses have recognised the preservation and protection of biodiversity to be of utmost importance. For this reason, firm anchoring of the ecosystem service approach within the entrepreneurial goals of a business is an essential prerequisite for ensuring success. This also concerns management decisions that cannot be reversed, which is frequently the case when natural resources are consumed. Such decisions must be particularly carefully weighed up, as they influence the sustainability of a business. Thus there are strategic competitive advantages for businesses that regard a reduction of their negative effects on biodiversity as an important commercial goal. Appropriate integration into entrepreneurial target system can, for example, be achieved by the following means:

- ➲ Investigation of the business risks and opportunities associated with the effects of and dependency on biodiversity and ecosystem services.

- ➲ The definition of so-called SMART (specific, measurable, attainable, realistic and timely) goals with a view to incorporating ecosystem services into the business's management system.

sense, 'natural capital' also includes abiotic resources such as oil and minerals. Economically sustainable businesses strive to maintain the capital stock in order to secure their long-term corporate existence (ACCA, KPMG, FFI 2012).

There is a limit to the natural capital that is available, but it is still frequently seen as a freely available public asset. By means of their (indirect) environmental effects, businesses influence so-called 'externalities', i.e. the status of nature and its ability to function. Neither the benefits nor the damage, however, are adequately reflected in corporate decision-making and financial accounts, such as the balance sheet or the profit and loss statement. Thus there has been a discussion for some time about the need for businesses to undertake an economic evaluation of this natural capital and the external costs involved. In July 2016, the Natural Capital Protocol was released. The Natural Capital Protocol is a standardised framework to identify, measure, and evaluate direct and indirect impacts (positive and negative) and/or dependencies on natural capital. More information on natural capital valuation can be found in Chapter 10 "Purchasing and supply chains".

In 2015, the World Business Council for Sustainable Development (WBCSD) developed a third term: Natural Infrastructure for Business. WBCSD launched a platform to strengthen the business case for investing in natural infrastructure, for case studies from different industries leveraging various ecosystem services and for decision making tools.

3.3 Direct and indirect influences of businesses on biodiversity

In many businesses, it is only once the dependencies and influences on biodiversity have been determined that it becomes clear whether and to what extent biodiversity is of significance for them. Both influences and dependencies may be either direct or indirect. Businesses in the extractive industries, furniture production or energy providers will have a direct influence on natural habitats, while a car manufacturer, on the other hand, will have an indirect influence (e.g. the use of steel, which in turn is derived from ore or use of devices made from natural rubber). Food and beverage manufacturers have a direct influence on natural resources, while the influence of wholesalers and retailers will tend to be indirect, through product quality requirements and supplier specifications.

Tourism activities have both direct and indirect influences depending on the type of business: A company carrying out activities in a natural park will have a direct influence and will also highly depend on "natural capital", while a tourism accommodation located in urban areas could have an indirect influence (e.g. products for meals or souvenirs, water consumption), but could also directly affect biodiversity (e.g. plants for the garden, gardening products used).

4   WHY SHOULD BUSINESSES PAY ATTENTION TO BIODIVERSITY?

Numerous studies and publications (e.g. PwC (2010), TEEB (2012), Natural Capital Coali-tion (2016)) or the ongoing ValuES Project (http://www.aboutvalues.net/about_values/) indicate the various risks and dependencies for businesses associated with biodiversity, impacts on ecosystems and ecosystem services. These risks and dependencies can be divided into different categories. The major risks are listed in Table 1.

Examples of direct and commercial risks resulting from a loss of biodiversity and a reduced functionality of ecosystems	
Operational risks	◯ Limited availability of plant- and animal-based resources ◯ Limited availability of ecosystem-based production factors, such as clean water and fertile soils ◯ Price increases for natural resources as a result of shortages ◯ Lack of innovation – biological systems and the functional principles of nature act as drivers for busi-nesses' new products and processes (bionics) ◯ Decreased attractiveness for tourism destination and negative impact on tourism business
Risks of reputation loss	◯ Damage to the image of industries or individual businesses due to the negative effects of economic activities on biodiversity ◯ Damage to the image of a specific location that can also affect the image of the products and services produced
Market-related risks	◯ Changes in buying behaviour (end consumer, business to business), with a stronger emphasis on biodiversity criteria ◯ Failure to penetrate new markets
Regulation-and law-related risks	◯ Regulations governing the acquisition and use of natural resources, such as fishing quotas; emission limit values, taxation of resources ◯ Regulations governing access to and the use of genetic resources (access and benefit sharing), the implementation of the Nagoya Protocol in national legislation ◯ Regulations governing interventions in nature, such as compensatory payments/actions ◯ Restricted access to species-rich (conservation) areas, e.g. prohibition of mining in conservation areas
Liability risks	◯ Lawsuits against industries or businesses for causing the loss of biodiversity, for example under the EU Environmental Liability Directive
Financial market risks	◯ Consideration of biodiversity criteria when financial institutions grant credit and make investments ◯ Biodiversity as an assessment criterion in sustainability ratings

In the industries depending on water, food, wood and fibres like apparel, food & beverage or luxury products like cosmetics, or in extraction industries like in gravel quarries or in the paper and pulp industry, the effects on biodiversity are particularly evident. The tourism industry also requires intact landscapes and the preserved natural environment. In the clothing, metal-processing or electronics industries, the decisive effects are often caused by the upstream supply chain. Notably the conditions of production of agricultural and forestry raw materials and the extraction of abiotic raw materials are defining the impacts on biodiversity. For instance rare metallic raw materials such as gold and tantalum used in the production of electronic equipment are primarily mined in countries that have an extensive biodiversity. The list of industries that have some kind of link to biodiversity can be extended almost infinitely. Ultimately, all businesses are directly or indirectly affected by the loss of biodiversity over the short or long term. It is therefore also important to have a good understanding of the significance of these impacts and dependencies and to what extent these are material for the business activities at stake. A detailed overview of industry-specific risks is provided in the publication "Are you a Green Leader", published by the UN Environmental Programme and the World Conservation Monitoring Centre (UNEP 2010).

Increasingly businesses are becoming aware of their dependence and impacts on biodiversity and are recognising it as material to their business and relevant for the sustaining a competitive edge, while many others are not yet as a PwC study in 2010 showed (PwC 13th Annual Global CEO Survey 2010 in: TEEB 2011, 10).

Some financial institutions have already integrated biodiversity aspects into their risk analyses and use the results when making decisions about granting credit or making investments (UNEP Financial Initiative 2010). At the same time, there are opportunities for corporate success if businesses develop innovative products and services for the sustainable use and preservation of biodiversity at an early stage, thus opening up new business markets.

4.1 The availability and preservation of natural resources

Intact ecosystems provide valuable natural resources, which every business ultimately requires. Biodiversity provides stable ecosystems, which not only supply food, wood and substances for medicines, but also clean water, healthy soil and cultural assets, such as the aesthetic features of a landscape. It is now nearly impossible for nature to furnish assets and services at the same rate as with which they are being consumed by the economy (also see 3.1. Box: "Preserving ecosystem services as an important economic goal").

For businesses, the associated shortages could mean an increase in prices or the complete non-availability of required resources. A case in point can be seen in the decline of sales and increasing prices of fish species that have been over-fished (as was the case for codfish in the 1990s). A survey of corporate decision-makers in global businesses showed that there are expectations that a critical situation will arise in the medium term, especially with regard to the availability of water, food and soil fertility (InnovaStrat 2013).

4.2 Reputation and the growing demand for certified products

Numerous surveys and studies have indicated a gradually yet steadily increasing consumer interest in the subject of biodiversity. The Biodiversity Barometer 2015 of the Union for Ethical Biotrade (UEBT) underlines that understanding of biodiversity is rising significantly around the world. 49 % of the German citizens interviewed by UEBT have heard of biodiversity. In France even 95 % have heard about biodiversity and 36 % gave the right definition. Awareness is rising even faster in emerging markets in Latin America and Asia. "Brand reputation is most important when it comes to persuading people that companies respect biodiversity and people. Reputation can be built through authentic storytelling and external validation of respect for people and biodiversity" (UEBT 2015).

The 2015 Nature Awareness survey carried out by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety confirms that nature plays an important role for German citizens and is one of the relevant elements for a "good life". 92 % of the respondents appreciate the diversity of nature and link health and recreation with nature. 85 % say to enjoy nature as much as possible and 85 % underline to feel closely connected with nature and landscape in the own region. 65 % of the respondents is afraid to have no intact nature anymore for future generations and 83 % feels angry because of the careless handling of nature today. 62 % of the surveyed citizens state that we should use nature only to an extent that still allows future generations to use and enjoy nature to the same extent (BMUB 2016).

4.3 The growing trend among consumers to buy responsibly

The successes of organic products as well as fair trade products and the increase in ecotourism all indicate that there is a correlation between the results of surveys and actual consumer behaviour.

According to the yearly survey of MACH Consumer in 2015, 21 % of German consumers preferred fair trade products - especially in the case of coffee and beverages. That means:

12.72 million Germans aged 14 and above increasingly buy fair trade products. In Switzerland, approximately 14.7% of the population confirmed to prefer to buy food certified by a fair trade label. NB: Most fair trade certifications include ambitious criteria for the protection of biodiversity.

Meanwhile, the revelation of activities that are treated as scandals and the growing number of consumer protests also speak for themselves. Environmental NGOs are increasingly working hand in hand with consumer protection organisations to determine which companies and products contribute towards the extinction of animal and plant species and destroy ecosystems.

Results of the 2013 Nature Awareness survey in Germany (BMUB 2014) show: The significance of nature and the willingness to change attitudes in order to protect it can particularly be seen in consumer behaviour. Here it was demonstrated that 82% of respondents regarded regional and seasonal foods as important to very important, while over 57% had the same opinion on organic foods. Female respondents were more interested in sustainable product characteristics than male respondents and the willingness to buy them increased with their income. As far as regional foods are concerned, interest rises with age, although when it comes to ecological agricultural production, respondents aged between 30 and 59 years were most interested.

Attitudes of Europeans towards biodiversity

In October 2015, the European Commission published a special Eurobarometer regarding the "Attitudes of Europeans towards biodiversity". Some results:

- At least eight out of ten Europeans consider the various effects of biodiversity loss to be serious. More than half think they will be personally affected. Overall, respondents consider the decline and possible extinction of animals, plants, natural habitats and ecosystems to be a serious problem. 91% think this is a serious global issue; 80% think it is a serious issue in Europe, 76% perceive it as a serious problem in their country and 55% think this is a serious issue in the local area where they live.

- More than 90% think the EU should better inform citizens about the importance of biodiversity

- Almost two thirds of respondents feel they are making a personal effort to protect biodiversity and nature. The most common action taken to protect nature and biodiversity is respecting nature protection rules such as not leaving waste in natural areas (92%). Additionally, a large proportion of Europeans claim they regularly buy eco-friendly or local products (65%), look for information and make lifestyle choices to reduce possible negative impacts on nature and biodiversity (49%).

- More than three quarters of Europeans believe that mankind has a responsibility to look after nature and that it is important to stop biodiversity loss. More specifically, 76% totally agree that we have a responsibility to look after nature, while 67% totally agree that looking after nature is essential for tackling climate change and 60% think that our health and well-being are based upon nature and biodiversity.

Source: Special Eurobarometer 436

Nature is more than ever a source of inspiration for industry. With the rise of the wellness trend, natur based products are on the rise. A majority of respondents of the UEBT Biodiversity Barometer 2015 says they often buy food, beauty and pharmaceutical products made of natural ingredients, especially in emerging markets. Other research shows that sales of personal care products are projected to increase by 10% per year until 2019. Consumers also demand more transparency: a significant number of respondents pays close attention to where natural ingredients come from.

Consumers that often buy beauty, food or pharmaceutical products made of natural ingredients are more concerned about biodiversity: 95% say it is important/essential to personally contribute to biodiversity conservation (compared to 88% on average), and 68% say it is essential. They also have higher expectations towards companies: 94% expect them to have policies in ethical sourcing of biodiversity (versus 83% on average), 93% wish to be better informed by companies (versus an average of 82%) (UEBT 2015).

4.4 The obligations of suppliers

In the Business to Business (B2B) sector, producers specify requirements for their suppliers, which have a direct or indirect effect on biodiversity. Thus there are increasing requirements to provide proof of the origin and ecological certification of raw materials and ingredients, both for biotic products such as palm oil and for abiotic products such as aluminium. Unilever, Nestlé and other customers of the Sinar Mas Group have cancelled their contracts with this palm oil producer as a result of the company's illegal destruction of rain forests. Unilever included ambitious and effective criteria into their Sustainable Agriculture Code for the suppliers and producers of biotic products. Similarly, different retailer members of the Retailers' Action Program for the Environment (REAP) took an ambitious commitment to guarantee a sustainable sourcing of raw material such as palm oil, wood, soy or fish. The aim of the Aluminium Stewardship Initiative is to develop sustainability standards for the aluminium industry that also explicitly take into account biodiversity and land use (ASI 2016). The members of the German corporate initiative 'Biodiversity in Good Company' have undertaken to inform their suppliers about the importance they attach to the maintenance of biodiversity. Currently some businesses are carrying out pilot projects to develop 'biodiversity-friendly' versions of delivery chains; among these is the retailer REWE Group for various products such as banana, apple and potting soil.

4.5 Biodiversity in Green Public Procurement

Europe's public authorities are major consumers. By using their purchasing power to choose environmentally friendly goods, services and works, they can make an important contribution to sustainable consumption and production. In Article 67, the EU Directive on Public Procurement mentions the possibility to include environmental criteria when defining the criteria to award public contracts. Up to now, biodiversity has been only considered in very few product groups (e.g. products from wood and fish). The German Environmental Ministry will change this for German public authorities and motivate the European Commission and other member states to consider biodiversity criteria for green purchasing. In 2015, the ministry started an initiative to elaborate action plans for the inclusion of biodiversity criteria into the requirements for 21 product groups with Green Public Procurement Criteria.

4.6 New challenges for the financial sector

Banks, insurance companies and investors are increasingly realising that a scarcity of natural resources and a loss of biodiversity is not only associated with considerable risks but also with major financial opportunities. Financial institutions have begun to take account of biodiversity in their strategic considerations and business models to an increasing extent (UNEP FI 2010).

At an international level, 40 financial institutions, including UniCredit, have become member to the Natural Capital Finance Alliance (NCFA) and signed the Natural Capital Declaration (NCD) (as of October 2016). By signing it, these financial institutions have committed themselves to integrate natural capital considerations into financial products and services, and to work towards their inclusion in financial accounting, disclosure and reporting (NCFA 2016). In addition, the NCFA and the Natural Capital Coalition are developing) a sectoral guide for financial institutions specifying the Natural Capital Protocol and facilitating its application in the sector.

This voluntary initiative is supplemented by organisations' internal guidelines and the specifications of numerous banks. In addition, the biodiversity performance of organisations is increasingly being monitored by rating agencies such as oekom research and indices such as the Dow Jones Sustainability Index (for selected industries).

In Germany, the Association for Environmental Management and Sustainability in Financial Institutes (VfU) has developed biodiversity principles for the financial sector. The document is accompanied by guidelines for the assessment of biodiversity risks and opportunities (VfU 2011).

If these principles are increasingly taken into account by the financial and insurance industry in future, this means that the effects of organisations on biodiversity and especially the risks posed to biodiversity will be incorporated into the assessment carried out when it comes to granting credits or taking out insurance policies.

4.7 Policy and legislation - what can businesses expect?

The preservation of biodiversity is already anchored in European nature conservation legislation and the corresponding legislation of the EU member states. In order to achieve the ambitious goals set by the International Convention for Biological Diversity (CBD), further statutory regulations at European and national level came into force - see Chapter 16 Legal Compliance.

The Commission remains committed to the Natura 2000 Directives' objectives. The Birds and Habitats Directives form a cornerstone of Europe's nature conservation policy and remain vital to EU competitiveness. The Commission's

conclusions on the Fitness Check will be presented together with a decision on follow-up action. The high quality outcome to the Fitness Check will provide a strong basis for future action, working with member state authorities and other stakeholder groups across the EU. The emerging findings of the Fitness Check reveal that Directives' objectives are not being achieved and this is also undermining opportunities for sustainable socio-economic development, particularly in rural areas. Integration of nature objectives into other policy areas, more effective and efficient investments in nature conservation and restoration, improved knowledge and access to data and enhanced stakeholder engagement are all key aspects on which there will be focus on. At the same time the Commission is listening to calls from businesses and will seek to ensure that the smartest and most cost effective approaches are applied to implementation.

4.7.1 Access and benefit sharing

One of the main aims of the UN Convention on Biological Diversity (CBD) is to ensure the fair distribution of the benefits resulting from the use of genetic resources, while it also provides rules for access to genetic resources (access and benefit sharing, ABS). The CBD emphasises the rights of states and local population groups with regard to their ownership of their genetic resources and the associated traditional knowledge of indigenous communities. Under the terms of the CBD, persons or organisations that wish to obtain access to genetic resources may only do so with the prior informed consent (PIC) of the party that makes these resources available. In addition to prior consent to access, the fair participation in the benefits resulting from the use of genetic resources by those who provide them is to be regulated by means of mutually agreed terms (MAT).

The rules for access and benefit sharing were specified in the Nagoya Protocol (NP), which was signed in 2010 (CBD 2011). Thus, for example, cosmetics companies that make use of genetic resources and the associated knowledge during research and the development of new cosmetic ingredients have to provide proof that their activities meet the requirements of the CBD and the Nagoya Protocol. In concrete terms, this means that businesses will need to take the following measures:

- Comply with the requirements with regard to the fair sharing for benefits accrued during preliminary bioprospecting activities.

- Identify the providers of a genetic resource (the relevant government authorities or local/indigenous groups that hold the corresponding ownership rights).

- Obtain the consent of the providers of genetic resources to access to genetic resources and the type of use made of them before carrying out any research and development work (prior informed consent).

- Make mutually approved agreements about access and the fair sharing of benefits between the providers and users of a genetic resource (ABS – access and benefit sharing).

Even organisations whose business model is not based on the use of genetic resources can make use of the principles of access and benefit sharing as a guideline to what conduct can be considered fair towards the countries of origin of their natural resources (for example by early consultation of local stakeholder groups when planning projects or by supporting local environmental and social projects). See also Chapter 16 "Legal compliance and voluntary obligations"

4.7.2 Integrated reporting

Since the sports apparel manufacturer Puma published the first ecological profit and loss account in 2011, the non-disclosure of costs that arise as a result of the adverse effects of a business on the environment and natural capital has once again become a hot topic. The environmental costs of the group's operations and procurement chain – measured using the main environmental indicators greenhouse gas emissions, water consumption, land use, air pollution and waste – were equivalent to €145 million in 2010. Puma's parent company Kering (formerly PPR) announced that it would publish group-wide environmental profit and loss (EP&L) accounts for its luxury and sports lifestyle brands from 2015 (PUMA 2011, Kering 2015).

The International Integrated Reporting Committee (IIRC) was established in 2010. The aim of the IIRC is to create a generally accepted framework concept for a sustainability balance sheet by combining financial, environmental social and state information in an 'integrated' format.

At the end of 2013, the IIRC published an international framework concept for integrated reporting (IR). Among other things, this concept includes reporting on natural capital, explicitly mentioning biodiversity and ecosystem services: "Natural capital: All renewable and non-renewable environmental resources and processes that provide goods or services that support the past, current or future prosperity of an organization. It includes air, water, land, minerals and forest and biodiversity and ecosystem health" (IIRC 2013, 12).

In its EU Strategy (2011 - 2014) for corporate social responsibility (CSR), the EU Commission emphasises the following: "The integrated financial and non-financial reporting constitutes an important medium- to long-term goal and the Commission is monitoring the activities of the 'International Integrated Reporting Committee' with interest." (European Commission 2011a, 14).

In addition to mere reporting, the European Commission suggests in its Communication on a Roadmap to a Resource Efficient Europe that the actual costs for the consumption of raw materials should be paid by the market participants, explicitly referring to the conservation of biodiversity and ecosystems. It states: "The focus of measures to improve resource efficiency and to strengthen overall economic com-petitiveness must be placed more on appropriate pricing and price transparency for the consumer, so that, for example with regard to transport, energy and water, the total costs of resource use to society, including the costs of environmen-tal pollution and adverse health effects, are included in the price calculations and counter-productive price incentives are avoided." (European Commission 2011b).

Environmental Reporting for the value chain of food and beverage

CDP's environmental reporting system for the food, beverage and agriculture value chain is a highly promising innovation, already being taken up by leading corporations. CDP's system focuses on climate change, including emissions of greenhouse gases (GHG), on water security, and on deforestation risk related to the production or pro-curement of forest risk commodities such as palm oil and soy. These are key drivers of biodiversity loss and decline of ecosystem services. The system supports companies in their risk assessment and improvement of environmen-tal performance - including biodiversity.

http://ec.europa.eu/environment/biodiversity/business/assets/pdf/workstream2/cdp_en.pdf

4.7.3 Non-Financial Reporting Directive

Financial and non-financial reporting provides shareholders and other stakeholders with a meaningful, comprehensive view of the position and performance of companies.

Large public-interest entities (listed companies, banks, insurance undertakings and other companies that are so designated by Member States) with more than 500 emplo-yees should disclose relevant and useful information on their policies, main risks and outcomes in their management report relating to at least

- environmental matters,
- social and employee aspects,
- respect for human rights,
- anticorruption and bribery issues, and
- diversity in their board of directors.

There is significant flexibility for companies to disclose rele-vant information (including reporting in a separate report). They may also rely on either international, European or national guidelines (e.g. EMAS, the UN Global Compact, the OECD Guidelines for Multinational Enterprises, ISO 26000, etc.). UN Global Compact and ISO 26000 contain extensive references to biodiversity (see chapter 14 "Marketing and Communication"). Although not part of the scope of this directive, other organisations and businesses could also decide to disclose environmental information to comply with the increasing demand for transparency and corporate res-ponsibility. EMAS can be an excellent instrument to deliver a credible and validated environmental reporting including performance related to biodiversity.

Forest: Hotspots of Biodiversity

About one third of the surface of our planet is covered with forest. These ecosystems are hotspots of biodiversity and habitat for two third of the 1.3 million known animal and plant species on earth. Forests are the basis for the livelihood of approximately 1.6 billion people - including many indigenous nations. Forests offer protection against erosion, avalanches and floods. As a natural water storage they are essential for the regulation of the water balance. One third of the mega cities receive an important part of their drinking water from protected forest areas. Forests storage about 50 % of the CO_2 sequestrated on earth. Their vegetation contains 20 – 50 times more CO_2 than other ecosystems.

Tropical rain forests are of special importance. They cover only 7 % of the planet´s surface, but provide habitat for half of all fauna and flora worldwide. The trees of tropical forests storage 50 % more CO_2 than trees in other forests.

Today, the planet is covered with approximately 4 billion hectares of forest – only one third is remaining virgin forest. 78 % of virgin forests have been destroyed during the last 8000 years and every year 4.2 million hectares are lost. Natural forests are in decline whilst heavily modified forests and plantations are increasing worldwide.

Destruction is ongoing: Between the 1980s and 1990s, 16 million hectares of forest were destroyed every year. In the last years, deforestation has slightly decreased, but with 13 million hectares per year – which corresponds to the size of Greece - the level of deforestation is still dramatic. Tropical forest is most affected.

4.7.5 No-Net-Loss Initiative

EU legislation protects a wide variety of habitats and species. Compensation for damage occurring in Natura 2000 sites is a legal requirement of the EU Birds and Habitats Directives. However, there is currently no requirement for the compensation of unavoidable residual impacts on species and habitats that are not covered by nature legislation. This results in a net loss of biodiversity and ecosystem services.

The EU Biodiversity Strategy 2011-2020 announced „an initiative to ensure there is no net loss of ecosystems and their services (e.g. through compensation or offsetting schemes)". This no net loss (NNL) initiative sets highly ambitious objectives, which are necessary to achieve the headline target of, halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss.'

In 2013, the No-Net-Loss working group adopted a set of documents, including a definition of the scope and objectives of the no net loss initiative and a glossary. In a document discussing the development of operational principles of any proposed EU no net loss initiative, it stressed that it is "vital that any EU NNL initiative anchors compensation/offsetting into a strict and systematic mitigation hierarchy".

In June 2014, the Commission launched an internet consultation on the EU No Net Loss initiative. The consultation asked interested citizens, public authorities, business and NGOs for their views on a No Net Loss Initiative at EU level: how to develop the policy, how to apply the mitigation hierarchy; the scope and the scale of the initiative; which drivers of biodiversity loss and which economic sectors to include; how to tackle the challenges related to offsetting and the choice of policy instruments to use. Currently, the Commission is preparing an impact assessment to support the No Net Loss initiative taking into account the results of this consultation.

4.8 Increasing business initiatives

The increasing number of business initiatives dealing with biodiversity issues can also be considered as an indicator for the growing relevance of biodiversity for the economic sector. Partly these initiatives are the reaction to the steadily increasing number of scandals in the public and the corresponding risks of reputation loss, as well as the growing demand for more biodiversity protection.

The Round Table on Sustainable Palm Oil (RSPO) is a good example for such a reaction – in this case a reaction of the food industry. Stakeholders from the 7 sectors of the palm oil industry participate in RSPO: oil palm producers, proces-

sors or traders, consumer goods manufacturers, retailers, banks/investors, and environmental and social non-governmental organisations (NGOs). The RSPO has developed a set of environmental and social criteria, which companies must comply with in order to produce Certified Sustainable Palm Oil (CSPO). Currently, 17 % of the palm oil produced worldwide are CSPO certified.

The RSPO is committed to the conservation of primary forests and high conservation values (HCV) within the context of sustainably managed landscape through RSPO Principles & Criteria. On the other side, RSPO certification allows ongoing clearance of any forest not identified as primary or HCV. Furthermore, RSPO rules allow peatland forests to be cleared for the expansion of plantations – despite their importance for the storage of GHG emissions. The palm oil produced from these plantations can still be RSPO-certified. There is lots of room for improvement of the RSPO standards and more and more companies go much further than RSPO with their requirements for the supply chain, e.g. the Palm Oil Innovation Group (POIG). It is a process which is moving (too) slowly, but in the right direction.

There is an increasing number of national Business and Biodiversity Initiatives in and outside Europe: in Germany, Spain, Portugal, Scandinavia, Austria ... in Canada, Brazil, Thailand or Mesoamerica. These B+B Initiatives offer support to companies from all economic sectors, which want to improve their biodiversity performance.

"Biodiversity in Good Company" in Germany was the first national initiative created and today includes 26 companies from different branches (August 2016). All members signed a "Leadership Declaration" to improve biodiversity performance continuously vía biodiversity management and they meet

regularly for capacity building workshops. The companies publish Progress Reports on their achievements regarding biodiversity protection: http://www.business-and-biodiversity.de/en/about-us/members/

Since 2007, the World Business Council for Sustainable Development (WBCSD) is working on since 2007 on biodiversity aspects – later called ecosystem services and now defined as natural infrastructures. Next to others, WBCSD published the "Eco4Biz - Ecosystem services and biodiversity tools to support business decision-making" – a structured overview of existing tools and approaches for biodiversity management.

The newly created Platform Action2020 also identifies "Ecosystems" as one of the most important environmental and social challenges for companies. WBCSD promotes business approaches to solve those challenges, such as the Tropical Forest Alliance 2020 (TFA 2020). It is a public-private partnership with the goal of reducing the tropical deforestation associated with key global commodities, such as soy, beef, palm oil, and pulp and paper. The Alliance was born out of discussions between the US government and the Consumer Goods Forum before and during the Rio+20 Conference. It achieves its goals via voluntary actions: http://action2020.org/

The "Global Platform for Business and Biodiversity" of the Convention on Biological Diversity (CBD) coordinates the national B+B Initiatives and provides an overview on organisations, studies and tools related to business and biodiversity: https://www.cbd.int/business/resources.shtml. These are only few examples of initiatives dealing with biodiversity aspects. Links to more initiatives can be found in chapter 17 "Practical instruments".

5 BIODIVERSITY AND THE EMAS MANAGEMENT SYSTEM

EMAS is the first environmental management system based on third party verification by an accreditation body, which explicitly identifies biodiversity in its requirements. References to biodiversity are expressly mentioned in the requirements related to the EMAS Environmental Review (Annex 1 of the EMAS Regulation).

As part of this preliminary analysis the organisation is required to:

1. Take biodiversity into account when determining the context of the organisation.
2. Take biodiversity into account when assessing the significance of its environmental aspects.

During the environmental review, the organisations will also need to consider the legal requirements related to biodiversity that concern its activities, products or services. The significance of these environmental aspects, including their impact on biodiversity, shall also be periodically evaluated as part of the environmental audit of the organisation.

In addition EMAS requires registered organisations to report on biodiversity related aspects as part of its Environmental Statement (mandatory public reporting defined in Annex 4 of the Regulation).

Among the core elements of this reporting the organisation has to report on its use of land with regards to biodiversity. Depending on its activities the organisation may also report on biodiversity as part of the specific environmental performance indicators associated with significant direct and indirect environmental aspects related to its core activities.

Thus all organisations that put in place or maintain a management system in accordance with EMAS should investigate their negative effects on biodiversity. This also applies to businesses. If it is established that environmental aspects shall be considered significant due to their impact on biodiversity (see Chapter 8 Considerations for strategy and management), the business shall plan actions to address those significant aspects. The organisation should also establish quantifiable environmental objectives related to those actions and report on its performances with regards to those objectives.

At the beginning of the process, most organisations will find out during their environmental review that they know very little about the relevance of biodiversity to their business, their dependencies on ecosystem services and the effects of their business on biodiversity. The logical next step is to develop objectives and measures mostly to close the information loopholes, so that correct priorities can then be set.

In the context of the EMAS Evaluation study organised by the European Commission in 2014 the EMAS organisations reported the following performances regarding the core indicator addressing land use with regards to biodiversity:

- 65% reported no change
- 32% reported an improvement
- 3% reported a deterioration.

The fact that a majority of organisations reported no change on land use tends to confirm that reporting on this core indicator only is not sufficient to correctly reflect the biodiversity impact of an organisation. This is confirmed by the feedback obtained from 574 EMAS-validated organisations in Germany evaluated in the 'EMAS in Germany - Evaluation 2012' study. When asked about the practicality of the key indicators, 49% of respondents saw the biodiversity indicator as "less good" or "poor" (UBA/BMUB 2013, 49).

This may be because land use is not an important aspect for most businesses and the negative effects on biodiversity are in other areas (such as raw materials, supply chain, production processes). However EMAS also invites organisations to identify further indicators that are suitable for defining major negative effects on biodiversity. The objective of these guidelines is therefore to provide EMAS-verified companies with information and incentives to help them appropriately incorporate and measure the results of activities relevant to biodiversity in their EMAS management system and reporting.

The present guidelines contain recommendations that should help with filling in the information gaps and to make concrete improvements. However, these recommendations need to be adapted to each particular sector and appropriately extended.

One instrument of interest to EMAS companies, but also to other organisations aiming to improve their environmental performance related to biodiversity impacts, are the EMAS Sectoral Reference Documents (SRDs) on Best Environmental Management Practice (EMAS SRDs). These documents provide guidance and inspiration to organisations in specific sectors on how to further improve environmental performance. For each priority sector identified, the European Commission produces a concise Sectoral Reference Document (SRD) and a detailed technical report on Best Environmental Management Practices ('best practice report').

Many of the priority sectors for which SRDs and best practice reports are already available, or will be available shortly, contain specific guidance on how to improve an organisation's impact on biodiversity, from its own operation and through the value chain; these include among others the construction sector, food and beverage manufacturing, car manufacturing or electronic and electrical equipment (EEE) manufacturing.

The Natural Capital Protocol and its sector guides also provide very useful approaches to fill information gaps. The Natural Capital Protocol is a standardised framework designed to help generate trusted, credible and actionable information for business managers to inform decisions.

6 BIODIVERSITY AND ISO 14001

The following chapter briefly explains the differences between EMAS and ISO 14001 when addressing biodiversity aspects. ISO 14001 is incorporated into EMAS as part of the Annex II defining the requirements of the Environmental Management Scheme; however EMAS supplement ISO 14001 with extra requirements, including requirements related to biodiversity as identified in the previous as chapter.

In comparison to EMAS, where biodiversity is used as a performance indicator, ISO 14001 is generalised and unspecific. Whether and to what extent a business decides to act with regard to the conservation of biodiversity depends on whether the business and its external consultants regard wildlife and biodiversity as relevant and strive for continuous improvement in this field.

The recently revised version of ISO/DIS 14001:2015 refers to biodiversity

- ⊙ in its introduction (non-normative)
- ⊙ in a note on the definition of the term 'environment' (explanatory)
- ⊙ in a note about potential aspects of environmental policy (example)
- ⊙ and twice in the annex (informative).

Biodiversity is no obligatory field of activity in the revised version, but the increasing number of references show the increasing relevance of biodiversity in the ISO 14001.

As a management instrument, ISO 14001 can be suitable for continuously improving a company's biodiversity performance. All management measures specified by ISO 14001 can be employed within the fields of activity related to the preservation of biodiversity. Once the relevance of the biodiversity aspect has been established (see Chapter 8) the business must define its current related status (environmental audit). Based on the results of the environmental audit, concrete – and where possible quantifiable – goals need to be defined by the organisation, along with the measures required to achieve them.

However no mandatory public reporting on those measures and objective is foreseen, making ISO 14001 less transparent than EMAS.

A similar guideline has been developed with intention to help businesses with an ISO 14001 environmental management system to integrate biodiversity-relevant activities in their management operations. This guidance "ISO management system and the protection of biological diversity" also includes references to the ISO Series 37000 on the sustainable development of communities (in preparation), the ISO 26000 guidance on Social Responsibility and the ISO 50001 standard on Energy Management.

7 INITIAL APPROACHES TO THE MANAGEMENT OF BIODIVERSITY-RELATED ASPECTS

Environmental management systems are relevant to traditionally important drivers of climate change, such as energy consumption and transport, as well as pollution and emissions. This is why these guidelines are primarily concerned with counteracting the effects of the degradation and destruction of ecosystems, the excessive exploitation of natural resources and the proliferation of invasive alien species.

For the environmental management coordinator however, it is important to be aware of the interactions between these aspects. Measures for climate protection will also promote the conservation of biodiversity. Adherence to national or European standards at international level in order to avoid polluting the air, water or soil, is another important contribution that will decrease the loss of biodiversity. Management decisions that cannot be reversed must be taken with particular care. When in doubt, it is always best to err on the side of caution.

The key data and indicators specified in the following chapters should be regarded as examples. They were defined during the European Business and Biodiversity campaign, further developed in consultation with various groups and are applicable to all business sectors. These process or performance indicators should be considered merely as a start-up support and should be supplemented by sector-specific key data and performance indicators. For some industries, such as the food industry and extractive industry, specific indicators are already available. Where these are publicly accessible, we refer to them in this guideline.

Many other key data and indicators are currently in the process of being defined. It is thus advisable to review on-going progress at regular intervals so that these can be taken into account in decision-making and the planning of measures.

These guidelines focus on:

- The avoidance and reduction of negative effects on biodiversity
- Direct and indirect effects
- The various divisions and activities within businesses
- The main reasons for the loss of biodiversity: degradation/destruction of ecosystems, excessive exploitation of natural resources, proliferation of invasive alien species
- A number of key data and indicators that are relevant to all business sectors.

8 INCLUSION IN STRATEGY AND MANAGEMENT CONCEPTS

It is the management of a business that sets the course for a continuous improvement in biodiversity performance. Due to the complex interactions and challenges, especially when it comes to reducing negative effects due to indirect influences, it is necessary to take a structured and continuous approach to preserving biodiversity.

It is not advisable to introduce a separate biodiversity management system in parallel with other management systems; instead, the factors relevant to biodiversity should be integrated into a management system that is already in place. EMAS III and ISO 14001 are eminently suitable as environmental management systems, but biodiversity can also be managed in other environmental management approaches and sustainability management systems.
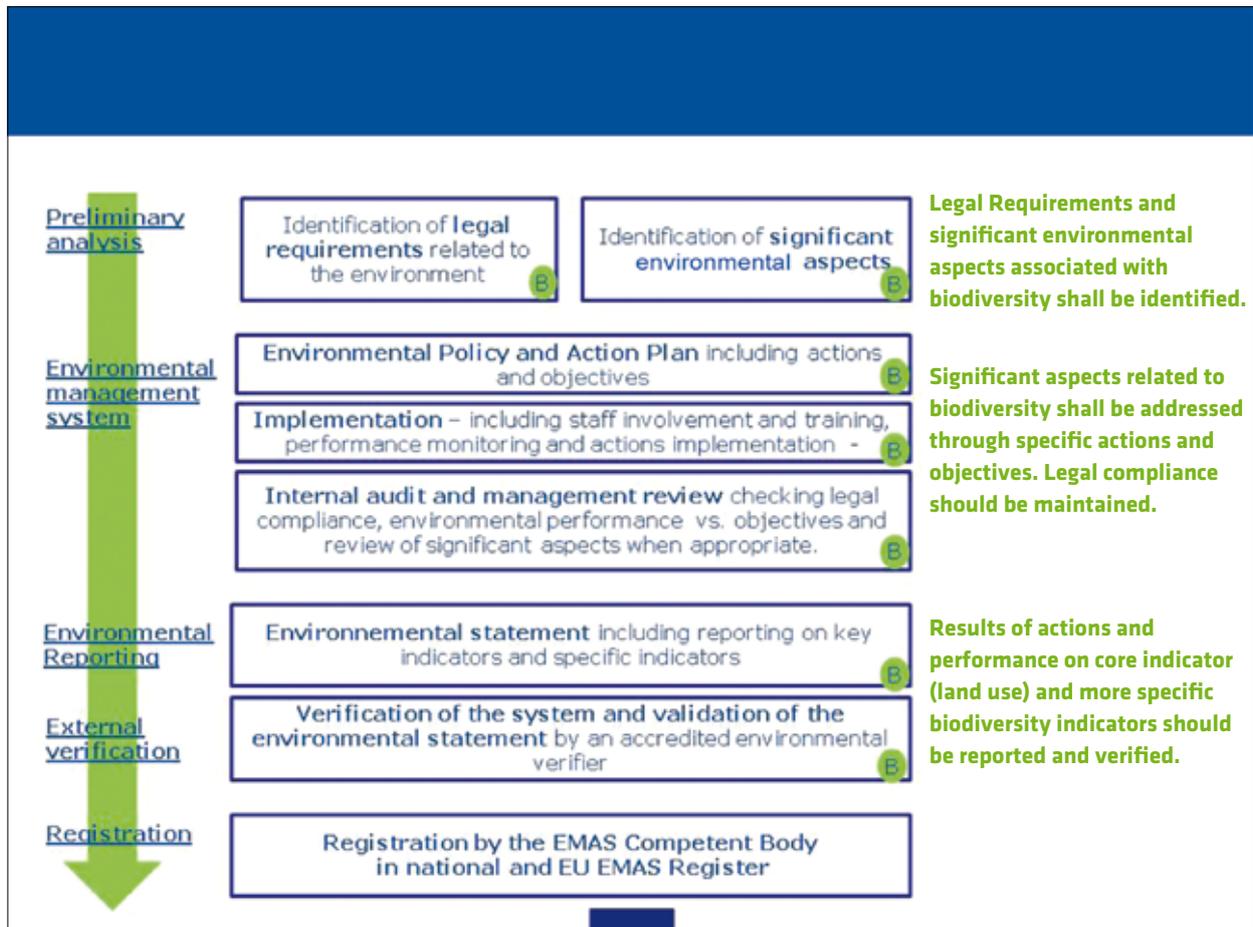

Figure 1 – Taking biodiversity into account in an environmental management system

8.1. Determining the baseline situation

The following questions should only be answered with 'yes' or 'no' or 'in preparation' and thus do not serve as indicators. Even a 'yes' does not reveal anything about the quality of the strategy or measure. Nevertheless this exploration is an initial step and will provide insight into the position of the business when it comes to biodiversity and the fields in which action is required.

Questions for corporate management:

- Is biodiversity being taken into account within the environmental management system or other management systems?

- Have the direct and indirect effects of the business on biodiversity been systematically investigated?

- Does the business make use of the mitigation hierarchy (avoidance, reduction, restoration, compensation) in order to reduce its negative effects on biodiversity?

- Does the environmental or sustainability programme include goals and measures designed to preserve biodiversity?

- Are the goals and measures quantifiable and auditable – at least most of them?

- Have meaningful key data and indicators been defined for monitoring purposes?

- Does the advanced training programme for employees incorporate aspects of biodiversity?

- Does the business participate in a national, European or international business and biodiversity initiative?

- Does the business have a strategy or programme to ensure fair and equitable sharing of the benefits of using genetic resources?

- Does the business take biodiversity into account when making investments or buying shares in other companies?

8.2. Determining the relevance of biodiversity to a business and other organisations

All environmental management systems that require certification – and EMAS in particular - stipulate that a business or a different type of organisation must determine the relevance or significance of all environmental aspects. How can this be achieved for the aspect ‚biodiversity' without having to carry out detailed studies?

Below is a proposed method based on a few relevant and non-sector-specific questions and a simple assessment. This preliminary analysis can be used to determine the general degree of significance of biodiversity for the organisation. Those questions could also be used to identify environmental aspects that could have a significant impact on biodiversity. The suggested questions can (and should) be supplemented with more specific questions focusing on the economic sector in question.

As explained in Chapter 2 'Scope', this guideline deliberately excludes the aspects of climate change and pollution/emissions, as it can be assumed that the continuous reduction of the relevant factors is already being implemented under an environmental management system. They are thus not taken into account for the purposes of determining the relevance of biodiversity to a business although they play a major role when it comes to the loss of biodiversity.

It would undoubtedly be of benefit to a business to involve the divisional heads of all corporate sectors and relevant external stakeholders (research institutions, nature conservation authorities and environmental conservation organisations) into the process of determining the relevance of biodiversity for the business. This could take the form of an open dialogue or a comparison of the various evaluation results.

A risk assessment can also contribute towards determining the relevance of biodiversity to a business. A great deal of work is currently being carried out in this field. However, thus far there are no longer-term, practical experiences with the various instruments available to businesses (also see Chapter 17 'Practical instruments'). It is to be expected that considerable progress will be made with risk assessment with regard to biodiversity. It is therefore advisable to regularly keep up to date; for example, information can be obtained from the websites of the EU Business@Biodiversity Platform, the European Business and Biodiversity Campaign and the national B+B initiatives, e.g. Biodiversity in Good Company.

Determining the relevance of biodiversity to a business	
Effect on	**Potential environmental aspects related to biodiversity**
Ecosystems/ biodiversity	Do the activities of the business involve land use? No = 0 points. To a minor extent = 1 point. Substantially = 3 points
	Does the business or its direct suppliers operate in conservation areas or near conservation areas or in non-conservation areas with a high biodiversity value? No = 0 points. Yes = 3 points. Don't know: 3 points.
	Do the activities of the business directly or indirectly depend on ecosystem services? No = 0 points. Directly or indirectly = 3 points. No information = 3 points
	Does the business process mineral resources or intermediate products derived from them? No = 0 points. To a minor extent: 1 point. An essential basis for production: 3 points
	Does the business process animal raw materials or intermediate products derived from them? No = 0 points. To a minor extent: 1 point. An essential basis for production: 3 points.
	Does the business deal with protected species or parts thereof (i.e. those listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora [CITES], also known as the Washington Convention). No = 0 points. Yes = 3 points.
	Does the business make use of genetic modification techniques or does it process the corresponding products? No = 0 points. Yes = 3 points.
	Does the business and/or its first-tier suppliers have premises/properties with outdoor areas? No outdoor areas = 0 points. Small outdoor areas = 1 point. Medium size outdoor areas = 2 points. Large outdoor areas = 3 points.
	Do the business premises or properties include green spaces or other ecologically valuable areas (biotopes)? None = 0 points. One biotope = 2 points. Several biotopes = 3 points
	Has the business restored habitats and/or created areas of value for nature to compensate for its effects on nature and the environment? Did the business support NGOs to do this? Not relevant, as no related effects = 0 points. Yes = 1 point. No = 3 points

PERFORMANCE
CREDIBILITY
TRANSPARENCY

Excessive exploitation of natural resources	Does the business process plant or animal raw materials or intermediate products derived from them? No = 0 points. To a minor extent = 1 point. An essential basis for production = 3 points.
	Is water important to the production activities of the business or its suppliers? To a minor extent = 1 point. Substantially = 2 points. Very substantially = 3 points.
	Does the business or its suppliers operate in regions in which water is in short supply? No = 0 points. Yes = 3 points. Don't know: 3 points
Invasive alien species	Does the business make international goods deliveries or commissions them? No = 0 points. To a minor extent = 1 point. To a major extent = 2 points
	Is the business aware of the proliferation of alien invasive species on its own premises/properties? No, no proliferation = 0 points. Yes, there are invasive alien species = 1 point. Don't know = 1 point

0 – 8 points = not relevant

9 – 13 points = average relevance

More than 13 points = extremely relevant

8.3. Coordination

Biodiversity is complex, as are the various effects of businesses. Businesses differ in the level of specialist knowledge available to them. Businesses in the foodstuff or (agro-)chemical industry often have entire divisions dealing with this topic. In other businesses, there is only an environmental or sustainability officer who coordinates the biodiversity-relevant activities. This represents a major problem.

To be effective, biodiversity management requires appropriate knowledge at both local and global levels. It may thus be advisable to consult with experts. Nature conservation authorities and environmental organisations are usually familiar with the situation on local or global level and can provide important input for the analysis of the current situation and the identification of goals and measures (see Chapter 15 'Multi-sectoral: the involvement of stakeholders in decision-making'). Among other things, national business and biodiversity initiatives arrange for an exchange of experience between businesses and provide an overview of relevant studies, positive examples, etc.

8.4. The environmental and sustainability policy of a business

The environmental and sustainability policy of a business should deal with the effects of the business on biodiversity and clearly indicate the priorities for improvements. Among other things, it is important to use the internationally recognised terminology. Where separate definitions for certain biodiversity aspects are required, these must be explained clearly and comprehensively.

The relevance of standardised definitions

In 2011, the World Conservation Monitoring Centre (UNEP-WCMC 2011) published the results of an analysis of how biodiversity was specified in 36 standards from eight different business sectors. Among the findings of the WCMC was the fact that the standards make use of different terms and definitions and rarely adhere to internationally recognised ones (for example conservation areas, endangered species, biodiversity hotspots).

Inconsistent terms and missing cross-references are a problem, as they do not constitute a clear reference framework and may result in different interpretations. Internationally recognised definitions can be found at: www.biodiversitya-z.org/themes/terms

8.5. The support of expert consultants

The conservation of biodiversity and ecosystem services is a new field of activity in connection with (environmental) management systems that can be certified.

Most organisations lack the corresponding experience for implementation. In view of this, external support will be useful when it comes to the successful incorporation of biodiversity aspects in the management system. Therefore it is advisable to contact an external expert, such as an experienced management system consultant with knowledge on the incorporation of nature conservation measures in management processes. Environmental NGOS are also often experts in biodiversity and able to contribute with expertise.

In the case of EMAS, biodiversity should be taken into account by the organisation when defining its significant environmental aspects and as part of the reporting process specified above. As the accredited environmental auditor has the task of investigating whether the environmental management system they are auditing complies with EMAS requirements, they will thus also review biodiversity-relevant aspects, in as far as these are of relevance to the company:

Potential questions relating to biodiversity to be used during the validation process

- ➲ What effects do the various corporate divisions have on biodiversity?
- ➲ What effects do the organisation's activities have on biodiversity considering a life cycle perspective?
- ➲ Which general biodiversity-relevant objectives have been stipulated in the environmental policy?
- ➲ If biodiversity is a significant environmental aspect, what concrete targets and measures have been specified to preserve biodiversity?
- ➲ Which raw materials or other materials are purchased from upstream suppliers?
- ➲ What effects does their use have on biodiversity?
- ➲ In what form do the activities of the business influence biodiversity?

Moreover, it is the task of an expert / consultant to inform management about the significance of biodiversity /ecosystem services in relation to the business-specific performance process. To avoid potential conflicts, auditors who are acting as consultants to an organisation should not carry out the actual certification or validation activities within this company. It can be assumed that in many businesses there is an interactive relationship between the exploitation of ecosystem services and adverse effects of economic activities. Thus a knowledge of this relationship will help the company develop measures to maintain biodiversity. An overview of the relevance of biodiversity in various business sectors is provided in the following.

8.6. Examples of commercial sectors and their relevance to biodiversity

The oil and gas industry

Significant biodiversity-related environmental effects

- Intervention in the ecosystem as a result of exploration and resource utilisation. Increasing demand has led to exploitation in ecologically sensitive regions (extraction of oil sand and deep-sea deposits)

Ecosystem services of importance to this sector

- Natural deposits of oil and gas form the 'natural capital' of the sector. When issuing oil and gas mining permits in particular, the authorities are increasingly concerned with the preservation of the natural environment.

Raw material extraction and mining

Significant biodiversity-related environmental effects

- Intervention in the ecosystem as a result of exploration and resource utilisation. Raw material extraction is usually associated with large-scale land use and intervention in ecosystems (e.g. deforestation). As mining activities also consume large volumes of water, underground water reserves may also be exhausted, especially in arid regions.

Ecosystem services of importance to this sector

- Raw materials are the 'natural capital' of this sector.

Cosmetics and pharmaceutical/medicinal plants

Significant biodiversity-related environmental effects

- More than 25.000 types of plants are used for medicinal purposes worldwide. Their use can also promote species extinction. In Western Europe, over 150 plant species are threatened with extinction due to over-extensive harvesting.

Ecosystem services of importance to this sector

- In many instances, naturally occurring plants provide the basis for the manufacture of active pharmaceutical substances.

Tourism

Significant biodiversity-related environmental effects

- Tourism poses a threat to biodiversity by: habitat destruction (land use), over-use of ecosystems (water, energy), pollution (waste water, waste and emissions), and interference in sensitive ecosystems caused by sports activities.

Ecosystem services of importance to this sector

- The natural environment is a major asset of tourism. Landscapes, mountains, coastlines, beaches, dunes, moors, lakes, forests and meadows, flora and fauna (i.e. biodiversity) provide for recreation and leisure activities.

The fishing and fish-processing industry

Significant biodiversity-related environmental effects

- Overfishing has resulted in drastic reductions in fish stocks. It is estimated that the fish population has been reduced by more than 80% since the introduction of industrialised fishing techniques. Impacts of climate change affect both the regional supply and quality of the fish supply. This results in adverse effects on the fish-processing industry.

Ecosystem services of importance to this sector

- The fish population has always been one of the main sources of food for humans and provides work and economic benefits to those working in the fishing industry. The preservation of an intact ocean ecosystem is a requirement for maintaining this ecosystem service for the fishing industry.

Forestry and the furniture, wood and building material industry

Significant biodiversity-related environmental effects

- Logging at rates that exceed the natural tree regrowth rate put the continuance of forests at risk. Rapid deforestation adversely affects biodiversity; ecosystem services such as the protection of catchment areas and soil protection disappear; this results in losses and lower quality in the timber, furniture and building material industry. It should be noted that even nature oriented, sustainable forestry with alien tree species provides major services, such as CO_2 storage, wood, water formation/purification and air filtration.

Ecosystem services of importance to this sector

- As the forestry industry depends entirely on natural resources, natural forest growth provides a major service to the furniture, timber and building material industry. Moreover, an intact forestry ecosystem provides additional ecosystem services such as CO_2 storage, water protection, the provision of genetic material and recreational value in the case of both natural forests and plantations.

As part of the European Business and Biodiversity Campaign, Biodiversity Fact Sheets were developed for the tourism industry, golf courses, leisure parks, cosmetics industry, extractive industry (dry and wet mining and quarrying) and the food and beverage industries. These sheets provide an initial overview of their relationship with biodiversity, and with meaningful targets and measures in this field (see http://www.business-biodiversity.eu/knowledge).

9 BUSINESS PREMISES AND PROPERTY

In its Annex IV defining the requirements of environmental reporting, the EMAS Regulation explicitly requires reporting on land use as part of the key indicators of the EMAS environmental statement. However, organisations are also encouraged to take proactive actions to offer positive conditions to biodiversity on their site. If this environmental aspect is considered as significant they should also be able to monitor their impact through specific indicators. The following lines provides inspiration for organisations wanting to achieve progress in this field (European Environmental Agency, 2016).

9.1 Why is action needed?

According to the European Environment Agency, Europe is among the most intensively used continents on the globe, with the highest share (up to 80%) of land used for settlement, production systems (including agriculture and forestry) and infrastructure. Additionally, about 30% of Europe's land area is heavily fragmented. This leads to high pressure on biodiversity and impacts on the land's potential to supply key services.

On many business premises it is easy to offer favourable conditions for native flora and fauna without losing valuable room for development: depending on local topography and site structure, there are surfaces areas that for one reason or another cannot be used as production sites or for infrastructure – e.g. because there is a steep slope preventing further expansion in that direction or a company is required by law to keep its distance from a riverbed. And of course: most companies have at least some green areas on site, which can be designed in a biodiversity friendly manner.

Nature oriented design alternatives can also make economic sense:

- Flowering meadows are easier to maintain than lawns, which require short maintenance intervals for mowing, fertilisation, aeration and possibly fungus-control

- Nature oriented design of rainwater management systems can offer improved seepage capacity (due to improved root-penetration of the soil)

- The adoption of green roof and facade systems reduces the consumption of energy for heating and cooling. Green roofs offer considerably improved resilience to hail and can reduce the risk of flash-floods due to a delayed release of rainwater

- Nature oriented areas support a sense of well-being, creativity and the performance of employees.

Employees can also get involved in designing and monitoring the environment, which can serve to further the corporate identity of a company. It is not necessary to work through the rather long Red List of the IUCN in order to verify the effect of such activities. The recommendation is to select one or two key species in cooperation with the nature conservation authorities or local environmental conservation organisation that would be suitable for the long-term monitoring of changes to biodiversity in such areas. Local NGOs usually also have the knowledge about local flora and fauna and experience with ecosystem-monitoring that will enable them to review developments.

Another important option to contribute to the protection of local or regional biodiversity is the provision of offsets for built-over areas in excess of the business's statutory obligations. One way this can be done is by covering the costs of landscape restoration and the maintenance of ecosystems or by supporting species protection programmes.

9.2. Challenges

Business are often concerned that the introduction of pro-tected species could result in restrictions on the future use of the business premises (see Section 12ff. of the Habitats Directive; Section 5 of the Birds Directive.

Potential conflicts can be avoided by careful planning. Valuable habitats should be created only in places where they can develop over the long term. Quite often, afore-mentioned restrictions on land-use are a good place to start looking for unproblematic potential locations for high-value habitats.

For areas that are only available mid-term, biodiversity-fri-endly design-alternatives, which depend on regular main-tenance or have limited durability are a good choice.

If endangered species are present, they can usually be resettled. With expert support resettlement can – depen-ding on the species in question – be as simple as offering alternative nesting sites one season ahead of the start of a new construction project. In any case, it is important to face potential problems head-on: a company should consider the possibility that protected species may be inhabiting a future construction site well in advance. If a company has implemented a nature oriented design and a suitable maintenance-scheme, they will usually know very well if the expansion of an existing site poses a risk to an endangered species. In fact, the presence of an endangered species is not dependent on a nature-oriented design: Examples in Germany have shown, that the intention to make a potential future construction site unattractive for rare species (e.g. by mowing very often), can lead to exactly the results a compa-ny tried to prevent. Since nature-oriented design is based on a solid analysis of the conditions on site, it takes the specific circumstances on site into account and can even alleviate possible conflicts with wildlife conservation laws.

Regular monitoring serves to inform the business about the development of animal and plant species on the site and enables the business to respond in good time to ensure that it can both conserve biodiversity and achieve its targets.

One of the key factors to foster biodiversity on site is a low-input maintenance scheme. Maintenance on nature-ori-ented premises in general has the purpose to moderate and steer the development of the premises based on the region's natural spatial conditions. Low input does not imply a negligence of green areas - it simply means less work with increased efficiency. However, the resulting aesthetics can be different to what employees or visitors are used to. There may often be a transitional period between a ‚conventio-nal' and a ‚nature-oriented' design, during the beginning of which green areas may look wild - before they reach the

desired new aesthetics. But even after the nature-oriented design has been established, green areas are likely to change their appearance over the course of the year and will never look as sterile and unchanging as before.

However, if the business provides information about its aims and the progress made, on species that have been attrac-ted to the premises and deals appropriately with common anxieties (such as the risk of being stung by bees or having a pond turn into a breeding ground for mosquitoes), critical voices often turn into supporters. Furthermore, the 'wild ap-pearance' can often be attenuated with simple tricks. During the project 'Nature oriented Design of Company Premises', which was supported by the German Federal Ministry for the Environment and the German Environmental Protection Agency, more than 50 businesses of all sizes and sectors have already received advice on the potential for biodiversity oriented improvements on their premises and case studies regarding the planning and the implementation are available (in German language): **www.naturnahefirmengelaende.de**. An expansion of the initiative to other EU countries is planned.

Various studies have demonstrated that there is a positive correlation between intact nature and health (ten Brink et al. 2016). Experience has shown that a business site that is designed to be nature oriented can also have a positive influence on the work atmosphere and the productivity of employees (Brämer 2008, 73ff.). As of yet, there are no studies that provide empirical evidence in support of these observations.

The support of biodiversity outside the premises is normally highly appreciated and needed, because companies and other organisations always tend to have an unavoidable bio-diversity footprint that should be compensated for. Gover-nments and civil society represented by NGOs by far do not have the resources needed for the restoration and protection of habitats and species.

The challenge is to support initiatives in a transparent and appropriate way without giving any reason to be accused of green washing (see also chapter 14 "Marketing and Com-munication"). The long-term compromise that is required poses another challenge, as restoration measures often need many years to show positive results. It can be a long time before results can be seen, which is a particular problem to the marketing divisions of companies, who usually wish to communicate news as soon as possible. Biodiversity and nature are exciting and emotional topics for communication and the challenge is to develop a communication strategy that highlights the aims of a project, but also informs about the concrete results based on sound monitoring, as well as the challenges the project is facing.

9.3. Nature-Oriented Design of business premises: Feasible targets and measures

The aim should be to create a nature-oriented environment on the largest possible part of the premises. Nature conservation authorities and environmental NGOs can provide useful support with high impact measures in terms of local biodiversity on site.

A company should consider hiring a specialised planner or gardener with a focus on designing biodiversity-friendly premises at some point. They have the knowledge and experience to combine the idea of a nature-oriented design with the additional demands and expectations a company may have regarding their premises e.g. aesthetics or more pragmatic issues (e.g. security or legal requirements). In many European countries, there are nature-oriented gardening organisations that can provide contacts to experts.

Local biodiversity is based on and adapted to local climate and rain patterns, landscape elements (including traditional land-use patterns and methods), soil conditions etc. Nature oriented design favours the usage of indigenous plants, which – as an up-side for companies – offer the best resilience to extreme weather events and require low maintenance efforts. The up-side for local biodiversity is that these plants are closely knit into the ecological system of a region. This means that they usually fulfil a variety of functions for local fauna and contribute to the diversity and stability of local/regional ecosystems – which in turn will offer increased functionality in terms of ecosystem services. Potentially invasive species should never be used and in fact be counteracted if present on the premise.

The most important measure for a company should be to increase the amount of ‚nature-oriented surface area‘. There are various biotope-promoting elements that can be used (and are considered ‘nature-oriented‘) on business premises:

- Indigenous shrubs and trees (traditional orchards, hedges, groves)

- Flower or herb meadows, flower borders or grassland under a ecological maintenance scheme (mowing only 1-2 times a year, no fertilizer-usage, no watering, removal of clippings after mowing etc.)

- Sparsely vegetated areas such as gravel and marl surfaces, fallow areas

- Dry walls, heaps of stones, piles of wood and branches, dead wood structures

- Standing or running water and (alternating) wetlands, as long as they are designed in a nature oriented manner. This means, for example, that the shore is ecologically functional and not made of hard concrete, not too steep to allow amphibians to enter and leave etc.

- Green facades (not 'living walls' that require a great deal of water and fertiliser)

- Biodiversity-friendly green roofs

- Thoroughfares (roads, paths, parking spaces) with permeable coverings and without drainage channels (test soil properties first)

- Nesting aids, insect boxes

- Outdoor lighting should be achieved by insect-friendly LED and light emission in general should be kept at a minimum.

- Birds friendly windows and crystal facades to avoid collisions

Experiences in Switzerland and Germany, based upon discussions with hundreds of companies, have shown that for most premises, a "30%-target" for nature oriented surface area is feasible and pragmatic. The percentage refers to the whole premises' surface area minus build-upon surface (only buildings are deducted). Since green facades and green roofs are considered nature oriented, this is actually not so hard and a company might even reach "over 100%". Only a minority (e.g. inner-city detail-companies) might not be able to reach the 30 %.

Nature oriented premises

The idea of 'nature oriented premises and properties' has been developed by the Swiss 'Stiftung Natur und Wirtschaft' ("Foundation Nature & Economy"). Today, more than 350 companies have certified nature-oriented premises in Switzerland. The Swiss concept has been adopted by Lake Constance Foundation and Global Nature Fund, and has been further developed for the Initiative 'Nature Oriented Design of Business Premises'. The "Self-Check" for companies is a good starting point and can be downloaded in German and English at: http://www.naturnahefirmengelaende.de/SelbstcheckUnternehmensstandort.html

9.4. Sample key indicators

Up to now, the most commonly used performance indicator within EMAS regarding biodiversity is land use, expressed by square meter of build-up land in relation to production or staff etc. This performance indicator is usually very static and does not change for may years. It does not distinguish the different levels of insensitivity of land use and doesn't accurately depict measures a company implemented on-site. As such, it often fails to be an effective tool to manage on-site biodiversity performance. EMAS III will be partly updated and adapted to the revised ISO 14001. This will also include a specification of the performance indicator land use.

Example key indicators: corporate premises and properties	
Relevant issues	**Key data / Indicator**
Does the company / organisation own, lease or manage sites or properties in the immediate proximity of conservation areas or areas with high biodiversity? **Yes** -> see indicator **No**	Proportion of areas cultivated in accordance with a nature conservation management plan: *Size of areas subject to nature conservation management plan (m² or ha) and* *their percentage of the corresponding total area (as %)*
Does the company / organisation know the intensity of land use in the premises and properties **Yes** -> see indicator **No**	Proportion of ➲ Sealed land ➲ Unsealed land ➲ Natural or semi natural land (nature-oriented design) *In % of the corresponding total area*
Does the company / organisation have a management plan to support and protect nature oriented areas of the corporate site / properties owned, leased or managed? **Yes** -> see indicator **No**	Proportion of areas with nature-oriented design: *Size of areas subject to nature oriented design (m² or ha) and Percentage of the corresponding total area (as %)*
Are the internal or external responsible persons for the maintenance informed / instructed to implement an extensive and biodiversity-friendly maintenance of the nature-oriented sites? **Yes** -> see indicator **No**	Internal job descriptions or contracts for maintenance services with appropriate instructions
Do the buildings have green roofs and / or green facades? **Yes** -> see indicator **No**	Proportion of roofs and / or facades with vegetation: *Size of green areas (m²) and* *Percentage of the corresponding total area (as %)*

Did the company / organization implement a monitoring system to evaluate the biodiversity performance of the premises / properties **Yes** -> see indicator **No**	*Simple but meaningful monitoring system implemented* *Yes / No* *Number of habitat types and / or key indicator species monitored*
Are there restored habitats and/or areas to offset business-related interference in natural and landscaped environments that exceed the statutory obligations? **Yes** -> see indicator **No**	*Total proportion of habitats and/or areas of offset in excess of the statutory obligations as a percentage of the total area used by the company (ha)* *Size of offset areas (m² or ha) and* *Proportion of these spaces as a percentage of the total surface area used by the business (as %)*
Are there restored habitats and /or areas to offset the impacts on nature / biodiversity of the business / organisation's supply chain? **Yes** -> see indicator **No**	*Total proportion of habitats and/or areas of offset as a percentage of the land used by the supply chain (ha)* *Size of offset areas (m² or ha) and* *Proportion of these spaces as a percentage of the total surface area used by the supply chain of the company (as %)*

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EMAS
GEPRÜFTES
UMWELTMANAGEMENT

10 PURCHASING AND SUPPLY CHAINS

10.1. Why is action needed?

When defining its environmental aspects under EMAS, organisations should adopt a life cycle perspective. Even if the direct impact on biodiversity is limited, significant indirect aspects arising from suppliers should also be considered - if the organisation can reasonably influence these.

Each year, approximately 60 billion tonnes of raw materials are consumed worldwide, i.e. almost 50% more than 30 years ago. There are no signs of a reversal of this trend. However, the provision of raw materials not only results in a high consumption rate of natural resources but also in the production of emissions and waste, which also pose a threat to nature. This is also documented by the results of a study published in the journal Nature, which concludes that Germany's biodiversity footprint is mainly created abroad, as a result of the country's international trade - and this would generally be the case across the EU. The study specified several hundred species that had been lost as a direct result of Germany's foreign trade (Lenzen et al. 2012). The actual number may actually far exceed that cited in the study.

With the exception of businesses in the primary sector, the main negative effects on biodiversity caused by businesses are usually associated with their supply chains. This may take the form of deforestation to obtain agricultural land, mining to extract raw minerals, the construction of a hotel in an area of high ecological value, the planting of monoculture forests for paper and furniture production or the harvesting of wild plants from their natural habitats to obtain medical active substances: almost all raw materials and (intermediate) products procured by the purchasing department of a business are in some way associated with biodiversity-related environmental effects.

A business's procurement division is thus an important corporate interface at which measures to improve environmental biodiversity performance can be introduced. But not only will the reduction of negative effects contribute to this. Wherever the existence of natural habitats and ecosystems is threatened, for example as a result of overexploitation due to a lack of alternative income sources for local population groups, it has been shown that the sustainable use of biodiversity can create strong incentives to maintain such environments. This is particularly true when local population groups appropriately share in the corresponding value-creation processes used to obtain raw materials. With regard to genetic resources, there are statutory international specifications that require the consent and involvement of local groups in the use of such resources (UN CBD – Nagoya Protocol). However, these specifications only apply to states that have ratified this protocol. Ratification processes are ongoing; so far more than 80 parties have become members (Status October 2016). The EU ABS Regulation applies from 12 October 2014 (see also Chapter 16).

10.2. Challenges

The main challenges are the traceability of raw materials, to know the supply chain, to understand its effects on biodiversity and to take effective steps to reduce negative effects. The point of departure for any form of biodiversity management by the purchasing division is thus to obtain relevant information about the potential effects of the raw materials, products or services obtained. Various sources of information can be used for this purpose.

The first step should be to obtain an overview of the type and volume of the most important resource input required to realise the company's activities. This overview would be needed to conduct a biodiversity risk analysis for each of the most important resources. Where a certain input is an unprocessed biological or mineral raw material, the immediate next step should be the determination of the geographical origin of the raw materials used. In the case of more complex intermediate products, their composition would need to be checked and screened for the presence of potentially critical raw materials.

Studies and tools to support the risk analysis

It is very likely that the supply chain management of the company will be overstrained with the task to realise a risk analysis of the most important raw- and other materials in regard to their impacts on biodiversity. The company is well advised to use available tools and studies, and to include external experts for the realisation of the analysis. Furthermore, it is important to communicate results and lessons learned to the persons responsible for the product design. They should confront the challenge to identify alternatives for those materials with a high risk and no available alternative sourcing.

Every day there are risk assessments for more and more sectors and/or raw materials available. IUCN conducted an assessment for the apparel sector value chain for Hugo Boss. One of the results:

Hugo Boss - Apparel stage of value chain
Raw material for natural fibre: Fibre for fabric from farmed crops. Examples: cotton, flax, hemp

Loss, degradation & fragmentation of natural habitats	Excessive nutrient loads (especially nitrogen & phosphorous) & other forms of pollution
HIGH RISK:	**HIGH RISK:**

HIGH RISK:

High probability of impact:

When sourcing from regions with at least one of the following:

a. Weak environmental regulations, particularly for natural habitats

b. Water scarcity

c. Cumulative impacts from multiple land uses are contributing to deforestation pressures in areas of cotton production

d. If areas of expansion or replacement of food crops by cotton are in food insecure regions, there is also a high likelihood of negatively impacting food security.

High magnitude of impact:

Irreversible loss of natural habitat through conversion and fragmentation from expansion, or irreversible degradation from reduced water availability for natural habitats due to diversion for irrigation.

Impact would be globally significant if expansion, degradation (incl. unsustainable water management) or fragmentation is negatively impacting Key Biodiversity Areas (KBAs: sites contributing significantly to the global persistence of biodiversity).

KBAs are present in virtually all countries and oceans (but only 56% of KBAs globally have legal protection).

HIGH RISK:

High probability of impact:

When sourcing from regions with at least one of the following:

a. Weak environmental regulations, particularly for pollution and pesticide management

b. Cumulative impacts from point and nonpoint sources of pollution, particularly nitrogen and phosphorous from agrochemicals, are contributing to excessive nutrient loads in waterways and soil

High magnitude of impact:

Excessive nutrient loads in waterways and/or pesticides impacting native wildlife and local water resources.

Impact would be globally significant if excessive nutrient loads and other forms of pollution are negatively impacting Key Biodiversity Areas (KBAs: sites contributing significantly to the global persistence of biodiversity). KBAs are present in virtually all countries and oceans (but only 56% of KBAs globally have legal protection).

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Climate change (CC), including acidification of the oceans	The impact of invasive alien species on ecosystems
Impacts to CC: RELATIVELY LOW; **Impacts from CC: HIGH** **Probability and magnitude of impact:** Cotton production both contributes to climate change and is at risk from its impacts. On the contribution side, GHG emissions from cotton production vary greatly across countries. Cotton production contributes to between 0.3% and 1% of total global GHG emissions (ITC 2011). GHG emissions in the cotton value chain are mainly derived from the consumer use phase (30%–60%) and manufacture (20%–30%). Emissions from cotton production amount to only 5%–10% of the total emissions of the value chain. Thus, while the likelihood of the impact is high (i.e. cotton cultivation does contribute to climate change through GHG emissions), the magnitude of the impact from cotton cultivation is low (as it is not a large contributor of emissions compared to other crops). On the other hand, the likelihood and magnitude that cotton production will be impacted by climate change is high, because: ⊃ Agriculture is extremely vulnerable to climate change. Higher temperatures eventually reduce yields of desirable crops while encouraging weed and pest proliferation. Changes in precipitation patterns increase the likelihood of short-run crop failures and long-run production declines. ⊃ Climate change will affect cotton production as a result of higher concentrations of CO_2 and warming average temperatures. Both these changes will set off a series of other actions that will have direct and indirect impacts on cotton production, for example through water availability and the incidence of cotton pests and diseases (ITC 2011). Indirect impacts can include the displacement of cotton production to forest frontiers resulting in habitat loss and GHG emissions (known as indirect land use change in the bioenergy sector).	Cotton is not an invasive species known to negatively impact native ecosystems (GISD), but cotton monocultures could harbour invasive species.

Source: IUCN (2016): Assessment for the apparel sector value chain of Hugo Boss.

Next to the type and volume of the resources used, the most detailed information available on the actual local production conditions should be obtained for those raw materials. Information on the biodiversity risks of their production and extraction should also be acquired (see also Chapter 11 "Raw materials").

Biodiversity hotspots also play an important role next to the factors mentioned above. The greater the variety of species and ecosystems in the region of origin of a certain raw material, the higher the risk of potential negative effects. Global or regional overview maps of species diversity can serve as an aid during an initial evaluations. Another important question is whether biological raw materials are being obtained from regions with a water shortage or high levels of soil erosion.

Traceability of material and raw material is a big challenge for nearly all business sectors because of the complexity of global supply chains and commodity markets. More and more sectors, e.g. food and cosmetics, are building direct supply chains and buying raw material directly from the producers. Companies from other economic sectors are creating sustainable sourcing databases online, evaluating the traceability of ingredients.

Companies of many sectors rely on standards and labels to assure a certain environmental quality of the cultivation or extraction of a raw material. But so far, only few standards for few economic sectors include sound criteria for the protection of biodiversity: An increasing number of standards and labels for the food sector have effective biodiversity requirements. FSC certification for wood and for

paper prioritises the protection of especially valuable forest areas, including both ecological and social values. To achieve this, FSC developed the concept of High Conservation Value Forest (HCVF).

Various concepts have been developed by nature conservation organisations in cooperation with research institutions to evaluate the wealth of biodiversity in certain areas and regions that do not necessarily have protected status. Some well-known concepts are that of the High Conservation Value Area (HCVA; Forest Stewardship Council) and the Key Biodiversity Area (KBA; International Union for the Conservation of Nature – IUCN). More detailed information and additional classification concepts can be obtained on the A-Z Areas of Biodiversity Importance portal (www.biodiversitya-z. org) and the IBAT for Business (www.ibatforbusiness.org) fee-based website. Another option is to contact national and international nature conservation agencies. Once the sites of origin have been identified, it can be verified whether they are located within or in the proximity of conservation areas. The corresponding information can be obtained from national en-

vironmental authorities and environmental organisations and from relevant web portals such as www.protectedplanet.net.

Such analyses may be very expensive, especially if a business relies on a high number of resource inputs in order to render its services. In this case, it may be advisable to first concentrate on the biodiversity-related sustainability hotspots within the delivery chain. Any corresponding priority areas should defined on the basis of clear and transparent criteria. External stakeholders with the relevant knowledge can be involved in such processes.

An example of this is the cooperation between the flavouring and fragrance producer Symrise AG and the environmental NGOs Union for Ethical Biotrade (UEBT) and Global Nature Fund. In joint efforts, an evaluation of raw material portfolios took place to identify supply chains with importance to biodiversity. One important approach is the backward integration and sustainable use of biodiversity via collaboration with producers and local communities in regions of ingredient origin.

◼ POSITIVE EXAMPLE » Symrise Group

By establishing the Biodiversity Agenda 2020 and as a member of UEBT, the Symrise Group has undertaken to ensure that its procurement practices progressively promote species and ecosystems protection, respect traditional knowledge and guarantee fair sharing of any benefits obtained. The 2020 targets of the company include: **1.)** All local growers directly supplying to Symrise are assessed with regard to their practices on ethical sourcing of biodiversity and action plans are in place; **2.)** Strategic supply chains are increasingly assessed with respect to the ethical sourcing of biodiversity, and action plans are in place for these supply chains.

Source: Symrise AG 2015.

The Natural Capital Protocol: Support for the identification of natural capital hot spots in corporate supply chains

The Natural Capital Protocol is a standardised framework to identify, measure and value direct and indirect impacts (positive and negative) and/or dependencies on natural capital. With its four iterative stages (Frame, Scope, Measure and Value, and Apply), it involves the identification and measurement of biodiversity as both part of the natural capital and also as the basis that underpins ecosystem services.

The natural capital assessment offers several potential business applications, like the risk assessment along the supply chain. Furthermore, the Protocol is designed to apply the results and inform management and operating decisions. This includes the integration of identified risks and opportunities in standard business processes like raw material procurement.

To support the purchasing and sustainability department in the risk analysis and to increase traceability throughout the supply chain, the Natural Capital Protocol provides an overview of necessary evaluation steps. Through the Scope stage the user determines material elements of natural capital and important stakeholders that need to be engaged in the assessment. The measure and value stage guides the user on a diverse set of assessment methods.

Kering Group supported the development of the Natural Capital Protocol as a pilot tester

With its Environmental Profit and Loss Account, the Kering Group assessed the environmental impacts generated in their own operations (7%, € 52.4m) and in the supply chain of their products (93%, € 740.4m) in 2014.

The Natural Capital Assessment supported Kering in the identification of groups of raw materials with the highest impacts (leather and textiles from plant fibres, synthetics and animal fibres) as well as the determination of major categories of environmental impacts (land use and greenhouse gas emissions).

The mapping of the supply chain and the collection of primary and secondary data from the Kering brands and suppliers were important steps of the assessment. The mapping of the supply chain and production processes supported Kering in the identification of related risks and dependencies. Next to other routes, Kering collected data via a life cycle assessment and sending out surveys to suppliers.

The breakdown of the environmental impacts and key drivers helped Kering in the development of measurements for each tier. As animal rearing for leather and fabrics is a key impact driver in the raw material production, Kering developed a Smart Sourcing Strategy that for example supports the identification of low-impact leather suppliers and the evaluation of current sourcing practices to find opportunities for improvements (Kering 2015).

Other products than raw material and material

The purchasing department might also be responsible for office material, food and beverages in the canteen, cleaning products and other goods needed in the company. Biodiversity should be considered here as well. Normally, the purchasing department relies on standards and labels – from the Blue Angel for phones, the EU Ecolabel for sanitary cleaners up to bio-labels and fair trade standards for food, coffee, work wear etc. All products certified with an ecolabel or fair trade standard are produced in a more environmental friendly manner avoiding pollution, reducing CO_2 emissions etc. This contributes to reducing two of the main causes for loss of biodiversity: Contamination and climate change.

10.3. Feasible targets and measures

The purchasing division is not only responsible for obtaining information, but can make a substantial contribution to a business's biodiversity performance by promoting the informed selection of production factors and effective cooperations with suppliers.

Next to quality or commercial viability aspects, the purchasing division should thus make use of binding sustainability criteria when it comes to biodiversity, necessitating close cooperation with strategic management and the corresponding legitimation.

With regard to cooperation with suppliers, the following steps can be gradually introduced:

- All suppliers should be informed that the protection of biodiversity is a priority of the business

- Biodiversity-related sustainability criteria can be incorporated in procurement guidelines and supply contracts, based on e.g. relevant certifications, standards, ecolabels, private initiatives/cooperations

- Suppliers can be asked what activities, instruments and systems they use for the protection of the environment and biodiversity, for example by drawing up corresponding questionnaires

- Support and cooperate with suppliers to help improve their environmental performance through capacity building (by means of training for example)

- Auditing (externally if necessary) of 'risk suppliers', listing of strengths and weaknesses and identification of potential for improvement

- Performance monitoring on the basis of corresponding indicators (see below)

- If necessary, adapt product composition to remove components that cannot be sourced sustainably (e.g. for the food industry, adapt recipes to remove unsustainable ingredients)

Of course, labels and standards that provide for a certain predefined environmental performance with regard to energy, water, waste or cleaning also make a contribution towards the conservation of biodiversity, as such certified

products and services are particularly resource-saving and climate-friendly. This is the reason why the indicator 'percentage of certified suppliers/products' is also relevant to the topic of biodiversity preservation. The medium-term goal should be to incorporate biodiversity-related criteria in the business's own purchasing and supplier specifications.

Unfortunately, to date no comprehensive check list has been drawn up that could be used by procurement or the product manager in order to prevent negative effects on biological diversity.

In 2014, 20 standards that prevent to the foodstuffs sector were analysed to determine their relevance to biodiversity and recommendations were prepared in order to improve the extent to which standards and labelling protect biological diversity. The findings are of particular relevance to the foodstuffs sector. The project was supported by the REWE Group and financed by the Federal Agency for Nature Conservation. The baseline report and recommendations are available online at:
http://lebensmittelstandards.business-biodiversity.eu.

Canteens offering 'biodiversity friendly' meals made of organic products, MSC-certified fish and fair trade certified juices, tea or coffee are perfect places to sensitise staff towards the importance or biodiversity. For example, a weekly or monthly 'Biodiversity Day' could even address the agro-biodiversity that is concerned with products from regional breeds and/or

traditional vegetables or cereals, which are also in a dramatic decline. A small exhibition or leaflets on the table would inform employees about the objectives and measures of the company.

The extent to which labelling and competitions within the tourism industry could help protect biodiversity was also investigated and recommendations designed to enhance biodiversity performance were developed. The recommended biodiversity-relevant criteria applicable to hotels, tour operators and destinations can be downloaded at:
www.business-biodiversity.org/knowledge (=>Industries => Tourism).
Interested stakeholders can also consult the guidance available for the EU ecolabel for campsites and tourist accommodation and the EMAS SRD for the tourism sector, which contain several criteria / best practices relevant to biodiversity protection.

Where the corresponding standards do not guarantee the desired sustainability in the field of biodiversity, businesses may find other ways of positioning themselves in a competitive market. A case in point is the sustainability strategy of the Round Table on Sustainable Palm Oil, which has attracted considerable criticism. This is regarded as an inadequate compromise solution by many organisations. Werner und Mertz GmbH, manufacturers of the Frosch brand of cleaning agents, is thus attempting to replace palm oil-based surfactants with alternative products:

■ POSITIVE EXAMPLE » 'Frosch' products, Werner und Mertz GmbH

The project 'Surfactants derived from European plants' is intended to set new standards even beyond our sector. Instead of using palm kernel oil-based detergents as an alternative to mineral oil-based surfactants, plant-derived surfactants of European origin will be increasingly used. This is an important contribution towards the protection of tropical regions and valuable resources.

Source: www.frosch.de

Voluntary commitments and membership of initiatives aimed at the preservation and sustainable use of biodiversity can be used by suppliers to provide buyers with information about their responsible attitude and readiness to cooperate on the subject of biodiversity. Next to cross-sectoral initiatives for the preservation of biodiversity, such as 'Biodiversity in Good Company' and the European Business and Biodiversity Campaign, there are also sustainability projects initiated

by corporate associations that explicitly define biodiversity targets. When implementing voluntary undertakings, organisations should ensure that these strictly conform to the requirements of the 'mitigation hierarchy' (avoidance rather than minimisation, restoration or offsetting). An overview of relevant initiatives can be found here:
http://ec.europa.eu/environment/biodiversity/business/links-to-platforms/index_en.htm.

10.4. Sample key indicators

The following table identifies important courses of action that can be implemented in 'Procurement / Supply Chain'.

The key data and indicators make it possible to quantify the goals and to monitor developments.

Example key indicators: procurement and the delivery chain	
Relevant issues	**Key data / indicator**
Are there risk analyses of the most frequently used or the most important raw materials and natural resources of the business with regard to the potential effects of cultivation and extraction on biodiversity? **Yes** -> see indicator **No**	Number of raw materials/products/services investigated with regard to their effects on biodiversity *Total number* *Percentage of total number*
Are the suppliers/service providers involved in biodiversity management, for example by means of regular communications or on-site information? **Yes** -> see indicator **No**	Number of suppliers informed of the relevance to the business of its biodiversity management programme *Total number* *Percentage of total suppliers*
Are suppliers trained in biodiversity-relevant aspects? **Yes** -> see indicator **No**	Regular training Yes/No Suppliers/service providers who have participated in advanced training programmes in biodiversity-relevant aspects *Total number* *Percentage of total number of suppliers*
Do the business's procurement guidelines include criteria applicable to biodiversity? **Yes** -> see indicator **No**	Number of products/services for which there are procurement specifications with biodiversity criteria *Total number* *Percentage of total number of products*
Does the procurement prefer products and services certified with an ecolabel / organic standard / fair trade label? **Yes** -> see indicator **No**	Number of products / services with ecolabel, bio-label, fair trade certification? *Total number* *Percentage of total number of products*

11 RAW MATERIALS

This chapter specifically addresses the organisations active in the extraction of raw material. However, as mentioned in the chapter addressing procurement, an EMAS organisation that defines its environmental aspect by applying a life cycle perspective should also have a close look to the origin of its raw material. This issue could become a significant indirect environmental aspect if the organisation can reasonably influence the origin of its raw material and its effect on biodiversity.
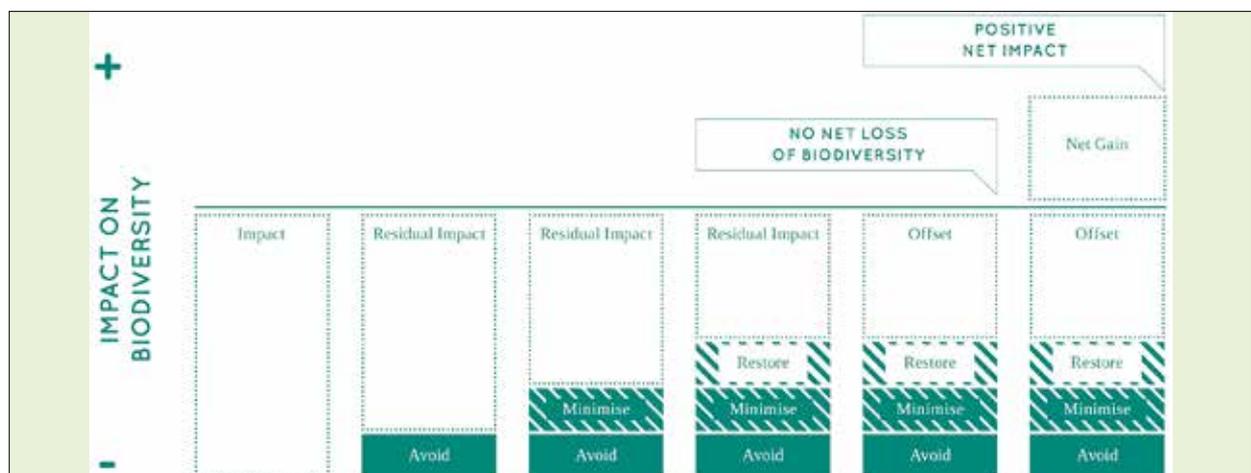
11.1. Why is action needed?

The extractive industry is of key importance to a modern society. Almost all sectors depend on the acquisition of industrially mined metals, minerals, earths and gravels. However, it is not only ores and building materials that constitute valuable resources; the natural environments from which these materials are obtained have an equal potential. Sustainable resources and fuels (coal, oil and gas) will not be explicitly covered in this chapter.

In a densely populated region like the European Union, careful planning is required when opening, expanding and restoring extraction sites. Minerals and ores also often occur in very biologically diverse regions outside Europe. The World Resources Institute assumes that some 20% of all existing and planned mining sites are located within or on the perimeters of conservation areas (WRI 2003). Responsible mining activities must be combined with efficient restoration and regeneration at extraction sites in order to ensure the protection and promotion of biodiversity. The course for biodiversity management needs to be charted at an early stage, when planning the raw material yields.

Apart from so-called no-go areas, in which raw material mining should be completely prohibited - irrespective of whether this is a legal requirement or not - it should be the aim to ensure that all operations conform to the avoidance and mitigation hierarchy (see figure). The purpose of the avoidance and mitigation hierarchy is to ensure that interference with nature and the environment is averted, reduced and reversed as far as possible and that any remaining adverse effects are offset or replaced by something that is similar or of equal value. The Business and Biodiversity Offset Programme (BBOP) has developed a comprehensive set of standards and guidelines in this respect, and these are applied worldwide:
http://bbop.forest-trends.org/pages/guidelines

11.2. Challenges

The worldwide rise in the demand for raw materials makes it probable that the pressure to mine new areas will continue to increase. Conflicts between nature conservation and mining arise in particular in connection with the questions of whether mining in a biologically diverse area would be sustainable or whether certain regions should be protected against incursion of all kinds. Within this context, various companies in the mining industry have already agreed to exclude the possibility of any raw material mining at UNESCO world heritage sites. Within the EU, raw material extraction in Natura-2000 conservation areas remains a contentious issue. The industry itself believes that it should be permitted to carry out mining if it observes certain requirements designed to ensure the conservation of valuable ecosystems. Nature conservation associations, on the other hand, are calling for a complete prohibition on raw material mining in Natura-2000 areas, as these areas make an important contribution to the maintenance of biodiversity in the EU.

The raw material industry emphasises that it makes nature conservation a priority during the extraction phase and the restoration or natural succession of mining sites; and that former sites represent valuable biotopes for animal and plant species threatened with extinction. These species often need extreme habitats which are in dramatic decline in Europe. It should be noted however, that although restoration or natural succession may produce high-quality new habitats for elements of biodiversity other than the original ones, which may also have been extensive. Moreover, restored or naturally succeeded landscapes often do not meet the expectations and requirements of the local inhabitants of the surroundings - they would prefer to see the original landscape. But there are also positive examples regarding the involvement of the local population leading to solutions with benefits for nature and biodiversity as well as for the local population, e.g. recreational offers.

Businesses need to aim at achieving a net increase in biodiversity when they cease operations on a certain site (BBOP 2012).

■ **POSITIVE EXAMPLE » Industrieverband Steine und Erden Baden-Württemberg (ISTE)**

ISTE and its more than 600 member businesses – mainly small and medium-sized companies – are active in the preservation of biodiversity since some time and have set themselves ambitious goals. Thus ISTE and the NABU State Association for Baden-Württemberg have been issuing joint statements on raw material mining since 2000. ISTE is currently joining forces with external consultants to compile fact sheets that propose measures to increase biodiversity during various types of mining and after the finalisation, such as quarrying and both wet and dry gravel mining. The fact sheets can be downloaded from
http://www.business-biodiversity.eu/default.asp?Lang=DEU&Menue=236

ISTE developed and tested a biodiversity database in which the data obtained from the monitoring of extraction sites will be entered on a regular basis. In combination with information about any conservation areas or biotope corridors, the database will make a major contribution to the improvement of biodiversity management systems during mining; and to the improved restoration of the site once extraction has been completed. The data are also used to monitor the effectiveness of the measures implemented, i.e. whether gains in biodiversity have been achieved or not (www.biodiversitaet-deutschland.de).

By using systematic and long-term monitoring, businesses in the quarry and pit industry can prove a positive contribution to the preservation of biodiversity and secure their commercial base. This includes advantages when applying for mining permits, an improved reputation and the support of the local population in the mining region. At present, public bodies are not adequately taking biodiversity factors into account when awarding tenders. Like other environmental aspects, the conservation of biodiversity should be a criterion for municipalities and authorities when it comes to awarding

tenders. To date, the inclusion of the corresponding criteria in the Green Public Procurement Criteria of the EU has been thwarted by the lack of a label or standard to document biodiversity-friendly mining. It will be up to the EU Member States and the industry as a whole to create this. A recognised standard or certified environmental management system focusing on biodiversity would make it possible for those responsible for tenders in municipalities and authorities to give priority to obtaining raw materials from businesses committed to the preservation of biodiversity.

11.3. Feasible targets and measures

Every business should develop a biodiversity strategy and pursue it over the long term. The strategy and goals should be aimed at defining those locations in which the business will not carry out extraction activities (no-go areas). In the case of globally active organisations, UNESCO world heritage sites and high conservation value areas should be included in the no-go areas. In order to determine whether existing and proposed sites are located in ecologically valuable regions, the IBAT database of the World Conservation Monitoring Centre may be a useful instrument at a global level. It contains extensive map material and provides information about the conservation status and ecological value of the areas **www.ibatforbusiness.org.** As a further aim, businesses should commit themselves to providing for a net increase in biodiversity and the compulsory use of the avoidance and mitigation hierarchy at all extraction sites.

Conservation of biodiversity must always be a location-based programme. If raw material suppliers collaborate with local authorities, nature conservation organisations and/or scientific institutes in mining areas, they can profit from the experiences of their cooperation partners and obtain their assistance in conserving and supporting locally specific ecosystems. These partners will also help them develop a biodiversity management plan with a concrete action plan for a particular site.

There are many opportunities for creating new habitats at former mining sites, thus promoting biodiversity. The following are important goals:

- ◒ The creation of conditions for the spontaneous settlement of animal and plant species
- ◒ The promotion of natural development processes
- ◒ The reduction of planting and cultivation

The training and involvement of the employees of a business are important for ensuring the success of biodiversity conservation programmes.

Long-term monitoring of the environment helps to analyse the effects of the actions taken so they can be modified where necessary.

Further information: Biodiversity fact sheets for wet and dry mines and quarries. Download from: biodiversity.eu/default. asp?Lang=DEU&Menue=236

11.4. Sample key indicators

The following table identifies relevant actions that can be implemented in the sector discussed in this chapter. The indicators make it possible to quantify the goals and to monitor developments.

Examples of relevant questions on and indicators related to raw materials	
Relevant issues	**Key data/Indicator**
Has the business defined no-go areas? **Yes** / **No**	....
Does the business make use of the avoidance and mitigation hierarchy? **Yes** / **No**	....
Has the business undertaken measures to achieve a net increase in biodiversity at the end of its active operations (net positive impact)? **Yes** -> see indicator **No**	Baseline has been documented. Monitoring system is in place. Monitoring results are regularly analysed.
Has the business investigated its extraction sites with regard to their location in or near valuable ecosystems? **Yes** -> see indicator **No**	Number of extraction sites in or near valuable ecosystems as a percentage of the total number of mining sites.

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Has the business developed a biodiversity management plan and action plans for its extraction sites? **Yes** -> see indicator **No** Is implementation of the activities stipulated in the management plan, are their effects audited regularly and are the results published? **Yes** / **No**	*Number of extraction sites with a biodiversity management plan as a percentage of the total number of sites.* ....
Has the business set up a monitoring system? **Yes** -> see indicator **No**	*Number of species at the site in comparison with areas outside the site (at a distance of 500 m).*
Has an advanced training programme in biodiversity been set up for employees? **Yes** -> see indicator **No**	Regular advanced training **Yes** / **No** Number of employees receiving advanced training *Total number* *Percentage of total number of employees*
Is there an information programme for the local population about biodiversity at the site? **Yes** -> see indicator **No**	Type of programme (open day, guided tours) *Total number of participants.*

■ **POSITIVE EXAMPLE**

Heidelberg Cement has been developing biodiversity management plans (BMPs) for all its extraction sites in Europe located within or in the proximity of Natural-2000 areas since 2009.

Source: http://www.quarrylifeaward.co.uk/biodiversity-quarries/biodiversity-management-heidelbergcement/ biodiversity-management-plans

Since 2014, Heidelberg Cement organises the Quarry Life Award, an international research competition for the promotion and education of biodiversity in quarries. The categories include Habitat and Species Research, Biodiversity Management, Education and Rising Awareness and Beyond Quarry Borders. In the 3rd edition in 2016, 69 companies in 22 countries participated; the winners can be considered as positive examples for biodiversity management.

12 PRODUCT DEVELOPMENT

12.1. Why is action needed?

Product design and development are strategic instruments (see the Chapter: Strategy) and the point of departure for new value creation processes. For this reasons they are specifically mentioned as one of the issues that should be considered by EMAS registered organisations when defining their environmental aspects.

From the very beginning, product development controls the complete life cycle of a product, together with its effects on biodiversity, e.g. through the materials and composition, the production techniques, the utilisation and waste disposal profiles etc. At this stage, there are numerous opportunities to control many environmental aspects relevant to biodiversity. Product development decisions have an effect on:

- ⊙ The procurement of raw materials (see chapters 10 and 11)
- ⊙ Emissions during the product life cycle
- ⊙ The creation of waste and its disposal

It is essential to incorporate indicators of the specific influences on biodiversity in the various stages of the product development process.

General recommendations in this regard are provided in the ISO TR 14062:11/2002 technical report on 'Environmental management - integrating environmental aspects into product design and development'. However, specific product group related recommendations can also be extracted from the EU Ecolabel Criteria. Those criteria developed by environmental experts in consultation with stakeholders aim to decrease the main environmental impacts of a product over its entire life cycle and consider impact on biodiversity among different key issues such as emissions to water or land use. Similarly, the EMAS Sectoral Reference Documents will provide specific recommendation for 11 priority sectors. Among those, the documents (and the supporting Best Practice reports for each sector) addressing sectors such as 'Food and Beverage manufacturing', "Construction", or "Electrical and electronic equipment (EEE) manufacturing" recommend best practices aiming at mitigating the impact of product development on the environment. Such practices include, for instance, improving or selecting packaging to minimise environmental impact in the food and beverage manufacturing sector; including environmentally friendly water drainage systems in building design and selecting

certified wood for construction materials; or designing EEE products for repairability, reuse and recycling.

The traditional instrument for the incorporation of environmental aspects into product development is the ecological balance sheet. This method provides the option of recording selected environmental effects of all processes involved over the entire life cycle of a product and displaying them as indicators. The 'acidification' and 'eutrophication' indicators that are clearly of relevance to biodiversity are already widely used. Their regional relevance and those indicators that have a direct influence on biodiversity are currently in discussion and various projects are working on the integration of biodiversity into the Life Cycle Analysis (LCA).

In general, our industrial system procures all its mineral and fossil fuels by extracting them from the earth, while biotic energy is obtained by means of forestry and water management, agriculture and, less extensively, from wind and water. Their provision goes hand in hand with land use, which often exceeds that required for the processing systems. Thus each product development process must carefully monitor the material and geographical characteristics of its raw materials. It is equally important to estimate the trade-offs that can be achieved by increasing efficiency.

An example would be the way in which production systems with increasingly intensive land use have dramatic consequences for biodiversity, e.g. the destruction of primary ecosystems, the overuse and pollution of water bodies and soils and the import of invasive species. Moreover, they result in genetic erosion of agrobiodiversity in the agricultural sector. The move away from varied forms of farming towards an intensification and specialisation of European agriculture has resulted in a restructuring of the agrarian landscape and a loss of habitat and biosphere. Both the diversity of species and the diversity of the types and breeds within a species are steadily decreasing among both crop plants and domestic animals. Ninety percent of the calories provided by the worldwide food industry are generated from only 15 types of plants and 7 types of animals (Fairtrade Germany 2014).

To address these issues, several approaches can be implemented, such as some of the best practices suggested in the EMAS Sectoral Reference Document for agriculture: managing biodiversity at the landscape scale, managing high-nature value grassland or using locally adapted cattle

breeds. Many other best practices proposed in the Document also have beneficial effects on biodiversity in general and agrobiodiversity in particular.

12.2. Challenges

Due to the far-reaching effects of product design and development within businesses and their interaction with many other activities (e.g. procurement, transport, disposal), there is a considerable need for early and internal coordination in order to resolve potential conflicts between economic and ecological goals.

Among the goals of ecological design are material efficiency (e.g. light construction), material-appropriate design (e.g. giving priority to sustainable materials), energy efficiency (reduction in consumption, giving priority to sustainable energies), low levels of pollutants, reusability, reparability and recyclability (reduction of waste and material diversity) and degradability (biologically degradable materials).

Consistently taking these goals into account in product design usually also benefits biodiversity, in accordance with the general principle of 'less is more'. In most cases, improvement in one environmental impact will also be positive for biodiversity, e.g. reduced overall electric power consumption will decrease demand for mining or extractive raw materials (e.g. coal, uranium, oil, gas) although the local impact will vary according to grid mix (coal-heavy grids may rely on open-cast mining of lignite, for instance). At the same time however, there may be conflicting biodiversity targets, for

example a stronger emphasis on the principle of 'giving priority to sustainable fuels' may not take into account agro-ecological principles and trigger an increase in the demand for monocultures of certain energy plants, thus resulting in the corresponding consequences of soil overuse.

The necessary adjustments required for the provision of raw materials in the delivery chain were discussed in chapter 11. Smaller businesses are often not able to influence their upstream suppliers. For them, most of which are in the processing sector, the major challenges are the

- Development of innovative procedures and processes to improve resource efficiency or to avoid and reduce waste

- Safe handling of hazardous materials or genetically modified organisms and the prevention of environmentally relevant incidents

- Development of processes and technologies for the substitution of critical raw and other materials.

The latter could, for example, apply to a particular biomolecule that serves as a raw material for a cleaning or cosmetic products and that has thus far not been produced from sustainably produced organic raw materials or that has been produced from a harvested plant that is now threatened with extinction. By means of the introduction of an innovative process, it could become possible to use an alternative to this biomolecule. This means that there are sometimes close links to research and development activities in this field, as well as to product design and supply chain management.

Does natural also necessarily mean sustainable?

The skin-soothing substance alpha-bisabolol is an active ingredient of many cosmetic products. It is a natural product obtained from the wood of the candeia tree (Eremanthus erythropappus), which is indigenous to the Brazilian Mata Atlantica rainforest (a biodiversity hotspot). The candeia tree is exposed to two threats - on the one hand it is threatened by the increasing loss of the Atlantic rain forest and on the other hand by overuse of the wood by the cosmetics industry. According to the fragrance and flavouring supplier Symrise, 20,000 cubic metres of wood are required annually to meet the worldwide demand for candeia oils.

This resulted in the company taking the following decision in September 2011: "Symrise has decided to terminate the production of natural bisabolol from the candeia tree that grows in the Brazilian rain forest. As a sustainable raw material supply with candeia oil can no longer be ensured, the company will in future focus on producing highly purified, near-natural bisabolol".

https://www.symrise.com/newsroom/article/symrise-to-concentrate-on-nature-identical-alpha-bisabolol-to-protect-and-preserve-the-rainforest/

When this is viewed from the perspective of a mining or agricultural company, aspects of resource efficiency are added to the question of ecologically compatible cultivation

and extraction conditions, with the general conditions being determined by the ecological context of the region of origin.

12.3. Feasible targets and measures

For processing companies, it is relatively easy to incorporate biodiversity-relevant factors in standard environmental management programmes. Examples, such as mentioned in greater details in the (upcoming) EMAS Sectoral Reference Documents and Best Practice reports, include: performing an environmental sustainability assessment of products and/or operations (food and beverage); and managing biodiversity at site level but also along the supply chain (car, EEE manufacturing).

In the case of those producing mineral raw materials, such as gravel and sand; the following rule should be applied: the more sensitive the ecological environment being used, the greater should be the motivation to strictly adhere to environmental and nature conservation specifications or to even exceed them.

Most industrialised countries have the corresponding legal, administrative and planning tools based on environmental and nature conservation legislation. It is thus possible to determine what operations are involved and how these impinge on the environment. In Europe, such tools may include the Environmental Impact Assessment (EIA), draft EIA assessments or Habitat and Special Protection Areas (SPA) assessments. Environmental incursions that have an adverse effect on biodiversity can, for example, be offset by implementing the specified activities in the areas in question. Another option is the qualitative or quantitative replacement by means of a similar offset project with a positive effect. Appropriate offset projects would, for example in Germany, be landscaping plans approved by the planning authorities or, in the case of large-scale activities, a mining and recultivation or restoration plan as part of a planning procedure or regional planning.

Those processing agricultural or forestry products not only need to take protection and promotion of biodiversity in the proximity of the cultivation and extraction locations in account but also the biodiversity on the actual production site.

Businesses should give preference to raw materials sourced from agricultural operations whose biodiversity performance has been certified to meet a recognised requirement: for example, the conservation of primary and semi-natural ecosystems, a minimum size of ecological structures (biotope corridors) and a minimum quality of biodiversity-promoting activities, no use of pesticides with a negative effect on biodiversity, optimised fertiliser management, activities to maintain soil fertility, no genetically modified plants, promotion of the diversity of species, sustainable use of water sources, no propagation of alien species and long-term monitoring based on indicator species.

There are many standards and labels for the food sector and considerable differences regarding their 'biodiversity performance'. Together with standard organisations and companies, Global Nature Fund and Lake Constance Foundation elaborated recommendations for standards to improve their criteria with relevance for biodiversity protection. These recommendations are also valid for companies of the food sector with their own supply chain requirements. Requirements should be included into the individual sourcing guidelines and/or standards should be screened to the extent their criteria are in line with the recommendations. See:
www.business-biodiversity.eu (=> Activities => Food Industry)

12.4. Sample key indicators

The following table identifies important courses of action that can be implemented in the sector discussed in this chapter. The key data and indicators make it possible to quantify the goals and to monitor developments.

Examples of relevant issues and indicators related to product development and production

Relevant issues	Key data/Indicator
Ecological environment/the biodiversity-related context of production. **GRI EN 11:** Cultivation or extraction area or production site located within or in the proximity of conservation areas or non-conservation areas with a high biodiversity value? **No** **Yes** -> see indicator	The business has incorporated procedures/measures for the conservation of the protected area/area with a high biodiversity value into its management system. These procedures/measures have been elaborated together with conservation experts and are subject to regular monitoring.
Ecological environment: Is a cultivation or extraction area or production site located within or in the proximity of a water conservation area or in areas where water is in short supply? **No** **Yes** -> see indicator	The business has incorporated procedures for the sustainable use of water resources into its management system or promotes the establishment of a corresponding management system by the relevant authorities. Fresh water consumption per product (in cubic metres) Fresh water consumption per sale (in cubic metres) The sustainable use of water sources (ground water, surface water) is being regularly audited by internal auditors and in the context of the EMAS verification.
Does the company offset/compensate the use of natural resources/ecosystem services? **No** **Yes** -> see indicator	Size of the restored land and/or offset areas beyond legal requirements (in hectares). The size of restored and/or offset areas beyond legal requirements as a percentage of the land area controlled by the company (in %).
Does the product development division consider/discuss biodiversity related aspects? **No** **Yes** -> see indicator	The business has a commitment/specifications regarding product development and the protection and promotion of biodiversity (environmental policy, environmental programme, sustainability report). The business uses tools for product development where biodiversity related aspects are considered (e.g. LCA). The business is involved in projects/initiatives to further develop a sound consideration of biodiversity in tools for sustainable product development. Percentage of suppliers who deliver in compliance with biodiversity-related criteria for the supply chain.

Are indirect effects of production or processing on biodiversity considered? (e.g. the intermediate product wood does not come from a certified timber company or gravel comes from a quarry that has no biodiversity management, bananas are not certified with a standard which includes biodiversity criteria) **No** **Yes** -> see indicator	An analysis of the direct and indirect effects of the production process has been realised/is taking place. Total number of products analysed. Number of products analysed as a percentage of the total number of products (in %)
Emissions that affect biodiversity (e.g. acidification, eutrophication) and consumption of natural resources (e.g. water, land use) are continuously reduced. **No** **Yes** -> see indicator	Indicators of the environmental programme are monitored through the environmental management system. The business uses an ecological balance sheet

13 TRANSPORT AND LOGISTICS

13.1. Why is action needed?

Transport processes are very energy- and resource-intensive. Negative effects such as the emission of CO_2 or other greenhouse gases and the fragmentation of habitats have been ignored for a long time. Experts agree that the current level of mobility of goods, services, information and persons is not ecologially sustainable.

This chapter covers the transport of goods by rail and road. Some of the negative effects described also apply to the shipping and air freight industries. To ensure better comprehensibility, the effects of physical movements (transport) and supportive and strategic processes (logistics) will be discussed separately below. Potentially negative effects of transport are:

- Land use: The construction and use of infrastructure with sealing of surface areas can result in a total loss of the natural soil properties (soil fertility, oxygen production, habitat, decomposition), as well as in a partial loss of habitats in the adjoining areas (the marginal effect or 'road effect' zone).

- Collision and mortality: In the past, death by collision was the most common cause of the death of otters, stone martens, wild cats and other animals and was thus the main reason for their inclusion in the Red List species at risk of extinction. Several variables such as movement speed, time of day at which activity takes place, noise sensitivity, proliferation, type of population control or activity ranges influence whether 'only' individuals or an entire species is at risk of mortality due to potential collisions.

- Fragmentation and separation: The access of species, among other things to resources, (seasonal) habitats and partners is rendered more difficult by the infrastructure and its use. Mortality is the worst direct consequence. Shrinking genetic variability results in lower adaptability, with inbreeding being the worst long-term effect. This also affects plants, as spores and seeds are often disseminated by hooves or fur. In many cases, hydrological systems can also be disrupted, resulting in changes to downstream ecosystems.

- Invasive alien species: These are semi-intentionally introduced through lack of vigilance, but can also be unintentionally spread by transport. In particular, invasive marine species including microbes or larvae in ships' ballast water may cause serious problems to native species. Only for Europe, costs of invasive species introduced by ballast water are estimated at 2 billion Euro annually.

- Erosion: Both unnaturally and naturally occurring substances may, for example, be loosened from roads by rain, vehicles or wind and moved (desertification) or subsequently deposited elsewhere (sedimentation). This can have particularly negative effects on sensitive ecosystems such as particle-absorbing water bodies.

- Pollution: Emission of various substances (including fine dust, ozone, carbon monoxide, volatile organic compounds, nitrogen oxides, greenhouse gases, sulphur, rubber particles, road salt, waste, de-icing liquids, unburned hydrocarbons) or other forms of pollution (including light, noise, heat, vibration) impair the environment for animals. They make areas infertile for vegetation (see eutrophication) or at least change competitive relationships. They also significantly contribute towards climate change by releasing greenhouse gases.

- Life cycle effects: These are the effects attributable to infrastructure and vehicles and caused by the user, the consequences of which are felt elsewhere, such as resource and energy consumption, recycling and devaluation.

The potentially negative effects of complementary logistics are:

- Energy consumption (technology, lighting, temperature control)

- Pollution (emissions and other forms)

- Land use

- Life cycle effects of machines, buildings and packaging materials (resources, energy, recycling).

13.2. Challenges

Individual businesses can only influence the negative effects on biodiversity to a very limited degree. This is partly because transport activities are frequently contracted out, but also because even environmentally compatible modes of transport will adversely affect ecosystems in an irreversible manner from a certain volume onwards. Next to the options to reduce environmental effects, the most effective strategy

- and at the same time the greatest challenge - is to reduce transport distances.

This is not a straightforward matter, as it results in a series of elementary structural conflicts, both for businesses and for the national economy. Regionalisation equates to local cooperation with a limited turnover and is in conflict with existing market economy goals such as the growth of business, external trade and national economic performance and the implicit hedging or expansion of capital assets.

13.3.   Feasible targets and measures

- ⊙ The most difficult, but also by far the most effective strategy is to reduce transport distances, for example by adapting product ranges and journeys, optimising loads or introducing more regional sourcing and selling.

- ⊙ The use of more environmentally-friendly modes of transport should generally be preferred and, as this is a time-related aspect, the production planning and purchasing divisions need to be involved.

- ⊙ To reduce the consumption of pollutants and fuels, it may prove effective to replace the vehicle fleet, taking its service life balance sheet into account.

- ⊙ When it comes to land use and especially to a reduction in the fragmentation and separation effect, roads that are area- and landscape-efficient, i.e. those with light and heavy traffic, are to be preferred, thus contributing to the concentration of traffic on transport routes that incorporate solutions such as green bridges.

- ⊙ To avoid collisions, traffic signs and speed limits would need to be carefully observed, especially at certain times of the day.

- ⊙ Upstream suppliers and downstream hauliers should be informed by the business that it considers the preservation of biodiversity to be an important priority. They should be asked about the measures they use to conserve biodiversity. With respect to seaborne trade, requirements for ocean carriers should include the operation of ships with a Ballast Water Treatment System. The Treatment System should meet at least the requirements of the D-2 Ballast Water Performance Standard of the Ballast Water Management Convention (BWM). The ,2011 Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species" (MEPC.207(62))' should also be taken into consideration.

- ⊙ Suppliers and hauliers with an ecolabel and/or a certified environmental management system should be given preference or their use should be specified.

- ⊙ Like all buildings, new warehouses should be built on brown-field rather than green-field sites and should be highly energy-efficient. Furthermore, warehouses and premises should follow a nature-oriented design (see Chapter 9 'Business premises and property').

- ⊙ Employees in the transport and logistics divisions should receive biodiversity training.

Example indicators: transport and logistics	
Relevant issues	**Key data/Indicator**
Has the business analysed the ecological effects of transport processes? **Yes** / **No** Did this analysis go beyond CO2 emissions? **Yes** / **No**	....

Are there corporate key indicators for the comparability of product transport distances, adapted to various modes of transport? **Yes** / **No**	…….
Has an accident risk assessment been undertaken by frequency and degree/type of risk? **Yes** / **No**	…….
Is there a management plan to reduce accidents resulting in environmental damage? **Yes** -> see indicator **No**	Accidents involving environmental damage *Absolute number* *Percentage of the total number of transports* *Irreversible/severe environmental damage as a percentage of the total amount of environmental damage*
Does the company aim to procure more of its products and services regionally (≤ 50 km radius)? **Yes** -> see indicator **No**	Percentage of regional/local suppliers *Absolute number* *Percentage of total number of suppliers*
Are transport and logistics service providers actively involved in protecting biodiversity? **Yes** -> see indicator **No**	Regular information **Yes** / **No** Transport and logistics service providers who have been informed about the aim of the business to protect biodiversity *Absolute number* *Percentage of total number of transport and logistics service providers* Shipping carriers have been requested to operate fleets with ballast water treatment systems **Yes** / **No**

Does the business require suppliers, hauliers and logistic service providers to have a certified environmental management system? **Yes** -> see indicator **No**	Upstream suppliers and downstream hauliers and logistic service providers with a certified environmental management system *Absolute number* *Percentage of total number of suppliers, hauliers and logistic service providers*
Are employees in the Transport/Logistics divisions informed/trained in biodiversity-related aspects? **Yes** -> see indicator **No**	Employees in the Transport/Logistics divisions who have been trained in biodiversity-related aspects *Absolute number* *Percentage of total number of employees in this sector* *Quality/results of training: Results from feedback sheets/ surveys*

14 MARKETING AND COMMUNICATION

14.1. Why is action needed?

The consumer target group

In the chapter 'Why should businesses pay attention to biodiversity?' reference is made to the slowly but steadily increasing interest of consumers in the subject of biodiversity. Meeting the increasing demand of clients for information helps to improve a business's image – provided that the business's communications are adequate and credible. This element is particularly relevant for EMAS registered organisations, which can highlight their environmental performances with regards to biodiversity in their environmental statement.

Another important reason for communicating aspects of biodiversity is the potential effect that a wrongly used or disposed product may have on biodiversity. There are numerous examples of this, most of which are due to negligence or a lack of information on the part of the consumer, resulting in negative effects, e.g. incorrect use of pesticides or insecticides in the garden.

The stakeholder target group

The EMAS environmental statement as well as other environmental or sustainability reports are usually compiled for the representatives of stakeholder groups. Up to now, information on aspects of biodiversity has either been excluded or mentioned only in passing in such reports.

As mentioned earlier, biodiversity is indirectly incorporated as part of the EMAS key indicators through the indicator on use of land. However, depending on its environmental aspects and activities, the organisation should be much more specific and use some of the key data and indicators proposed in these guidelines in order to report on all relevant direct and indirect aspects related to biodiversity.

Today, many businesses and other organisations integrate the EMAS environmental statement into their sustainability report. Therefore the criteria of reporting standards such as Global Reporting Initiative or the Integrated Reporting Framework could also be considered for reporting on biodiversity (see chapter 14.5)

14.2. Challenges

Although studies such as the UEBT Biodiversity Barometer 2015 show that an increasing number of consumers are familiar with the concept of biodiversity (e.g. France 95%, Germany 49%), the risks of biodiversity are still nowhere near as well known as the challenges of climate change. Communication is required in order to anchor biodiversity in the minds of society and some of this communication must come from businesses.

Biodiversity is a complex interaction between ecosystems, species and genes and cannot be explained in one or two sentences. This argument is often used by those responsible for marketing/communications as a reason to avoid biodiversity as a topic, but there are numerous examples to demonstrate that such complex interactions are well understood by consumers. Information about biodiversity has the advantage that it is emotive, colourful, varied and attractive, i.e. that it has the characteristics one would wish for in successful communication.

In any case, communication on biodiversity must be credible, as is the case with all other environmental and social subjects. Where communication is not credible and appropriate, a business might find itself accused of 'green washing'.

The risk of being accused of greenwashing can be avoided by making communication transparent and factual and by getting the balance right between the core business and the activity that is being communicated. This is particularly important when it comes to the communication of projects managed by environmental organisations or other not-for-profit organisations supported by the business. There is no 'check list' on how to differentiate credible communication from greenwashing. Companies should rely on good judgement, facts and third party verification.

14.3. Feasible targets and measures

Customers, stakeholders and the general public need to be given substantial information on a business's activities to reduce impacts and to promote the protection of biodiversity. Meanwhile the EMAS Environmental Statement has been validated by the EMAS verifier and the rest of the environmental report or sustainability report should also include fact based and relevant information.

- The business/organisation should report on all significant direct and indirect impacts on biodiversity of its core activities and the measures taken to reduce negative effects. Wherever possible, targets and results should be measurable. See key data and indicators proposed in these guidelines.

- CSR activities such as the (financial) support of nature protection projects are valuable contributions, but should not be the main activity or even replace actions to reduce the negative impacts of the core business.

- Positive news should be communicated together with challenges and unresolved issues.

- Businesses can make use of their communication channels to explain the relevance of biodiversity and the threats it faces.

- Collaboration with environmental organisations and/or research institutions with skills in certain aspects is advisable as these will and can contribute towards content and appropriate communication.

- The GRI criteria and the Integrated Reporting Framework offer additional orientation for reporting on biodiversity.

- Stakeholders and customers should be regularly asked how they evaluate a business's communications on the subject of biodiversity.

- Ideally all information provided should be certified by a third-party verifier.

Businesses can appoint a person responsible for processing the feedback received from stakeholders, customers and the public.

■ POSITIVE EXAMPLE

For years, the Swiss food group Coop has been fully committed to marketing regional products, to promoting rare cultivated plants and domestic animal species and supporting organic farming. During the course of the UNO Year of Biodiversity 2010 for example, Coop made the wider public aware of the importance of the diversity of species and ecosystems. This includes the Coop wild flower campaign and Pro Natura, which has resulted in the rescue of 280,000 square metres of dry meadows rich in species. In addition, it has organised an open day for organic farms, the TV ad featuring the rapper Stress and other activities.

**http://www.coop.ch/content/act/en/principles-and-topics/main-topics/
environmentally-friendly-production/biodiversity.html**

14.4. Sample key indicators

The following table identifies important courses of action that can be implemented in the sector discussed in this chapter. The key data and indicators make it possible to quantify the goals and to monitor developments.

Examples of indicators: Marketing and communication	
Relevant issues	**Key data/Indicator**
Stakeholder mapping has been carried out. All relevant stakeholders are included in the reporting/communication on the subject of biodiversity. **Yes** -> see indicator **No**	Number of stakeholders actively involved *Number (total)* *Percentage of total number from stakeholder mapping*
The business /organisation reports on all relevant direct and indirect impacts of its core activities on biodiversity and the measures taken to reduce negative effects. **Yes** -> see indicator **No**	Targets and results are reported on the basis of meaningful key data and indicators

Customers and the general public receive information about the subject of biodiversity (production, utilisation, disposal of the product) **Yes** -> see indicator **No**	Number of customers/persons being reached Print run of journals that have published an article/advertisement Visitors to the website Qualitative: Results of a survey
Product information contains notes for end customers about the possible effects of using and disposing of the product on biodiversity **Yes** -> see indicator **No**	Number of products providing information. *Number (total)* *Total percentage of products*
Stakeholders, customers and the public are regularly asked about the content and quality of information. **Yes** -> see indicator **No**	*Number of stakeholders, customers, persons positively evaluating the information* *Number as a percentage of total persons surveyed*

14.5 Biodiversity in other reporting schemes

14.5.1 The Global Reporting Initiative (GRI)

GRI 4 Standard, a worldwide standard for reporting, includes four indicators for reporting on biodiversity.

G4 – EN11 » Operational sites owned or leased, managed in or adjacent to protected areas and areas of high biodiversity value outside protected areas

A. Report the following information for each operational site owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas:

- Geographic location
- Subsurface and underground land that may be owned, leased, or managed by the organisation
- Position in relation to the protected area (in the area, adjacent to, or containing portions of the protected area) or the high biodiversity value area outside protected areas
- Type of operation (office, manufacturing or production, or extractive)
- Size of operational site in km

- Biodiversity value characterised by:

  - The attribute of the protected area or high biodiversity value area outside the protected area (terrestrial, freshwater, or maritime ecosystem)

  - Listing of protected status (such as IUCN Protected Area Management Categories, Ramsar Convention, national legislation)

G4 – EN 12 » Description of the significant impacts of activities, products and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas

A. Report the nature of significant direct and indirect impacts on biodiversity with reference to one or more of the following:

- Construction or use of manufacturing plants, mines, and transport infrastructure
- Pollution (introduction of substances that do not naturally occur in the habitat from point and non-point sources)
- Introduction of invasive species, pests, and pathogens
- Reduction of species

- Habitat conversion

- Changes in ecological processes outside the natural range of variation (such as salinity or changes in groundwater level)

B. Report significant direct and indirect positive and negative impacts with reference to the following:

- Species affected

- Extent of areas impacted

- Duration of impacts

- Reversibility or irreversibility of the impacts

G4 – EN 13 » Habitats protected or restored

A. Report the size and location of all habitat protected areas or restored areas, and whether the success of the restoration measure was or is approved by independent external professionals.

B. Report whether partnerships exist with third parties to protect or restore habitat areas distinct from where the organisation has overseen and implemented restoration or protection measures.

C. Report on the status of each area based on its condition at the close of the reporting period.

D. Report standards, methodologies, and assumptions used.

G4 – EN 13 » Total number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk

A. Report the total number of IUCN Red List species and national conservation list species with habitats in areas affected by the operations of the organisation, by level of extinction risk:

- Critically endangered

- Endangered

- Vulnerable

- Near threatened

- Least concern

Besides the above described biodiversity indicators, the following indicator is also related to biodiversity:

GR4 – EN9 » Water Sources significantly affected by withdrawal of water

A. Report the total number of water sources significantly affected by withdrawal by type:

- Size of water source

- Whether or not the source is designated as a protected area (nationally or internationally)

- Biodiversity value (such as species diversity and endemism, total number of protected species)

- Value or importance of water source to local communities and indigenous peoples

B. Report standards, methodologies, and assumptions used.

The GRI Guidelines include further information regarding relevance, compilation, definitions and documentation sources.

14.5.2 Integrated Reporting Framework (IIRC)

The IIRC provides recommendations regarding the reporting on ‚Natural Capital' - in an even more integrated way than GRI. Natural capital – as well as reporting on all other sustainability aspects - needs to be connected with management, analysis and decision-making:

- an analysis of existing resource allocation and how the organisation will combine resources or make further investment to achieve its targeted performance

- information about how the organisation strategy is tailored when, for instance, new risks and opportunities are identified or past performance is not as expected

- linking the organisation strategy and business model with changes in its external environment, such as increases or decreases in the pace of technological change, evolving societal expectations, and resource shortages as planetary limits are approached.

According to the IIRC, natural capital includes all renewable and non-renewable environmental resources and processes that provide goods or services that support the past, current or future prosperity of an organisation:

- air, water, land, minerals and forests

- biodiversity and eco-system health

See: http://integratedreporting.org/

15 MULTI-SECTORAL: THE INVOLVEMENT OF STAKEHOLDERS IN DECISION-MAKING

15.1. Why is action needed?

Biodiversity is a complex field and the concepts of ecosystem services and natural capital do not simplify the challenge for businesses, which is to analyse and deal with the initial situation and the various influences. A business may obtain technical support from research institutions, nature conservation authorities or nature conservation organisation when it comes to determining the relevance of biodiversity, defining targets and activities, and monitoring the business's development in this field.

The Handbook of the World Business Council for Sustainable Development (WBCSD) lists external stakeholders, including NGOs, among the important target groups for the process of ecosystem assessments (WBCSD 2011). The WBCSD explicitly invites businesses to enter into creative partnerships for this purpose, for example with governments, NGOs and research institutions.

Continuous improvement of performance in the field of biodiversity protection is a corporate responsibility of businesses. Businesses can also undertake to conserve biodiversity by supporting corresponding projects and other activities. However, such commitments should always be supplementary to the statutory obligations.

Strategic partnerships with NGOs

The relationship between NGOs and businesses has changed in recent years. While intermittent cooperation and simple sponsoring were once the rule, both parties are now much more prepared to engage in dialogue and increasingly make use of cooperative strategies to avoid a confrontational approach. Businesses - and especially those active on a global scale - increasingly choose topics, projects and project partners that have a link to their own activities. Conversely NGOs actively approach businesses interested in solving certain problems, either because they have a related commercial interest or because of public pressure.

Examples of strategic partnerships:

- The Marine Stewardship Council (MSC) Initiative is an organisation established by the Unilever Group and the World Wildlife Fund (WWF) in 1997. The organisation awards a label for sustainable fishing and has thus far certified compliance with the MSC standard in the case of some 100 fishing businesses. The aim of long-term cooperation is to protect the fish stock against overfishing and thus to protect oceans and species. **(www.msc.org)**

- HeidelbergCement initiated a strategic partnership with BirdLife International in 2011. The aim is to minimise or compensate for the impacts on biodiversity on active mining sites and through future restoration. By (re)creating semi-natural habitats, quarries can not only host rare species, but can provide ecological links between preserved natural habitats that are otherwise lost within agricultural or urban landscapes. The BirdLife Partnership facilitates the exchange of knowledge and conservation expertise with HeidelbergCement. It also assists in establishing a network of essential stakeholders. BirdLife Partners located in the partnership countries can implement conservation actions in high biodiversity potential areas managed by the company in cooperation with HeidelbergCement at local, national and international levels. **(http://www.birdlife.org/europe-and-central-asia/partnership-heidelbergcement)**

- In the Lake Constance region, Pro Planet-Äpfel vom Bodensee, a joint venture between the producer association Obst vom Bodensee, the REWE Group and the Lake Constance Foundation, has made significant improvements to the conservation of species diversity in the intensive fruit-growing industry. Birdlife Germany/NABU is the joint venture partner for the extension of the project to other fruit-growing regions in Germany **(www.proplanet-label.com)**

⊙ In Spain, the environmental NGO 'Acciónatura' created a land cover nature balance initiative in 2011, called "CompensaNatura" **(at www.compensanatura.org)**. This initiative has already engaged more than 50 organisations in a first 'land cover nature balance' concept, especially suited for organisation operating under EMAS III in regards to their biodiversity indicator ('use of land, expressed in m2 of built-up area'). The proposal is very simple: as a first (not necessarily definitive) 'soil occupation compensation', organisation (and individuals) are called to help preserve a high natural value (natural) habitat, at least equal in size to the m2 they occupy with their offices, warehouses, shops, etc. The associated cost is a one-time donation of 0.19 € / m2, where funds are for example channelled to example to the stumpage acquisition over 25 years and thus the conservation of the last standing old-growth-forests, within the framework of their 'Selvans' project.

In view of the dramatic loss of biodiversity and the ever scarcer financial resources for nature and biodiversity conservation, straightforward sponsoring projects also make a valuable contribution. In addition to NGOs, municipalities and regional authorities are now looking for sponsors to maintain conservation areas, or to support projects for species conservation (e.g. the '111-Artenkorb' project of the State of Baden-Württemberg,
http://www.naturschutz.landbw.de/servlet/is/67646/).

15.2. Challenges

The conservation of biodiversity must be anchored both at meta-level and locally, i.e. businesses must identify and involve relevant stakeholders at both levels.

Not all challenges can be solved in a management cycle that lasts an average of three years. Biodiversity management is a long-term task. Businesses should thus also plan the involvement of or cooperation with stakeholders on a long-term basis.

If the involvement of stakeholders is to be constructive for both parties, transparency and clear rules are required – both in general terms and with respect to biodiversity: there should be a clear allocation of responsibilities within the business, an adequate process to make critical/constructive involvement possible and feedback from the business on what is being done with such input or criticism.

The restoration of habitats or the protection of species usually requires long-term activities, i.e. corporate sponsorships should have a long-term focus.

Appropriate communication will avoid running the risk of 'greenwashing' (Chapter 14 'Marketing and Communication' of these guidelines).

15.3. Feasible targets and measures

⊙ Stakeholder mapping: Analysis of the relevant stakeholders and their potential contribution to improve the business's performance on biodiversity

⊙ Establishment of transparent structures for stakeholder dialogue and/or the involvement of stakeholder groups

⊙ Strategic cooperation with international, national and local organisations in the field of biodiversity

⊙ Involvement of stakeholders in biodiversity related measures and/or sustainability reporting activities

⊙ Involvement of stakeholders in the training of employees and suppliers on biodiversity

⊙ Realisation of corporate volunteering projects in cooperation with NGOs or nature conservation authorities

⊙ Promotion of projects in the field of nature conservation/biodiversity protection

⊙ Realisation of a voluntary pay-back system, i.e. voluntary payments for ecosystem services used

15.4. Sample key indicators

The following table identifies important courses of action that can be implemented in the sector discussed in this chapter.

The key data and indicators make it possible to quantify the goals and to monitor developments.

But: The number of organisations or projects says nothing about the quality of participation, dialogues or projects. To assess the quality, qualitative indicators such as the degree of target achievement in projects or the degree of implementation of stakeholder recommendations should be used.

Example indicators: the involvement of stakeholders	
Relevant issues	**Key data/Indicator**
Has the business identified relevant stakeholders at local, national and international levels (stakeholder mapping)? **Yes** -> see indicator **No**	Number of stakeholders *Absolute number* *Qualitative: variety of stakeholders (geographically, expertise)*
Has the business set up a structure for participation and created transparent rules? **Yes** -> see indicator **No**	Qualitative: Evaluation of survey results on participation structure and process by the stakeholders
Does the business aim for long-term strategic cooperations? **Yes** -> see indicator **No**	Qualitative: Relevance of the cooperations' average duration Average duration of the cooperation *In years*
Does the business sponsor projects to protect biodiversity? **Yes** -> see indicator **No**	*Number of projects and percentage of goals achieved* *Size of restored ecosystems (hectares)*

■ **POSITIVE EXAMPLE** » **REWE Stakeholder Dialogue Forum: Out of the niche – fauna and flora**

In August 2013, the REWE Group organised a dialogue forum under the title of 'Raus aus der Nische' (out of the niche) on the subject of animal and plant conservation; more than 200 parties in industry, the public sector and NGOs participated. Biodiversity was one of the four workshop topics. The aspects of the communication of biodiversity to stakeholders and customers were discussed, as well as biodiversity as a criterion for labels and standards in the food industry. The Lake Constance Foundation and GNF profiled their projects for an improved integration of biodiversity aspects in labels and standards as an important regulatory mechanism for the industry. As part of the project co-financed by the Federal Agency for Nature Conservation and the REWE Group, 20 standards were analysed to determine their relevance to biodiversity. The results and conclusions were published in a baseline report and recommendations for the improvement of standard criteria and company requirements on their supply chain were elaborated - see **http://lebensmittelstandards.business-biodiversity.eu/**

16 LEGAL COMPLIANCE AND VOLUNTARY OBLIGATIONS - LEGISLATION AND ORDINANCES

16.1 EMAS and Legal Compliance

Unlike other EMS certifications, the EMAS regulation requires legal compliance with any relevant environmental legislation. This compliance is verified by third-party auditors and signed off by authorities.

As part of their initial environmental review, organisations applying for EMAS shall identify all legal environmental requirements they have to comply with, as well as the needs or requirements of interested parties they have to or choose to comply with. Following this preliminary analysis, organisations have to ensure legal compliance and must put procedures in place to maintain this compliance on an ongoing basis.

16.2. European biodiversity legislation

The following are the most important laws (EU directive transposed by the different Member States in national law) regarding biodiversity in the European Union:

The Habitats Directive and Birds Directive

In 1992, the European Union decided to protect the habitats and species of European significance and to ensure the long-term survival of their populations. In particular it was decided to establish a conservation area network (Natura 2000) to conserve wildlife and wild plants and to support their natural habitats. The Natura 2000 network consists of the areas specified in the Habitats Directive (dated 21 May 1992, 92/43/EEC) and the Birds Directive (dated 2 April 1979- amended in 2009, it became the Directive 2009/147/EC).

The Habitats Directive requires the designation of Special Areas of Conservation (SAC). Bird reserves are known as Special Protection Areas (SPA). The network of Special Protection Areas (SPAs) are included in the Natura 2000 ecological network, set up under the Habitats Directive 92/43/EEC. They are selected according to uniform EU standards and afforded protection. Various appendices to these directives list species and habitat types that are particularly worthy of protection and the preservation of which is to be ensured by this conservation area system. Both the Habitats and Bird Directive place a significantly greater focus on species conservation than the conservation area network.

http://ec.europa.eu/environment/nature/legislation/
habitatsdirective/index_en.htm

EU Water Framework Directive (WFD)

The aim of the WFD is to ensure a good ecological status of all aquatic ecosystems in Europe – including surface waters and groundwater. The Directive is based on a 'combined approach' of emission limit values and quality standards. Member States are required to implement and monitor river basin management plans, to involve citizens and stakeholders and to get the prices right for the use of water.

Companies and other organisations have direct and indirect relations with the EU Water Framework Directive: They are or should be involved in the elaboration of the river basin management plans and the implementation of the measures approved. They should pay prices reflecting the true costs of the ecosystem service 'drinking water'.

Adequate water pricing acts as an incentive for the sustainable use of water resources and thus helps to achieve the environmental objectives under the Directive. Member States are required to ensure that the price charged to water consumers - such as for the abstraction and distribution of fresh water and the collection and treatment of waste water - reflects the true costs. Whereas this principle has a long tradition in some countries, this is currently not the case in others. However, derogations are possible, e.g. in less-favoured areas or to provide basic services at an affordable price.

http://ec.europa.eu/environment/water/
water-framework/index_en.html

The Environmental Liability Directive (ELD)

This directive establishes a common framework for liability aimed at preventing and remedying damage to animals, plants, natural habitats, soils and water resources based on the 'polluter pays' principle. The directive holds all companies that operate in the EU liable in the categories biodiversity damage, water pollution, soil and land contamination. The biodiversity damage, defined by the ELD, does not embrace biodiversity as a whole, but is limited to damages to protected bird species, animal and plant species or habitats.

In case of an environmental damage, the accountable business is responsible for the planning and implementation of the rehabilitating measures, and the public authorities are responsible for ensuring that the operators responsible take or finance the necessary preventive or remedial measures themselves. It is advisable for companies to estimate their potential risks or impacts on the environment beforehand. During the last years, more and more insurance companies offered a new insurance model that protects companies against high costs of environmental damages.
http://ec.europa.eu/environment/legal/liability/

Environmental Assessment

The environmental assessment is a procedure that ensures that the environmental implications of decisions are taken into account before the decisions are made. The environmental assessment can be undertaken for individual projects, such as a dam, motorway, airport or factory, on the basis of the Directive 2011/92/EU (known as 'Environmental Impact Assessment' – EIA Directive) or for public plans or programmes on the basis of the Directive 2001/42/EC (known as 'Strategic Environmental Assessment' – SEA Directive). The common principle of both Directives is to ensure that plans, programmes and projects likely to have significant effects on the environment are made subject to an environmental assessment, prior to their approval or authorisation. Consultation with the public is a key feature of environmental assessment procedures.

The Directives on Environmental Assessment aim to provide a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation of projects, plans and programmes with a view to reduce their environmental impact. They ensure public participation in decision-making and thereby strengthen the quality of decisions. The projects and programmes co-financed by the EU (Cohesion, Agricultural and Fisheries Policies) have to comply with the EIA and SEA Directives to receive approval for financial assistance. Hence the Directives on Environmental Assessment are crucial tools for sustainable development.
http://ec.europa.eu/environment/eia/eia-legalcontext.htm

EU ABS regulation

The EU ABS Regulation implements those international rules (contained in the Nagoya Protocol) that govern user compliance in the EU – i.e. what users of genetic resources have to do in order to comply with the rules on access and benefit-sharing (ABS) established by the countries providing genetic resources. The EU ABS Regulation is complemented by Implementing Regulation (EU) 2015/1866, which entered came into force on 9 November 2015 ('the Implementing Re-

gulation'). Both the EU ABS Regulation and the Implementing Regulation are directly applicable in all Member States of the EU, regardless of the status of the Nagoya Protocol's ratification in the individual Member State.

Global biodiversity is protected by the international Convention on Biological Diversity (the CBD) to which the EU and its Member States are parties. The protocol on 'Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization', known as the Nagoya Protocol, was adopted in 2010. It aims to establish a clear, legally-binding framework determining how researchers and companies can obtain access to the genetic resources of a country and to the traditional knowledge associated with these resources. It also explains how the benefits arising from the use of these genetic resources and the associated traditional knowledge will be shared.

The EU ABS regulation brings EU law into line with these international obligations. The ABS rules apply when genetic resources and the traditional knowledge associated with them, are used in research and development for their genetic properties and/or biochemical composition, including through the application of biotechnology.

Genetic resources can be used in research and development for many different purposes. Here are some examples:

⊙ In medical research: A Danish company has developed a topical gel against a precursor to skin cancer, using as its main active ingredient the Euphorbia peplus plant found in Australia.

⊙ In environmental innovation: Researchers have been studying several fungi of the Ecuadorian rainforest, such as Pestalotiopsis microspore. They found that these fungi can break down the widely used plastic, polyurethane. In other words, they can digest plastic and there may be a wide range of effective waste-consuming microbes in existence.
http://ec.europa.eu/environment/nature/biodiversity/international/abs/index_en.htm

EU Timber regulation

Regulation (EU) No 995/2010 laying down the obligations of operators who place timber and timber products on the market – also known as the (Illegal) Timber Regulation counters the trade with in illegally harvested timber and timber products through three key obligations:

1. It prohibits the initial placing of illegally harvested timber and products derived from such timber on the EU market;

2. It requires EU traders who place timber products on the EU market for the first time to exercise 'due diligence';

once on the market, the timber and timber products may be sold on and/or transformed before they reach the final consumer. To facilitate the traceability of timber products, economic operators in this part of the supply chain (referred to as traders in the regulation) have an obligation to

3. Keep records of their suppliers and customers.

The core of the 'due diligence' notion is that operators undertake a risk management exercise so as to minimise the risk of placing illegally harvested timber, or timber products containing illegally harvested timber, on the EU market. The three key elements of the ‚due diligence system‘ are:

- **Information:** The operator must have access to information describing the timber and timber products, country of harvest, species, quantity, details of the supplier and information on compliance with national legislation.

- **Risk assessment:** The operator should assess the risk of illegal timber in his supply chain, based on the information identified above and taking into account criteria set out in the regulation.

- **Risk mitigation:** When the assessment shows that there is a risk of illegal timber in the supply chain, that risk can be mitigated by requiring additional information and verification from the supplier.

Legislative texts and an overview of the most important laws in Europe with a direct or indirect link to biodiversity can be found under:
www.business-biodiversity.eu/default.asp?Menue=187
See also chapter 19 'References and Links'.

16.3. International conventions

The Convention on Biological Diversity (CBD) was signed at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992. The CBD is an international legal agreement between sovereign states. This agreement has to date been signed by 168 members (status: September 2014). The member states have set themselves the goal of protecting and maintaining the diversity of life on earth and of organising its sustainable use in such a way that as many people as possible are able to live from it, both today and in future. The three main goals of the CBD are as follows:

- The maintenance of biodiversity

- The sustainable use of its components

- Fair sharing of the benefits arising from the use of genetic resources (access and benefit sharing - ABS)

The CBD has resulted in the issue of two protocols: the Nagoya Protocol on Access and Benefit Sharing and the Cartagena Protocol to ensure an appropriate level of protection for the safe transfer, handling and use of genetically engineered living organisms that might have adverse effects on the conservation and long-term use of biodiversity (www.cbd.int).

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) is both an agreement and an international organisation that has the aim of controlling the international trade in wild animals and plants to such an extent that the survival of wildlife and wild plant species is not threatened (www.cites.org).

The Ramsar Convention focuses on the protection of wetlands of international significance, especially as a habitat for water and wading birds. A total of 169 states have signed the convention (status: November 2016), who have listed a total of 2.243 wetland areas of international significance, with a total surface area of approximately 216,3 million hectares (www.ramsar.org).

The Bonn CMS (Convention on the Conservation of Migratory Species of Wild Animals) is designed for the worldwide protection and conservation of migratory animal species, including their sustainable utilisation (www.cms.int).

17 PRACTICAL INSTRUMENTS

Since the publication of the TEEB study (The Economics of Ecosystems and Biodiversity) at the latest, numerous organisations have been working on the development of tools aimed at helping businesses to avoid or reduce negative effects on biodiversity. Some of these tools have been practically applied and refined in recent years, while others have been added.

17.1. Methods and instruments with which the impact and dependency on biodiversity and ecosystems can be evaluated

As yet, there are no instruments that provide uniform, cross-sectoral, quantifiable and comparable results about the effects that businesses have on biodiversity. Most of these tools provide businesses with assistance in documenting effects and identifying potential risks and opportunities related to the use of natural resources and ecosystems.

In its publication 'Eco4Biz' (WBCSD 2013), the World Business Council for Sustainable Development has compiled a comprehensive document, listing tools that will help businesses document and evaluate ecosystem services. This is an overview of freely accessible tools. The overview is structured according to target groups and provides answers to the following questions:

- Which instruments will help my business document our effects and our dependency on biodiversity?
- Which tools can be used to assess or quantify effects and dependency?
- Which tools provide regional and area maps?
- Which businesses have already made use of the instruments?
- Who developed the instruments?

The European Business and Biodiversity Campaign (EBBC), established by a consortium of European companies and non-governmental organisations (NGOs), supports businesses by providing practical tools such as the Biodiversity Check and information about current developments in the field of business and biodiversity on its website **www.business-biodiversity.eu/biodiversity-check**

The Biodiversity Check was developed as a tool that helps businesses evaluate the effects that their various functional divisions have on biodiversity. It takes the form of an environmental audit and makes recommendations for goals and activities, as well as key data with which these can be quantified. It thus provides a good starting point for businesses intending to integrate biodiversity-related activities into their corporate (environmental) management system.

More than 40 businesses have already carried out this 'check'. This includes companies from a variety of industries and of various sizes, such as the Daimler car manufacturer, the TUI travel company, the FRAPORT airport operating company, the chemical group Evonik, the pasta manufacturer Albgold and the producer of outdoor equipment VAUDE.

The Natural Capital Coalition has developed the Natural Capital Protocol – an important framework to identify, measure, and value impacts and dependencies on natural capital (see also Chapter 10). The Protocol is available at **http://naturalcapitalcoalition.org/protocol/**

On a worldwide basis, numerous online platforms provide information about existing methods and tools. The Global Partnership on Business and Biodiversity of the UN Convention on Biodiversity publishes studies, tools, positive examples etc. on **https://www.cbd.int/business/**

The European Commission established the Business @ Biodiversity Platform, which addresses business issues at a European level. The Platform's work streams provide valuable information and instruments for companies interested in managing biodiversity and natural capital. On this portal companies also find links to national Business and Biodiversity initiatives in EU member states: **http://ec.europa.eu/environment/biodiversity/business/index_en.htm**

18 TERMINOLOGY

Access and benefit sharing

An objective defined within the UN Convention on Biological Diversity designed to bring about the fair distribution of the benefits resulting from the use of genetic resources.

Biodiversity hotspot

Areas of high biodiversity and a high percentage of endemic (only occurring in these regions) animal and plant species that are particularly endangered and the protection of which is thus a priority. To be regarded as a biodiversity hotspot, a region must be home to at least 1500 endemic plant species (= 0.5% of all plant species on earth) and have lost more than 70% of its original surface area (definitions per Conservation International).

Biodiversity

The diversity of life, diversity within and between species, genetic diversity and the diversity of ecosystems (definition per CBD).

Conservation area

A geographically defined area that is demarcated, regulated or managed with a view to realising certain conservation targets (definition per CBD).

Ecosystem

A dynamic complex of communities made up of plants, animals and micro-organisms and their non-living environment, which interacts with them as a functional unit (definition per CBD).

Environmental performance

The measurable result of managing environmental aspects within an organisation (DIN EN ISO 14031:2012-01, Term 3.9).

Genetic resources

Genetic material of actual or potential value.

High conservation value area

A natural region with a high landscape, diversity or ecological value.

Indicator

A quantitative or qualitative parameter for evaluating a criterion (DIN EN 16214 1:2012 11, Term 2.45).

Invasive species

An alien species that has undesirable effects on other species, symbiotic communities or biotopes (German Federal Agency for Nature Conservation: www.bfn.de/0302_neobiota.html).

Key indicator

A quantifiable parameter representing the status of services, management or conditions (DIN EN ISO 14031:2012-01, Term 3.15).

Key performance indicator

A critical performance factor represented by key indicators, on the basis of which progress with regard to major objectives or critical performance factors within an organisation can be assessed.

Logistics

Logistics is the term applied to the organisation, control and optimisation of goods and information flows within and between businesses. The three main logistic services in goods management are transport, storage and handling, together with associated activities such as packaging and commissioning.

Resilience

The ability of a system to recover from changes resulting from exogenous intervention and to return to its original state.

Sustainable use

The use of aspects of biodiversity in a manner and to an extent that will not result in a long-term reduction in biodiversity, hence preserving its potential and meeting the needs and wishes of current and future generations (definition per CBD).

Transport

Transport is the intentional or unintentional spatial movement of items, during which the items are usually only expected to undergo insignificant changes in their characteristics. Generally speaking, these items may take the form of goods, information, animals or people. These are moved by carriers or transmitters such as people, animals or vehicles (means or modes of transport) once the structural or technological conditions (infrastructure) are in place: transport can occur by air, through space, through pipelines, via cables, rails, roads or water, as well as along paths, overland or along other routes.

UN Convention on Biological Diversity

This UN Convention (CBD) has been signed by more than 165 states and constitutes the main international legal framework on biodiversity. The convention primarily focuses on three aspects to which it affords equal importance: 1. Protection of biodiversity, 2. Sustainable use of its components 3. Fair sharing of benefits resulting from the use of genetic resources, combined with access regulations (access and benefit sharing).

UN Sustainable Development Goals

The Sustainable Development Goals (SDGs), officially known as Transforming our world: the 2030 Agenda for Sustainable Development, is a set of seventeen aspirational 'Global Goals' with 169 targets between them. Spearheaded by the United Nations, the 193 Member States and global civil society have been involved in the development of the SDGs, approved in December 2014 by the UN General Assembly. The 17 goals cover a broad range of sustainable development issues: Ending poverty and hunger, improving health and education, making cities more sustainable, combating climate change, and protecting oceans and forests.

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PERFORMANCE
CREDIBILITY
TRANSPARENCY

EMAS Sectoral Reference Documents:
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EU Eco-Management and Audit Scheme (EMAS):
http://ec.europa.eu/environment/emas/index_en.htm

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Links

■ Conservation zones – regions with high biodiversity

Map material showing conservation zones throughout the world: www.protectedplanet.net

Map material showing conservation zones, key biodiversity areas and others on the IBAT website (charge for access): www.ibatforbusiness.org

Overview of the concept of high conservation value areas: http://www.hcvnetwork.org/resources

Overview of the concept of key biodiversity areas: http://www.biodiversitya-z.org/areas/22

■ Endangered species

Red List of endangered animal and plant species according to the International Union for Conservation of Nature (IUCN); Red List: www.iucnredlist.org

German national Red List:
http://www.bfn.de/0322_rote_liste.html

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
http://www.bfn.de/0305_cites.html

■ Business and Biodiversity Initiatives

European business and biodiversity campaign (EBBC):
http://www.business-biodiversity.eu/

EU Business @ Biodiversity Platform:
http://ec.europa.eu/environment/biodiversity/business/index_en.htm

Unternehmen Biologische Vielfalt 2020 (German Initiative of the German Environmental Ministry, Business Associations and NGOs):
http://biologischevielfalt.bfn.de/ubi_plattform.html

Biodiversity in Good Company:
http://www.business-and-biodiversity.de

■ EU Legislation and International Conventions

EU Habitats and Birds Directive:
http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

EU Water Framework Directive:
http://ec.europa.eu/environment/water/water-framework/index_en.html

EU Environmental Liability Directive:
http://ec.europa.eu/environment/legal/liability/

EU Environmental Assessment:
http://ec.europa.eu/environment/eia/eia-legalcontext.htm

EU ABS Regulation:
http://ec.europa.eu/environment/nature/biodiversity/international/abs/index_en.htm

EU Timber Regulation:
http://ec.europa.eu/environment/forests/timber_regulation.htm

Convention on Biodiversity (CBD): https://www.cbd.int/

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora): www.cites.org

Ramsar Convention: Convention on Wetlands: www.ramsar.org

Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention): www.cms.int

20 POSITIVE EXAMPLES OF BIODIVERSITY MANAGEMENT

In order to update and to compile more examples, it was decided not to include the positive examples directly into these guidelines, but to upload them as PDF-files on the EMAS Helpdesk:

http://ec.europa.eu/environment/emas/emas_for_you/ achievement_innovation_corner_en.htm

By end of December 2016, the following examples of biodiversity management have been compiled:

- Cafeology, coffee producer, United Kingdom

- Companhia das Lezíras, silviculture and nature tourism, Portugal

- HIPP, baby food producer, Germany

- Kneissler, bluing technology, Germany

- Meichle & Mohr, sand and gravel extraction, Germany

- Märkisches Landbrot, bakery chain, Germany

- Rheinsberger Preussenquelle, mineral water producer, Germany

The practical examples provide an insight regarding the biodiversityaspects that are of importance for the company, targets and measures included in the environmental management system and results and experiences so far.

Additional information and download of the guidelines in English and German:

www.business-biodiversity.eu

www.emas.eu