

# Measuring and managing biodiversity



# Contents by company

#### BASE -BASF Agro, BiodiversID, a double network of farms -[ for monitoring indicators ..... 43 а BECITIZEN -1 -The Concept of a Positive Economy TM..... .... 12 CIMENTS CALCIA \_\ -Biodiversity Management System (SMBio) ...... .. 22 ir CAISSE DES DÉPÔTS ET CONSIGNATIONS [DEPOSITS AND CONSIGNMENTS FUND] • -The ESR tool for identifying the impact and dependencies -F tł CDC BIODIVERSITÉ -1 -Monitoring and assessment indicators for 0 . 28 compensatory measures ..... -F • DELOITTE m -External communication and level of company . 29 engagement ..... COMPOSITE INDICATORS 40 • FDF -/ -Measuring the ecological value of land to enable sustainable management of natural spaces .. .. 23 -Hydroecological monitoring around nuclear power -/ stations: reporting on the long-term evolution of aquatic ... 29 ecosystems..... -1 -FRB/CESAB Partnership LOLA-BMS Butterflies. tł a model group for managing biodiversity ... .. 38 • ERM -/ m • EUROVIA -/ • GDF-SUEZ 0 -Indicators for tracking the company's commitment .. 18 to biodiversity .. -1 • GRTGAZ -The contribution of easement strips to ecological -( continuity ... 34 а • LAFARGE -A number of tools and methods for assessing, -9 measuring and managing biodiversity.... .... 26 -A dedicated indicator to assess the biodiversity ... 37 of quarries .....

#### • I VONNAISE DES EALLY

Dragonfly zone: An area for biological freedom nd combating emerging pollutants
MARSH ncluding Biodiversity in environmental risk insurance . 27
MICHELIN Which Assessment methods and indicators for ndustrial sites?
<b>RTE</b> Partnerships with organisations nat manage natural areas
ndicators for monitoring the impact f activities on ordinary biodiversity
Partnerships with scientists to nonitor biodiversity
SAINT-GOBAIN Testing a mapping method for use around the world 45
<b>SÉCHÉ ENVIRONNEMENT</b> A tool for measuring landscape integration
Trees and plants bear the brunt of climate change 42
SITA FRANCE An operational approach for preserving biodiversity 39
SNCF ndicators for managing biodiversity across ne organisation
SOLVAY An indicator for the tonnage of renewable raw naterials
SUEZ ENVIRONNEMENT Actively driving the number of action plans n its sites
THALES Mapping biodiversity risks at a portfolio of sites
VEOLIA Group-level consolidated indicators for monitoring nd reporting on the biodiversity policy
VINCI Systematic research partnership with stakeholders 33



## "Companies are becoming net creators of biodiversity'

he international year of biodiversity in 2010 contributed to raising awareness amongst economic players of the role they must play in this area. However, companies have different interpretations of the stakes at risk when biodiversity is eroded.

Some have been aware of and active in this field for decades. Quarry owners, motorway construction companies or other linear infrastructure construction companies (power lines, waterways, etc) and classified site management companies have developed their awareness and implemented a number of measures to meet the expectations of local communities or pre-empt regulatory reguirements. To the point that some companies are now net creators of biodiversity. Others are seeking to perfect the solutions they will introduce to protect biodiversity.

One constant is that the issue is highly complex. As for climate change, scientists have alerted us to a global and far-reaching problem: the erosion of biodiversity. This erosion takes on a varied and widespread range of guises that differ according to location: land artificialisation and fragmentation of habitats, pollution, over-exploitation, invasive species and global warming. Some companies are implicated largely as a result of the products they purchase or how their products are used, but are not always aware of this.

Expectations from society are high, however. Non-financial reporting includes biodiversity and all businesses need suitable tools to ensure this reporting reflects and triggers the actions of their operational staff.

This publication details the experience and insights of members of EpE, which is shared in the interest of collective learning. It aims to provide a window on the questions businesses must ask when dealing with this issue and to show the responses EpE members designed in the context of their different sectors.

We can only manage issues that are measured - this is just as valid for the environment as it is for other management techniques. Biodiversity is a new field for many companies. And I hope that this brochure will prove useful to as many of them as possible.

#### Pierre-André de Chalendar, Chairman of EpE, CEO of Saint-Gobain

This brochure is the fruit of the work of the Biodiversity Commission between 2010 and 2013. It gathers together the experience and best practices of EpE members in relation to biodiversity indicators.

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#### A word from the Chairman

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Claire Tutenuit, Secretary-General	

# Measuring and managing biodiversity

# **1** Basic concepts and tools

Biodiversity in a nutshell	8
The tricky matter of scope	10
• ERM/THALES, mapping biodiversity risks at a portfolio of sites	. 11
• BE CITIZEN, the concept of Positive EconomyTM	. 12
• SOLVAY, an indicator for the tonnage of renewable raw materials	. 12
Existing tools to help develop biodiversity indicators	13
• MICHELIN, which assessment methods and indicators for industrial sites?	. 15
• The Caisse des Dépôts Group, the ESR tool for identifying the impact and dependencies of Group activities on biodiversity	. 16

# **2** What are indicators used for?

Rolling out corporate ethics	17
• EUROVIA, a commitment with the SNB stamp of approval	. 17
• GDF SUEZ, indicators for tracking the company's commitment to biodiversity	. 18
• SUEZ ENVIRONNEMENT, actively driving the number of action plans on its sites	. 19
A management tool	. 20
• SNCF, indicators for managing biodiversity across the organisation	. 20
• SECHE ENVIRONNEMENT, a tool for measuring landscape integration	. 21
CIMENTS CALCIA, Biodiversity Management System (SMBio)	. 22
• EDF, measuring the ecological value of land to enable sustainable management of natural spaces	23
• LYONNAISE DES EAUX, Dragonfly zone: An area for biological freedom and combating emerging pollutants	24
Communicating and uniting: a corporate and social tool	. 24
<ul> <li>Communicating and uniting: a corporate and social tool</li> <li>RTE, partnerships with organisations that manage natural areas</li> </ul>	<b>. 24</b> 25
<ul> <li>Communicating and uniting: a corporate and social tool</li> <li>RTE, partnerships with organisations that manage natural areas</li> <li>LAFARGE, A number of tools and methods for assessing, measuring and managing biodiversity</li> </ul>	<b>. 24</b> 25 26
<ul> <li>Communicating and uniting: a corporate and social tool</li></ul>	. 24 25 26 . 27
<ul> <li>Communicating and uniting: a corporate and social tool</li> <li>RTE, partnerships with organisations that manage natural areas</li> <li>LAFARGE, A number of tools and methods for assessing, measuring and managing biodiversity</li> <li>Anticipating and preventing the risks</li> <li>MAPSH including biodiversity in environmental rick incurance</li> </ul>	. 24 25 26 . 27
<ul> <li>Communicating and uniting: a corporate and social tool</li> <li>RTE, partnerships with organisations that manage natural areas.</li> <li>LAFARGE, A number of tools and methods for assessing, measuring and managing biodiversity</li> <li>Anticipating and preventing the risks</li> <li>MARSH, including biodiversity in environmental risk insurance.</li> </ul>	. 24 25 26 . 27 27
<ul> <li>Communicating and uniting: a corporate and social tool</li> <li>RTE, partnerships with organisations that manage natural areas</li></ul>	. 24 25 26 27 27
<ul> <li>Communicating and uniting: a corporate and social tool</li> <li>RTE, partnerships with organisations that manage natural areas</li></ul>	• 24 25 26 • 27 27 28 29
<ul> <li>Communicating and uniting: a corporate and social tool</li></ul>	• 24 25 26 • 27 27 27 28 29

# **3** Developing and selecting indicators for the business

#### Creating a dialogue with management: the

#### Creating a dialogue with stakeholders ...

- VINCI, systematic research inpartnership
   GRTgaz, the contribution of easement statement

# 4 What makes a good biodiversity indicator?

#### Indicators based on science .....

- RTE, indicators for monitoring the impact on ordinary biodiversity.....
- LAFARGE, a dedicated indicator to asses
- EDF, FRB/CESAB: LOLA-BMS Partnersh a model group for monitoring biodiversit
- BIOINDICATORS, biological indicators for
- SITA France, an operational approach to
- DELOITTE, composite indicators.....
- RTE, partnerships with scientists to mor

#### Credible and recognised indicators......

- SECHE ENVIRONNEMENT, trees and plant
- BASF Agro, BiodiversID, a double netwo
  Reproducible indicators......
- VEOLIA, group-level consolidated indicat for monitoring and reporting on the biod
- SAINT-GOBAIN, testing a mapping meth

Conclusion
Acronyms

he financial approach	31
p with stakeholders	
rips to ecological continuity	

	35
ct of activities	
	36
s the biodiversity of quarries	37
ip Butterflies,	
ty	38
r monitoring environments	38
preserving biodiversity	39
	40
nitor biodiversity	41
	42
ts bear the brunt of climate change	.42
ork of farms for monitoring indicators	43
	44
tors	
iversity policy	44
od for use around the world	45
	46
	47

# Summary



#### Basic concepts and tools

Companies with a direct impact on biodiversity such as quarries, oil and gas operators and linear infrastructures etc have become used to integrating the issue of biodiversity into their everyday management processes. Other businesses with a more indirect impact are at a different stage in terms of awareness and experience. It is not unusual for businesses with an indirect impact to deal with biodiversity through sponsorship or forming partnerships with environmental associations in the first instance. Today, however, companies want to include biodiversity in their strategic objectives and are therefore exploring how best to approach the link between their business and biodiversity. "Measuring and managing biodiversity" has been published by the biodiversity commission and contains examples of members' practices.

#### What are indicators used for?

Business ethics, management of the business, communication, risk prevention... there are a number of reasons that prompt companies to measure their impacts and dependencies on biodiversity and how effective their actions are. Defining and implementing biodiversity indicators makes biodiversity relevant to strategic business goals, thereby attracting the attention of high-level directors. In addition, a voluntary commitment to positive biodiversity actions and transparent sharing of the biodiversity indicators helps create a dialogue with the different stakeholders - both internal and external.

# Developing and selecting indicators for the business project.

A business is part of an ecosystem (environment, partners and stakeholders) and studying this ecosystem and the issues and challenges surrounding it makes it possible to define



the indicators. As there are a number of goals and spatial and temporal scales, companies must find a middle ground between what they ought to do and what is realistically possible, based on the information and resources available. In order to create an approach that is both understood and accepted, the process of selecting and developing the indicators should be accompanied by a dialogue with stakeholders.

#### What makes a good biodiversity indicator?

There are no standards for biodiversity indicators, but a look at the practices of EpE members allowed us to identify some general trends. Whether we're talking about impact measurement, stock status or to give an overall view, companies often work in close collaboration with researchers to create a scientific basis for their biodiversity indicators with experts. The indicators, which must be verifiable, traceable and reproducible, in both time and space, are often monitored by scientists or associations over a long period of time. In addition, businesses generally seek fairly similar indicators to allow comparisons at group level. This doesn't prevent local indicators from being used, however.

# 1 Basic concepts and tools

Biodiversity and threats to biodiversity are increasingly well known. Efforts are being made on an institutional level, which includes measurement tools.

Scientists have reached a consensus that biodiversity is being eroded and that the loss of species is 100 to 1000 times higher than the natural rate of extinction. According to scientists this is very much as a result of human activity. Biodiversity plays an important part in keeping the planet balanced and provides many essential services to mankind, such as pure water, food, regulating the climate and even wellbeing. Unfortunately, these alarming findings are regularly confirmed, despite ambitious national and international goals to reduce the loss of biodiversity.

#### Against this concerning background, we must change our thinking that natural resources are inexhaustible and free,

and start to see them as a natural capital that must be protected. This is why businesses are making an effort to assess how dependent they are on biodiversity and the impacts they have, with a view to taking action to protect biodiversity and adapt to the upcoming changes in the services ecosystems are able to provide to them.

Identifying an arsenal of tools to help in this area is particularly complex, and indicators are the best place to start. Unlike greenhouse gases, which can be compared to carbon dioxide and for which the emissions each and every one of us contribute to global emissions can be identified, this is not possible for biodiversity. Companies can only refer to



their own indicators to understand their position and actions and share this with their stakeholders.

A number of EpE member companies have already set out down this path. After translating the methodological tools defined by the World Business Council for Sustainable Development (WBCSD) into French and publishing them, the members pooled their experiences and best practices in relation to indicators.

In the first instance, this approach confirmed the need for biodiversity indicators in order to include biodiversity in corporate management strategies. For internal communication purposes, the indicators help organise

employee efforts, set goals and provide motivation; to the outside world, they report and explain to stakeholders how the company is addressing the issue of biodiversity. Finally, some indicators allow the company to anticipate and manage the opportunities and risks related to biodiversity.

This publication captures the various stages of the process of developing biodiversity indicators, providing concrete examples taken from the experiences of EpE members. It aims to help companies begin the process of implementing relevant indicators.

#### **Biodiversity** in a nutshell

This chapter illustrates the fundamentals of biodiversity a summary and not a scientific essay, it does not aim to replace an in-depth study of the challenges of biodiversity.

#### Definition

In 1992. Article 2 of the Convention on Biological Diversity (CBD) defined biodiversity as the variability among living organisms from all sources including, amongst other things, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species. between species and of ecosystems.

#### The five key factors of erosion of biodiversitv

• The artificialisation of land: increasing and more and more wide-spread urbanisation, the number of people on the planet, intensive farming (there will soon be 9 billion people to feed), the fragmentation of natural spaces by infrastructure and deforestation have reduced the size and inter-connectedness of ecosystems, which in turn has reduced the diversity of species present in each ecosystem.

• Over-use of natural resources: to meet the needs of mankind natural the Asian hornet in France, the red lion fish resources are extracted at rates far in the Caribbean, the water hyacinth higher than natural replenishment or even species of crops cultivated and rates (deforestation and over-fishing, farmed in vast monoculture areas). for example). We are witnessing a reduction in stocks and resources which • Climate change: not all species adapt in is at risk of reaching a threshold below which regeneration will not be possible, changes in ecosystems, causing them or which may have an impact on other to evolve or sometimes leading to



• Air, soil and water pollution, including light and noise pollution, cause areas to change and reduce biodiversity.

• Invasive species: increased global trade introduces exotic species that invade places where they have neither natural predators nor competitors, causing an imbalance in the local ecosystem. This can have serious consequences (such as

the same manner, leading to fundamental species, ecosystems and the climate, etc. extinction. For example, the increased

level of carbon dioxide in the atmosphere has caused ocean acidification, resulting in the destruction of coral reefs.

#### Services provided by biodiversity

The 2005 Millennium Ecosystem Assessment, a report issued by international scientists, identifies the following functions provided by biodiversity.

Provisioning services: products obtained from ecosystems provide a number of necessary materials to humans, such as wood for construction and fuel, fibres, food from fishing and farming, the active ingredients of some medications, etc.

Regulating services: humans obtain a number of benefits from spontaneous ecosystem auto-regulation processes, such as the purification of water and air, pollination, the regulation of droughts and floods, preserving soil fertility and the decomposition of waste, etc.

#### Cultural and well-being services:

beliefs, traditions, knowledge, innovation (biomimicry) and art... Nature is a source of inspiration. The beauty of a landscape, the pleasure of taking a walk in the forest, beside a lake, a breath of fresh air - these may be difficult to measure but they represent a significant gift from biodiversity to mankind.

Attempts to harness the value of these services have proved that they provide immeasurable value as compared to the GDP we measure: however, the fact that these resources are free often means they are neglected, so long as our lives don't feel the impact of the reduced levels

#### Increased concerns and demands from society

From the creation of protected areas to the advent of organisations protecting the environment and international conventions, biodiversity was initially the province of public policies.

Since Pavan Sukhdev's report The Economics of Business and Biodiversity<sup>1</sup>, a large impact, such as mines and

1854:	creat the F
1872:	creat the w
1912:	creat
1948:	creat
1963:	creat
1992:	Earth now i
2005:	publi wide ecosy
2008:	creat
2010:	decla
2010 :	revisi
2010:	publi Biodi
2010:	adop "Bioc
2010:	launo
2012:	creat on bi

however, biodiversity has been recognised as a global issue, uniting the corporate and private worlds to create a space where individuals and organisations each have a role to play.

Companies' awareness of these challenges has grown in parallel with increased national and international measures to protect biodiversity and an increase in investors' awareness of the matter. Although some sectors remain more closely affected as they are particularly dependent or have

1 TEEB Report, http://ec.europa.eu/environment/nature/biodiversity/economics/pdf/teeb report.pdf

#### Key dates - Recognition of the importance of biodiversity in France and abroad

- tion of one of the world's first environmental associations. French National Society for the Protection of Nature (SNPN)
- tion of Yellowstone National Park, the first national park in vorld
- tion of the French League for the Protection of Birds (LPO)
- tion of the International Union for Conservation of Nature (IUCN)
- tion of the first natural park in France, the Vanoise park
- h Summit, the Convention of Biological Diversity (CBD), ratified by 192 countries
- ication of the Millennium Ecosystem Assessment, the first -ranging official report on the consequences of changing ystems, accompanied by recommendations
- tion of the French Foundation for Research on Biodiversity (FRB)
- ared the international year of Biodiversity by the UN
- ion of the 2011-2020 Aichi targets by the CDB in Nagoya
- ication of the TEEB report (The Economics of Ecosystems and iversity) on the impact of the loss of biodiversity on the economy
- tion by the European Commission of its strategy diversity, our life insurance, our natural capital"
- ch in France of the National Strategy for Biodiversity (SNB)
- tion of the scientific and political intergovernmental platform odiversity and ecosystem services (IPBES)

quarries, agriculture and the agro-food industry, foresters, infrastructures, the energy sector and water purification organisations, all businesses have a link with biodiversity - be it direct or indirect. And the need to measure biodiversity is evervone's business.

# The tricky matter of scope

One of the first steps in addressing the importance of biodiversity is the question of scope. Which aspects of biodiversity should be included? Which of the company's activities should be considered? Should we consider indirect impact, as they are often the most significant?

Unlike for greenhouse gas (GHG) reporting, there are no standard biodiversity measurements. Businesses are free to choose their own indicators. The answers to the questions above depend on the circumstances and a number of parameters:

## The link between biodiversity and the business

- Does the company's activity depend directly on biodiversity for supplies and the use of a raw material (natural assets, fibre, wood, etc)?
- Does the business have an impact on biodiversity as a result of manufacturing sites, points of sale or the use of its products?
- Is the impact indirect, as in the case of banks, where it is the projects financed that are likely to have the biggest impact?

The company must set the scope and decide the parameters within which it will work based on where it has the biggest impact, what is most important to its stakeholders and where it can make a difference.

#### The company's strategic goals

Depending on its circumstances, a business may need indicators to:

- Validate the location for a new site,
- Identify which processes to improve,
- Choose a development strategy,
- Report whether it has met its strategic goals.

#### Available data

When it comes to biodiversity, monitoring over time is critical because, more often than not, changes to the business take place slowly. So the data needed for the indicators must be permanently available. On the other hand, the business can't define its policy based solely on pre-existing data. Choosing certain indicators it considers important can provide useful structure for data gathering projects.

- What information is needed? How do we get this information?
- What information is available on local,

- regional, national and international levels?
- What support can local associations, researchers and advisory boards provide?
- Are there any existing benchmarks?

#### When it comes to defining indicators, the scope and size of the business must be taken into consideration.

• The local scope includes what is perceived to be the company's actual and direct sphere of influence (including subsidiaries and controlled companies). This sphere of influence entails an immediate legal responsibility (see pg 27 about regulations) and ethical responsibilities, obliging the company



The purpose of the risk map created for Thales comprising 140 sites and 26 countries was to create a global and

projects.

ERM/THALES.

Mapping biodiversity risks allows us to visualise the

environmental impact industrial and other sites have

on areas with a high level of ecological sensitivity. These

risk maps are visual, which makes it possible to quickly

target the area of particular biodiversity importance where

The map must also take into consideration the scope of the

analysis (national/international) and take information from

a consistent data set so that a comparative analysis of the

defined scope is possible. For example, using Natura 2000

areas is only relevant in the context of European analysis

preservation or management programmes are a priority.

to engage with its stakeholders. Within this local scope, the indicators track the company's direct impacts and dependencies on the ecosystems near company sites, as well as the success of the actions implemented. They are often used to evaluate workers' activities. The area studied is the location of the site itself and the surrounding area [generally with a 2 to 5 km radius of the site].

• The extended area includes the company's value chain. At this stage, the company is not alone, its suppliers and distributors are part of the scope, the entire life cycle is studied: the impact upstream when choosing raw materials, and the impact downstream when the product is used. Ideally, biodiversity reporting should also include this type of indicator. The scope is particularly relevant for companies involved in accessing and sharing the benefits of genetic resources (ABS), to help them regulate the impact of using resources.

This widened scope goes hand in hand with the changes in greenhouse gas emissions and water reporting: an increasing number of companies is using reporting systems that go up to Scope 3 (see diagram on pg 12) and include the vulnerability of natural resource supply and the impact waste and the use of products have on biodiversity. Of course, introducing a special category for Scope 2 (electricity production) is less meaningful than for greenhouse gases.

1 Maximilien Rouer and Anne Gouyon (2007), Réparer la planète. La révolution de l'économie positive, Lattès. [Repairing the planet. The revolution of positive economy]



#### Mapping biodiversity risks of a portfolio of sites

consistent view of the group's sites to identify which sites were in the most vulnerable areas in terms of biodiversity.

A set of indicators were then defined with the aim of carrying out a comparative risk analysis, using international databases. They were also defined to include ordinary biodiversity and understand the constraints for future developments in a 2 km radius around the sites. The indicators were consolidated to form a limited number of indicators:

- Percentage of the surface area in a natural area,
- Percentage of the surface area in a protected area, taking into account how large and close to the site they are.
- Number of species in a 2 km radius around each site.

## The opposite approach: positive economy

The BeCitizen example shows a different approach to choosing the scope; here it extends beyond the direct impacts of the project to include an area that is large enough for the activities of the company to compensate for any negative direct impacts. This is what positive economy<sup>™1</sup> is about and, in terms of biodiversity, is similar to the principle of compensation.

## **1** Basic concepts and tools

Reminder: different scopes according to ISO and the GHG Protocol used for GHG balance **SCOPE 3** Purchases **SCOPE 2** Waste SCOPE 1 Travel Direct Impact Investments Bought electricity Sewage Procedures Fixed assets Bought steam Combustion Biomass Leaks Bought heat Transport Bought cold Use End of life Leasing Franchises

**BE CITIZEN.** The Concept of Positive Economy<sup>™</sup>

Transforming environmental constraints into opportunities to create economic value is the principle BeCitizen applies to five key axes which are as much risks as they are engines for growth (energy, climate change, resources and waste, biodiversity and health and toxicity). The Positive Economy<sup>™</sup> generates economic growth that restores environmental capital, i.e. the environment's ability to supply resources (energy and raw materials) and services (carbon storage, recycling of waste, water purification, etc) to the economy <sup>2</sup>.

**BeCitizer** 

Other examples where the principle of Positive Economy<sup>™</sup> has been applied include optimising land use by considering the place of biodiversity in the context of development projects or town planning that respects "Facteur 4" (the goal to reduce greenhouse gases by a factor of four), integrating biodiversity from the off when designing an eco-quarter in order to restore biodiversity, particularly through landscape and filtering gardens that, at the same time, contribute to improving the health of residents and making the best use of the guarter's land and restoring an area using environmental engineering. The strategy's aim is to predict, as much as possible, the impact on biodiversity so that compensation is only used as a last recourse, as it does not actually restore biodiversity.

SOLVAY, an indicator for the tonnage of renewable raw materials



As a highly diversified chemicals company, Solvay interacts a great deal with biodiversity: greenhouse gases, avoiding emissions from the value chains, water management and use of renewable raw materials are just some examples of the issues that are important for biodiversity.

One indicator in particular cannot be overlooked: the tonnage of renewable materials used in the company's processes, as raw materials or sources of energy. Some of main bio-sourced raw materials used are:

- Vegetable oils (palm and soya) the sub-products of which are used as ingredients for manufacturing epichlorohydrin (from bio-sourced glycerine), with a process that is far cleaner than the traditional chemical process using chlorine;
- Waste wood used for making cellulose acetate;
- Ethanol from straw and sugar cane bagasse to produce oxygenated solvents for paint and varnish.

Solvay is committed to exploring and harnessing the potential of biosourced materials, whilst being sure to assess how they measure up in terms of impact on biodiversity and protection of ecosystems. Whenever possible, the group uses bio-sourced raw materials from certified sources. Since 2012, the indicator they use is the tonnage of renewable raw materials used by the group: 290,000 tonnes in 2012. In addition, Solvay increasingly tests the quality of the liquids it discharges to assess the impact on aquatic microflora and carries out a number of replanting activities around its sites.

#### **Existing tools** to help develop biodiversity indicators

As this is a relatively new approach, there is not yet a single reference tool for developing biodiversity indicators, but a set of tools that have been developed to meet different measurement needs for biodiversity and interaction between the company and ecosystems and ecosystem services

#### • The Global Reporting Initiative (GRI) has developed five specific indicators

on biodiversity which refer in particular to the issues of how close to protected areas sites are located. Only two of the five indicators are quantitative; the others follow an approach which is similar to interaction analysis, the tool used to assess services provided to businesses by ecosystems (ESR) proposed by the WBCSD (see below) and the indicators are generally qualitative. It's surprising just how few indicators there are. The GRI states that other environmental indicators such as materials, energy, water and emissions/sewage/waste can also be used for biodiversity reporting. In fact, they tell the story of the impact the business has on certain environments and therefore indirectly illustrate the potential effect on biodiversity. Greenhouse gas emissions contribute to one of the biggest causes of erosion of biodiversity (see below) and are therefore an indirect biodiversity indicator. The GRI plans to carry out further work on the biodiversity element of this.

• The World Business Council for Sustainable Development (WBCSD) has developed two tools to assess the services provided by ecosystems and biodiversity (ESR) to the business and the impacts the business has on how ecosystems work and to calculate or

areas.

biodiversity.

estimate the value (CEV). These tools are useful for identifying the links between the business and biodiversity. EpE has translated them into French:

#### FSR

http://www.epe-asso.org/even/Guide ESR Services rendus par les ecosystemes aux entreprises.pdf See feedback from the Caisse des Dépôts on using ESR, page 16.

#### CEV

http://www.epe-asso.org/index, php?part= publi&id rap=109

More recently, in April 2013, the WBCSD published «Eco4Biz», a brochure providing an overview of the current tools and approaches for assessing and managing biodiversity and ecosystems. This is a very useful tool to consult when developing a set of indicators. http://www.wbcsd.org/eco4biz2013.aspx

2 Maximilien Rouer et Anne Gouyon (2007), Réparer la planète. La révolution de l'économie positive, Lattès. [Repairing the planet. The revolution of positive economy]

1 https://www.globalreporting.org/resourcelibrary/Biodiversity-A-GRI-Resource-Document.pdf

#### **GRI<sup>1</sup>: biodiversity indicators**

**EN11:** Location and size of land owned, leased or managed in or adjacent to protected areas and areas of high biodiversity value outside protected

**EN12:** Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.

EN13: Habitats protected or restored.

**EN14:** Strategies, current actions, and future plans for managing impacts on

**EN15:** Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk.



A study by Deloitte in 2011 found that of the 50 biggest companies in the world, very few are reporting GRI indicators specific to biodiversity, as can be seen from the results below:

- 29 companies adhering to the GRI guidelines for sustainable development, of which
- -19 reporting on EN 13
- -16 reporting on EN 11
- -13 of the companies not following the GRI guidelines, however, did report on biodiversity indicators in their sustainable development report.

In France, only 3 CAC 40 companies published one or more GRI biodiversity indicators.

• In 1998, the World Bank produced The French National Biodiversity a guide entitled Guidelines for Observatory (ONB) helps companies Monitoring and Evaluation for **Biodiversity Projects.** It provides the have been implemented to monitor the fundamentals for developing and implementing a biodiversity evaluation national, European and international and monitoring plan and provides help level. These indicators and the database in selecting indicators. Although it is they feed into are a precious source of aimed at projects funded by the bank, information. it is a useful guide

http://siteresources.worldbank.org/IN-TBIODIVERSITY/214584-1110959186651 /20611829/270310 Guidlines0for0monitoring.pdf

issued a guide for voluntary impact assessment studies. http://www.cbd.int/doc/publications/cbdts-26-en.pdf

New projects are underway, looking in particular at including biodiversity in a product life cycle (LCA). On an international level, the World Resources Institute and the Global Nature Fund are also working on these issues.

• In Europe, the European Environment Agency (EEA) recommends using the DPSIR model (Driving force, Pressure, State, Impacts, Response) to integrate biodiversity into environmental evaluation. http://www.eea.europa.eu/ publications/92-9167-077-4/page013.html

On a sector level, reporting guides do exist, such as the guide, «Biodiversity and Ecosystem services; what are they all about?» aimed at the chemical industry. http://www.business-biodiversityeuglobal/ download %7BYOKFPWXQNV-1242013171926-BGWHNQPOIN%7D.pdf

• In France, the IUCN is in the process of preparing recommendations on how to develop biodiversity indicators, together with a selection of sample indicators. The IUCN's approach is very comprehensive and companies will need time to integrate and implement all the recommendations.

find national biodiversity indicators that commitments France has made on a

Standards such as ISO 14001, the European **EMAS** standard (Eco Management and Audit Scheme) and ISO 26000 can also help integrate biodiversity monitoring into • The Convention on Biological Diversity continuous improvement processes.

Choosing the method or tool to use

to assess how the business interacts

with ecosystems and then defining

meaningful indicators can be complex, as

the Michelin journey shows, but are steps

that must be taken in order to implement

an action plan (see inset).

#### French biodiversity indicators

By signing the Convention on Biological Diversity (CBD), France has committed to putting in place a national strategy to meet the goals of protecting biodiversity, sustainable use of biodiversity and fair sharing of the benefits obtaining by using genetic resources.

To meet national, European and international goals, France created the National Biodiversity Observatory (ONB) at the beginning of 2011. The ONB provides sets of indicators that respond to the varying needs of stakeholders on a range of subjects.

During 2012 and 2013, the Foundation for Research on Biodiversity (FRB) carried out a scientific analysis of each ONB indicator with a particular focus on reliability, robustness and sensitivity to produce a report of the strengths and weaknesses to help users understand the indicators.

All the indicators can be viewed on the ONB website: http://indicateurs-biodiversite.naturefrance.fr

#### MICHELIN. Which assessment methods and indicators for industrial sites?

#### Michelin knows that ecosystems are both essential and fragile

All businesses depend on ecosystem services and biodiversity, such as the provision of raw plant materials, water supply and climate regulation, to carry out sustainable activities in the long term. And Michelin is no exception to that.

As part of its commitment to conserving the effectiveness of ecosystems, Michelin isn't just designing products that respect ecosystems (lighter tyres that use fewer raw materials and less energy) and supporting sustainable rubber cultivation (around 40% of the rubber Michelin uses comes from rubber trees); it is also conserving local ecosystems near each of its sites.

#### Being aware of and preserving the ecosystems around sites

In 2007 Michelin started to follow a new approach which aimed to increased its awareness of how its industrial sites interact with the ecosystems around them. The approach consisted of exploring different tools that allowed the Group to quantify potential interactions between the sites and the surrounding ecosystems, to be able to protect them better.

In 2008, an ESR (Ecosystem Services Review, see above) was carried out at the Nyiregyhaza site in Hungary. This highlighted that the Hungarian site was exposed to a number of risks for which it is not necessarily responsible, such as air pollution (a smog alarm system which enables the local authorities to stop industrial sites from functioning in the event certain air pollution thresholds are exceeded).

The ESR produced a number of useful insights, but was Michelin will also continue to publish its on-site activities too time consuming and wasn't able to differentiate to conserve or restore ecosystems, in the spirit of indicator sufficiently from one site to the next to be practical for all GRI EN 13. of the Group's sites.

At the end of 2010, a second method was tested. Designed by an independent body, it aimed to identify not just the impact and dependencies of a site on ecosystem services, but also its environmental vulnerability, i.e. how close a site is to areas of ecological interest.

#### Find out more at

http://www.michelin.com/corporate/FR/finance/documents, Rubrique Documents de référence



#### 14 Measuring and managing biodiversity



#### A new indicator for a better understanding of the risks

In 2012, the Group decided to build on these insights and take an inventory of protected areas designated by supranational, national or local entities within a 15 km radius of its industrial and research facilities. Where there were surface or underground bodies of water, the survey area was increased downstream by an additional 15 km.

By mid 2013, this inventory had been carried out by 67 of the 72 sites involved, located in 18 countries, and found that the area studied contains a total of 369 protected areas. More specifically, the survey found that 27 sites are located under a kilometre away from one or more protected area.

2014 will see the implementation of a three-pronged approach as a result of this inventory:

• Changing the tool used to analyse the environmental aspects and impacts of sites (ISO14001) so that the presence of ecosystems and the biodiversity in the surrounding area is taken into consideration more consistently when ranking environmental aspects;

• Systematic consideration of protected areas in the context of impact studies for new sites or when extending sites; • Publishing a GRI EN11 monitoring indicator in future

annual reports.

Publishing a new indicator always leads to an increase in work to create it and keep it up-to-date. For existing sites, excluding where extensions are planned, the indicator will be updated every five years, as this frequence is sufficient to maintain the awareness raised in 2013, without making it a routine and predictable exercise by demanding a yearly update.



#### CAISSE DES DÉPÔTS GROUP, the ESR tool for identifying the impact and dependencies of Group activities in relation to biodiversity

The study was carried out at six Caisse des Dépôts sites in a range of sectors: Icade and SNI for the property sector, Egis for infrastructure, Société Forestière for forest management, Compagnie des Alpes for tourism and Transdev for public transport.

The chosen method was to focus on the activities of the business itself, and not to include suppliers or customers. Likewise, the accent was on seeing the bigger picture - to the detriment of a more detailed site-level or product-level analysis.

The ecosystem services identified for the majority of sites were related to water (clean water, water treatment) and climate regulation, which are common themes for the majority of businesses (MEDEF, 2013). However, specific services do stand out for certain companies within the Group, such as services linked to food for tourism and leisure operators, or the provision of wood or game for the Société Forestière. An unexpected result, and therefore the most interesting, was related to cultural ecosystem services, identified as a priority for the property industry. It would appear that conserving biodiversity in and around a building is a key engine for creating a feeling of community amongst the occupants.

#### Feedback

In addition to these results, the ESR analysis produced a number of insights:

- The ESR tool involved interacting with different operational employees about their activities and created a constructive dialogue and information flow, creating a shared knowledge base on the challenges and benefits of biodiversity.
- It also triggered a process of awareness-raising, of exchange and created new awareness about the challenges and benefits of biodiversity at a group and business unit level.
- Finally, the analysis allowed Caisse des Dépôts to arrive at a formal, diagnosis with contributions from all units that is understood by all. The Group was able to capitalise on relevant information and tie this up with other environmental issues, mainly water and greenhouse gases.

# **2** What are indicators used for?

General corporate policy, management or communication tool, risk prevention... a business can have a number of reasons for developing and using biodiversity indicators. This motivation is important when choosing indicators.

#### Rolling out corporate ethics

Some businesses are involved in the community above and beyond simple economic transactions, they are interested in their stakeholders and committed to sustainable development, often going further than regulatory requirements. Indicators can be used as a

way of communicating and rolling out the company's ethical commitments defined by directors at the top, and required approach and biodiversity philosophy of all business units and operations. After confirming that this code of ethics includes conserving biodiversity, defining a strategy and ensuring suitable resources have been allocated, implementing biodiversity reporting is of approval.

#### EUROVIA, a commitment with the SNB stamp of approval



BIODIVERSITÉ 2012-2015

Conserving biodiversity is a central concern to improving the biodiversity for Eurovia, one of the leading transportation infrastructure and urban development companies in the world.

The group's voluntary policy was initially based on a diagnosis of the impact all of its activities Central actions of the plan: have on biodiversity. The picture this assessment • Assess the ecological value of the sites depending on their drew was a rich learning experience and led to a relative zoning and fauna and flora data;

concrete action plan in response to the issues it • Standardise the fauna and flora data to better understand brought to light. In order to consolidate its plan and support their value and include them in the French National Natural Heritage Inventory (INPN):

the State's biodiversity policy, Eurovia made a commitment within the framework of the National Biodiversity Strategy • Implement a global biodiversity indicator developed by the project. Its plan, for the period 2012-2015, was acknowledged SPN, which takes into account the environmental context and validated by the SNB National Committee in October 2012. (TVB. Green and Blue Belt - a French initiative for the protection and restoration of biodiversity, zoning, etc) and involves a group-wide inventory;

A true joint undertaking, operational management teams worked under the guiding hand of general management Conduct a survey of biodiversity management methods; to contribute to developing Eurovia's commitment, which • Implement action plans that are tailored to and adequate comprises 13 key actions and includes seven of the SNB's to meet the challenges; goals. To confirm the merits of its plan, receive guidance and • Raise employee awareness and deliver training. gain scientific validation for its choices, whilst contributing





the natural next step.

In France, companies can have their recognised by submitting their plan to the SNB (National Biodiversity Strategy, see below) and the Ministry for Ecology, Sustainable Development and Energy (MEDDE) and gaining the official stamp

3

EUROVIA

knowledge base. Eurovia asked the National Heritage Department (SPN) at the National Museum of Natural History to work in partnership for the duration of its SNB commitment



#### **GDF SUEZ.**

indicators for tracking the company's commitment to biodiversity

#### There are a number of reasons for GDF SUEZ to commit to preserving biodiversity:

- Its activities are highly dependent on the biodiversity that supplies the raw materials it needs for production and regulates the environment, for example hydroelectricity or biomass.
- Its activities, as for all industrial activities, share the burden of direct or indirect responsibility for the deterioration of ecosystems,
- Its activities provide a number of potential solutions for restoring or conserving biodiversity,
- Recognition that we need to further our knowledge of biodiversity and interdependencies.
- The majority of stakeholders (customers and local community leaders) are voicing their expectations and calling for a dialogue with the group.

The group was able to exploit the expertise of its internal teams to define its biodiversity objectives and test the project, mainly SUEZ ENVIRONNEMENT (see inset) and also that of its external partners: the French Committee of the International Union for the Conservation of Nature (IUCN) and France Nature Environnement (FNE).

Back in 2008, a critical analysis of the group's ways of working and indicators linked to biodiversity led to the definition of biodiversity indicators, which were including in the group's environmental reporting process.

- Number of environmental diagnoses carried out
- Number of sensitive sites surveyed.

In 2010, the GDF SUEZ group committed to creating a plan of action for each of its European biodiversity sites by **2015.** As testament to this commitment and to highlight the value of its voluntary initiatives, GDF SUEZ expanded the two indicators in use since 2008 to create four indicators which are the current indicators, reported on a yearly basis.

- Number of total priority sites based on activity and proximity to a protected natural area
- Number of priority sites with a targeted plan of action taking into account local biodiversity challenges and different stakeholders.
- Number of priority sites with a global action plan

• Number of non-priority sites with a global action plan The priority sites are sites located in or near a protected natural area, the threshold varies depending on the activity and size of the site. For smaller facilities (generally less than 50 MW), the threshold is 1 km; it is 15 km for larger facilities.

#### In 2012, in the context of its SNB-recognised commitment,

the group's first actions were to identify the guidelines for implementing these indicators in collaboration with its external partners and the environmental reporting team. The goal was to define a clear operating methodology that could be rolled out throughout the entire group as a uniform and efficient standard. Initial feedback from the 2013 campaign showed that the road to success will be a long one. Although some business units and/or countries that are already aware of the issues are making excellent headway in taking into account the challenges of biodiversity, an internal communication campaign must be continued to encourage total ownership by all of the group's many business units, to ensure the reporting process is reliable and in order to meet the fixed objective.





#### SUEZ ENVIRONNEMENT, actively driving the number of action plans on its sites

Water treatment and waste management solutions are one The group manages several thousand sites around the way of limiting the physical, chemical and biological impact world. The goal for 2012 was obviously too ambitious, as of human activities on natural environments. So improving some countries have yet to reach the necessary levels of development and experience in protecting biodiversity and the quality of these processes represents an essential contribution to preserving biodiversity. Nonetheless, the a significant effort in terms of providing information and facilities managed by the group do put pressure on the raising awareness remains to be done. natural environment by the very fact of their presence and

emissions to water, land and air. However, the great number of plans implemented both at a This is why SUEZ ENVIRONNEMENT set itself the goal, back group and subsidiary level attest to the real progress made in 2008 and in the context of its Sustainable Development during this period. Which is why the goal for 2016 is still Road Map, of putting in place an action plan for 100% of its ambitious: significantly increase the number of regulatory sensitive sites - those located close to a protected natural and voluntary actions plans put in place at sensitive sites in site. In 2012, around 60% of its 240 surveyed sites had put or near protected areas. an action plan in place.





→ SUEZ ENVIRONNEMENT indicators for sensitive sites								
(Number of sites)	2010	2011	2012					
Sensitive sites	193	212	240					
Sensitive sites with action plan	31	39	40					
Sensitive sites with voluntary action plan	98	103	104					
	SUEZ ENVIRONM for sensitive sites     (Number of sites)     Sensitive sites     with action plan     Sensitive sites     with voluntary     action plan	SUEZ ENVIRONMEMENT in for sensitive sites       (Number of sites)     2010       Sensitive sites     193       Sensitive sites with action plan     31       Sensitive sites with voluntary action plan     98	SUEZ ENVIRONNEMENT indicators for sensitive sites(Number of sites)2010Sensitive sites193Sensitive sites with action plan31Sensitive sites with voluntary action plan98					

#### A management tool

Implementing any corporate policy requires tailored tools to make progress towards set objectives measurable. The same goes for biodiversity.

#### Engaging the whole company

A company has an impact on biodiversity at each and every level of its operations; from the purchasing director who decides on the policy for the supply of required is reduced - but alternative

raw materials to the site caretaker who decides when to mow the lawn. So it's important that staff at all levels understand the issue of biodiversity and take ownership of the actions that need putting in place in order to make managing biodiversity a part of their routine. This makes implementing indicators a way of managing biodiversity across the whole company.

This is especially true given that often

good biodiversity management doesn't

cost much at all: maintaining green

spaces is far less expensive if lawns are

mown infrequently; the amount of input

vegetation management techniques can cancel out these savings... Some methods and purchasing certified raw materials can also be slightly more expensive. Whatever the circumstances, other indicators can be just as relevant as economic indicators.



#### SNCF. indicators for managing biodiversity across the organisation

SNCF is already committed to protecting biodiversity, in particular with the rail network owner RFF, but also within its own scope, with a range of actions in relation to its production activities:

- New lines or changes to existing lines (impact studies, construction of tunnels for animals, etc),
- Training workshops on differentiated management in stations (Bondy) and/or across the network (sites on the L line in Paris, etc),



• Testing new approaches which led to reducing the use of phytosanitary products in stations (a flower meadow on stabilised topsoil was tested at Ris-Orangis station) and, along the lines, introduction of local activities to protect species (eq: managing beavers' dams in ditches along existing railway lines, etc),

• Conducting a study with the National Museum of Natural History on the contribution of railway lines to managing biodiversity in urban and suburban areas.

SNCF wants to do more and put in place a central biodiversity policy with specific monitoring indicators. For the moment, the first indicators used across the company relate to monitoring the use of phytosanitary products. This indicator is already included in the annual report. In addition, SNCF makes sure all of its industrial sites have

an ISO 14001 certification to manage the impact risk of its manufacturing activities. It aims to put the finishing touch to its toolkit by implementing a tailored environmental management system in all of its facilities by 2015.

#### SÉCHÉ ENVIRONNEMENT, a tool for measuring landscape integration

Specially developed by internal teams, this tool analyses how well integrated sites are into the local landscape. It was implemented for Séché Environnement's storage sites. Its goal is to capture the subjective idea of the company's impact on the landscape, as a simple visual representation, using relevant and significant measures to track how the impact of the activities on the landscape changes over time. It uses periodic photographic reporting.

#### This tool:

- Provides the company with a visual representation of the aesthetic impact it has on the landscape;
- Allows the company to follow the progress of development projects;
- Helps anticipate and plan development priorities;
- Integrates the indicators into the ISO 14001 system:
- Creates a model that can be transferred to all Group sites.





#### It is made up of five numbers that report negative perceptions according to

- Visibility of waste;
- Visibility of work area;
- Visibility of excavation and stored materials and equipment;
- Absence of landscaping features: lawns, plantations, etc; • Poor maintenance: wild vegetation, various stored materials, evidence of facility activity.
- The value of the criteria selected is expressed as a percentage of the overall visibility of the site.
- The viewing sites are located close to the sites on public roads that are regularly used by the local community. on A roads and on a selected few residential properties.
- The indicators are assessed by individual or joint analysis of the values. The sum is presented in a graphic representation and the results help highlight and prioritise actions to take.

#### Ciments Calcia Italcementi Group

#### CIMENTS CALCIA, Biodiversity Management System (SMBio)

**How it started:** a global environmental management approach that started 20 years ago, the signing of a partnership convention with the French Committee of the International Union for the Conservation of Nature (IUCN), translating the commitments made by Ciments Calcia and GSM in 2011 to integrate the National Biodiversity Strategy into everyday business practices.

**How it works:** formalise the entire biodiversity approach adopted by Ciments Calcia and GSM several years ago, include the challenges and benefits of biodiversity into everyday business practices, organise actions to consider and encourage biodiversity within the business and each of its sites.

Its ambition: rolling out SMBio to 100% of its site by 2017.

Inspired by an environmental management system, it is made up of highly functional tools that adapt to all stages of a quarry's lifecycle. Sets national operational goals for the period 2012-2015, supplemented by goals set locally:

**22** Measuring and managing biodiversity

- Assess the biodiversity of 100% of sites using standardised methods (rigorous inventory and indicator methods),
- Introduce a formal environmental monitoring procedure for at least one species in all sites,
- Strengthen local partnerships with at least one partner per site,
- Share biodiversity best practices with the whole company,
- Raise awareness of biodiversity across the company,
- Construct an IUCN-validated programme for controlling invasive exotic species,
- Maintain a high level of corporate engagement in the industry's work on biodiversity,
- Develop information on biodiversity with external stakeholders,

Early feedback shows a high level of interest in the approach, demonstrated by employees' eagerness to adopt the specific actions.

The environmental management system means this policy is easy to roll out to all sites and tailor to local circumstances.

Biodiversity monitoring is now included in local and national management reviews.











#### EDF, measuring the ecological value of land to enable sustainable management of natural spaces

## EDF-French National Natural History Museum Partnership

EDF decided to leverage a scientific partnership with the Natural Heritage Department (SPN) of the French National Natural History Museum (MNHN) to develop methods and tools to categorise, monitor and manage terrestrial biodiversity that could be recognised and rolled out across the nation. The land owned by EDF across the country - in a range of different environments, with varying levels of anthropisation, from suburban areas to national parks - represents an excellent opportunity for testing and validating the tools developed by the SPN on a wide range of sites.

In 2013, six sites were categorised: L'île du Rhin, where a re-naturation operation is underway, the Bizourtère forest in the Pyrenees, the Cordemais site on the Loire estuary, the Nogent/Seine site, the Verberie site in the Paris basin and the Chooz site in the Ardennes. These inventories have fed into around 10 sub-indicators that reflect the diversity of species, habitats, the heritage value and ecological functionality of the site. They have been combined to form a global indicator that gives each site a mark from 0 to 100. These indicators can be monitored over time and help guide site management.

#### Innovate

Understanding the link between business and biodiversity and developing indicators leads companies to anticipate future constraints and opportunities and can open up new horizons.

impact on people and the environment can be born out of exchanges between Indicators help build a common language academic research and corporate for the business and its stakeholders, research - this is the case with green facilitating communication and making chemistry. For example, Lyonnaise des the company's commitment to the Eaux, a company that monitors the environment easier to understand, impact of biodiversity on the composition thereby reducing the risk of and evolution of waste water, has

managed to quantify the potential of an area downstream from a waste water treatment plant to combat certain emerging pollutants that are not dealt with by the plant itself (see inset).

#### Communicating and uniting: Alternative solutions that have less of an **a corporate and social tool**

miscommunications.

#### Indicators as an internal and external communications tool.

The verdict is unanimous: including biodiversity in the company's business plan is an excellent method of communicating and engaging employees, who are increasingly aware of their employers' social and environmental responsibility policies (CSER). By taking this voluntary approach businesses are going beyond regulatory requirements and employee involvement can take a number of forms, such as participating in biodiversity inventories or observations on a site or creating working groups on actions for improvement.



#### LYONNAISE DES EAUX Dragonfly zone: An area for biological freedom and combating emerging pollutants

The first Dragonfly Zone, designed by Lyonnaise Des Eaux (LDE), was created in August 2009, downstream from the Saint-Just-Saint-Nazaire-de- Pézan water treatment plant, it involved introducing water to over 3.5 acres of dry prairie. The goal of the scientific study, which lasted three years, was to assess the benefits of complementary treatment, particularly in eliminating micropolluants, and to understand the environmental value of the local natural heritage.

The results of the study show that the majority of the initial aquatic and terrestrial flora (35 species in-situ when the project was constructed) was maintained, whilst the local floral biodiversity quickly flourished, with attendant fauna symbolic of wetlands (insects and amphibians

		2009	2010	2011	2012	Benchmark site 2011
	Aquatic flora	18	32	32	43	0
P	Terrestrial flora	17	81	81	100	23
	Locusts, grasshoppers and crickets	0	17	17	18	4
X	Dragonflies	0	12	12	15	1

from the batrachia, odonata and orthoptera orders and birdlife). The whole of the redesigned areas was colonised and after three years the number of floral species in the area amounted to 143. Two species of orthoptera (grasshoppers, crickets and locusts) that are endangered by the regression of wetlands inhabit the Dragonfly Zone. In addition, the site has also proven an attraction for birds, which use it as a feeding area. In 2010, 27 species were detected on the site, with egrets, herons and moorhens being regular visitors. A nearby benchmark site, similar to the terrain before the project began (dry prairie), was monitored to assess the biodiversity introduced by creating this Dragonfly Zone. The results of monitoring the terrestrial and aquatic flora and insects (orthoptera) shows that, as a result of introducing

water to the area and transforming it into a wet ecosystem, the Dragonfly Zone is home to more species than the benchmark site (see table below).

At the end of 2012, following this study, the ZHART project (Artificial Wetlands projects), led by Suez Environnement, began for a period of 28 months. It will ascertain what happens to micropollutants in the flora and macroflora, develop passive sensors suited to measuring in wetlands, build useful tools for the prediction of biodiversity, assess the land and social footprint of introducing the concept and produce a scaling and operating guide for ZHARTs so that this method can be transferred to other sites.

In the context of external relations, biodiversity indicators can bridge the gap between different stakeholders and create a new basis for dialogue and action. Linking actors up in this way can also change relations with the company and how it is perceived by:

- The world of science, where the company can create partnerships to study biodiversity in a particular area,
- Organisations that manage natural areas, as shown by the RTE example of partnerships with organisations of this kind.
- Regional environment directorates (DREAL) and other administrative bodies and local MPs in areas where the company operates,
- The general public,
- Suppliers and distributors,
- NGOs.

When a company opens a site in an area indicators can be used as a formal way of communicating to answer the questions asked about the business and its impact on the environment. Transparency and communicating a simple set of indicators promotes the process of integration, builds trust and creates a dialogue between the company and the local community.



#### RTE.

that manage natural areas

#### Partnerships between the electricity transmission operator (RTE) and organisations that manage natural areas

Almost 90% of the electricity transmission network is located in rural areas. 100,000 km of the lines that make up the electricity transmission network go through 18,000 communities. RTE therefore has a strong local presence and maintains strong links with rural areas and nature. RTE has made the environment a key commitment in its corporate policy and its activities, it has carried out an in-depth study to understand the impact of its activities on natural areas. Its learnings have fed into its partnership with **natural area** managers and to co-design innovative solutions to harmoniously integrate power lines and the company's presence into the areas it crosses.

A partnership was set up in 2008 between RTE and the French National **Federation of Hunters** to ensure the company's presence is wildlife-friendly by fitting bases around pylons and creating clearings through forestswhere overhead power lines pass.

Another partnership was established in 2010 between RTE and the **Federation** of French Regional Natural Parks (FPNR). This partnership was extended in 2013 for a further three years. Its goal is to promote mutual understanding and awareness of the respective challenges faced by RTE and the FPNR by launching joint initiatives, including knowledge sharing, coordination, training, as well as land management projects. This agreement has been rolled out to a number of regions between different units of RTE and Regional Natural Parks.

In 2012 RTE entered into a partnership with the National Federation of Conservatories of Natural Spaces (FCEN). Its aim is to create land management projects that foster biodiversity, as well as reinforcing links between RTE and the FCEN.

RTE is a partner of the project LIFE Biodiversité Elia. This project will see eight areas be transformed into experimental biodiversity-friendly areas in partnership with biodiversity specialists: Natural Regional Parks, Conservatories of Natural Spaces, Departmental Hunting Federations, National Forestry Office, local organisations for the management of natural spaces and environmental associations

partnerships.



# partnerships with organisations

A national indicator will be used to monitor the results of the land transformed into biodiversity-friendly areas in the context of these partnerships. It will take into account the area covered by the lines and the corridors created and managed by RTE.

As RTE does not own the land over which the lines pass, the owners are closely involved in the developments carried out as part of the

#### LAFARGE,

a number of tools and methods for assessing, measuring and managing biodiversity

Lafarge has been voluntarily committed to preserving biodiversity for over 35 years and wants to make a bigger commitment by adopting a specific **biodiversity management approach.** The central themes of this approach are:

- Participating in steps to assess heritage,
- Putting in place innovative techniques for reconstructing habitats.
- Developing partnerships and working with local actors and experts
- Implementing indicators to measure the evolution of biodiversity.
- Informing and training employees.

To meet this commitment, as part of the Group's 2020 Sustainable Development goals, the company has developed and will implement a biodiversity action plan (BAP) at **all of its** quarries by 2020. This proactive management plan involves establishing an in-depth survey by including actions that go above and beyond merely complying with regulations. In 2012, BAPs had already been introduced on all the priority sites identified in advance using the IBAT1 tool. These sites are located in internationally protected areas, such a Natura 2000 areas, IBA areas, IUCN areas I to IV, etc. A second wave has been launched for 2015 for sensitive sites, which means located in national, regional and local protected areas (PNR, RNR, ZNIEFF, etc). These action plans will also provide an opportunity to take stock of the best practices implemented to promote biodiversity and share them with the rest of the sites.

Lafarge has also developed a special **Toolkit** for this theme. The toolkit, created with scientific support from the IUCN France and the WWF (France and International), is made up of seven tools that track the evolution of biodiversity in **guarries.** Leading to better biodiversity management, they are also used as indicators for assessing the efficacy of the actions carried out. Lafarge's aim is to roll this toolkit out to

all of its aggregate and cement sites and use at least three of the tools by 2020

In France, the first stage is currently being rolled out to aggregate sites, and at least one tool is being used on all priority sites. The tools are chosen based on the context and the local constraints of each quarry.

Future users will receive training to ensure they fully understand the content of the documents and the required actions. Lafarge sees this as a way of transferring the necessary knowledge to environment managers. Tailored information sessions and material will also be delivered for operational personnel. What's in the toolkit:

Tool 1 : study the global dynamic of the vegetation  $\rightarrow$  Understand the surroundings and monitor how they change as activities are carried out.

**Tool 2:** scale for estimating reduction of threats

- $\rightarrow$  Establish how much the global threats to the site have been reduced or not over time.
- Tool 3 : knowledge sharing with a local expert
- $\rightarrow$  A competent external person helps:
- identify the biodiversity of the site, the threats and the difficulties which must be taken into account for continuing operations and rehabilitation,
- make recommendations on site management.
- Tools 4 and 5: ecological monitoring of a species or one or more groups of species

 $\rightarrow$  Study and describe colonisation by a specific species, or a group of species over time. Measure the success of the conservation activities and guide site management.

Tool 6: extend the fauna-flora strand of the environmental impact study

 $\rightarrow$  Evaluate the efficacy of measures taken to reduce the negative impact.

100

80 -

60 -

40 -

20 -

ACTIVE QUARRIES

2 3

2011 2012 2011 2012 2012 2011 2012

1 Quarries where

a biodiversitv

2 Quarries with a

sensitivity analysis

has been carried out

habilitation plar

3 Quarries with high

biodiversity with

management plan

a biodiversity

**Tool 7 :** Long-term Biodiversity Index

 $\rightarrow$  Evaluate biodiversity in the long term

For more information go to: https://www.ibatforbusiness.org

#### **PROGRESS OF REHABILITATION AND BIODIVERSITY**

SAMPLE OF 708 QUARRIES	Result from 201
% of quarries with a rehabilitation plan (goal 85% by 2010)	84.6 %
$\%$ of quarries where a biodiversity analysis has been carried out (using IBAT^{(1)} data)	100 %
Of which are located in or near a protected area <sup>[1]</sup>	18.5 9
Of which have a biodiversity programme (goal 100% by 2012)	<b>99.2</b> 9
% of sites home to protected species (red list) $^{\slash 2]}$	17.8 9
% of sites in official partnership with NGOs for the preservation of nature	34.6 %

(1) Quarries within a 500 m radius of IUCN I-IV, Ramsar, IBA, Natura 2000 (2) A species classifies "protected" by the IUCN



#### Anticipating and preventing in line with the studies reform (Decree the risks

#### Regulations

Facilities that represent a significant inconvenience or hazard are subject to legislation for installations classified for environmental protection (ICPE). As a result, there are certain regulations they must comply with and report in order to continue operating. Amongst other things, they must carry out impact studies (Articles 3-4 of Decree No. 77-1133 of 21 September 1977) and submit them to the prefect. The studies must include an analysis of the initial status of the site and its environment, the facility's temporary and permanent direct and indirect effects on the environment and how the site is returned to its original state after activities have been completed,

No. 2011-2019 of 29 December 2011) Far more recently, and in line with Article focused on three principal objectives: 225 of the "Grenelle II" law, Decree No. complying with French and EU law, simplifying the systems and a guarantee that the measures set out in the impact study will be effective. In concrete terms, this reform defines lists of projects that will be subject to impact studies either as a rule or on a case by case basis after consideration of the criteria and thresholds. It reinforces the need for a thorough impact study, informing the public and monitoring the impact by creating an administrative policy. The requirements that must be respected when operating come from the impact study and are often set out as key parameters in the authorisation to operate. These parameters become the main indicators for monitoring the

#### MARSH.

#### including biodiversity in environmental risk insurance

In the first decade of the 21st century, faced with the constantly expanding body of environmental responsibilities for our clients and their impact on insurance, Marsh France created a department dedicated to environmental risk.

Type of

Type of

When the European Directive 2004/35/EC introduced a the type and number of dangerous substances in relation to new obligation in relation to outstanding biodiversity, the location of protected areas and the prevention system the insurance industry noted that it differed from the implemented by the company. traditional system on the following ways: a system Today, an increasing number of companies insure against involving making good damage to nature rather than biodiversity risk and experience shows that just one paying compensation and applying administrative law to accident can cause a number of different types of damage. all regulated activities. Requirement to prevent significant The following table provides a summary of the types of risk environmental damage from occurring systems for considered by the insurance industry, the damage suffered compensating the environment, and applying this is why by the insured party (Damage), the harm caused to the the insurance and reinsurance markets have previously environment (Responsibilities), as well as the new types excluded biodiversity from traditional insurance cover. of insurance cover. These policies are applicable to site Marsh, in partnership with a range of other actors, was operations and services provided to third parties, including the driving force behind the creation of biodiversity cover as transport. part of a specific "environmental risk" insurance policy.

#### As applying rates to risks by just extrapolating past data was difficult, the insurer worked alongside client companies to look at the issue of biodiversity and participate in the necessary learning process.

party or the environme Damage to Prever assets and dam operating loss guara

Physical injury

Financial losses sustaine

result of damage caused to

impact of the site on biodiversity.

2012-557 of 24 April 2012 establishes a list of environmental information that must be communicated. This includes protection of biodiversity, as well as the requirement to report on waste and pollution management, the use of sustainable resources and climate change (management of greenhouse gases).

Measuring biodiversity also means anticipating regulatory changes, such as changes in environmental law and redress for environmental damage, calculated using the units of biodiversity destroyed, or legislative changes that affect the environment.



The insurer makes its own risk analysis, communication and prevention tools available and pays out for incidents that occur despite every effort. The risk audit carried out in advance, often in the form of a questionnaire, now considers

Responsabilites				
Administrative Directive 2004/35/ EC and transposition laws.	Administrative Classified Facilities	Damage to third parties		
Biodiversity	De-pollution fees	Physical injury, material and consequential damage		
	R Administrative Directive 2004/35/ EC and transposition laws. Biodiversity	ResponsabilitesAdministrative Directive 2004/35/ EC and transposition laws.Administrative Classified FacilitiesBiodiversityDe-pollution fees		

environmental responsibility provides a tends to be upheld by the legal system, framework for preventing and repairing damage caused to the environment by harm in the French Civil Code is being private entities. It defines the conditions discussed. These regulatory changes of compensation, stating that "the have pushed insurers to change measures for the repair of harm caused aim to restore natural resources and environmental risk as shown by the their environmental services to their original state and eliminate any risk of serious harm to human health" and Environmental compensation envisaging, in the event the original state cannot be achieved, restoration modifying natural spaces (soil of another site depending on the artificialisation) are the primary causes populations affected by the damage by of erosion of biodiversity. In France, way of compensation. Application of urbanisation and the construction of

The law of 1 August 2008 on the law on environmental responsibility and the inclusion of environmental their biodiversity offering to cover Marsh inset on page 27.

Land development projects and

transport infrastructure causes the loss of the equivalent of 150,000 acres of natural spaces per year - in other words an area almost the size of Malta every six years. The law of 10 July 1976 on protecting nature states that land development must avoid, reduce and compensate effects on natural areas. as French law considers them to be of common interest

However, this regulation has long been ignored. The post-Grenelle Environment Forum landscape marked an important step, setting a joint and mutually agreed goal of "no net loss of biodiversity".





#### CDC BIODIVERSITÉ. monitoring and assessment indicators for compensatory measures

Compensation is a regulatory requirement subsequent to the protection of nature law of 1976. It contributed to making the preservation of ecosystems more widespread and more effective by providing long-term conservation of areas conducive to biodiversity.

To this end, stakeholders (scientists and non-profits) and the State have evidenced the importance of using long-term monitoring and assessment tools alongside compensatory measures to help make environmental compensation efforts more effective. Tools of this type would not only improve transparency and how the commitments made by directors of works are monitored, the feedback would also help identify areas for progress.

By way of contribution to this dialogue, CDC Biodiversité, a leader in the field of compensatory measures, has an ongoing piece of work around the implementation of indicators. In addition to individual monitoring indicators for each project, such as indicators tracking the guality of the surroundings or the success of environmental engineering projects, joint and summary indicators would also be useful. For example. a surface indicator that shows the area in acres and/or the number of compensation units could be split into biodiversity activity type (creation, restoration or management) and/or the type of area (open spaces, closed spaces, forests, etc).

#### Deloitte.

#### DELOITTE. external communication and level of company engagement

Although the issue of biodiversity is referred to in nonfinancial corporate communication with increasingly frequency, it still isn't always clearly communicated to stakeholders. To get a clear view of corporate communication on the subject of biodiversity, in 2012 Deloitte carried out a study called Business and the Biodiversity Challenge: a study of actions among the Fortune Global 50 companies. The results show that over 80% of the companies studied provide a fairly detailed report on the steps they take to protect biodiversity.

In addition, a wide range of different types of companies are involved. Some companies, as a result of regulatory requirements or pressure from stakeholders and learning from some disastrous accidents, have had to get on board with the issue of biodiversity very early on. Meaning that oil and gas companies are amongst those which provide the most detailed communications on their biodiversity protection policies. Of the 17 oil and gas companies in the Fortune Global 50, 14 publish their efforts to control the impact of their activities on biodiversity on an individual site level or a group level. Over a guarter of companies outside of the oil and gas sector don't publish any kind of specific approach to protecting biodiversity.

→ Fortune Global 50 companies commitments to protecting biodiversity



No formal approach

- Protection activities implemented (mainly by means of partnership or sponsorship) Activities to reduce impact on biodiversity implemented
- Biodiversity is a priority, a structured approach has been implemented and significant commitment mad



#### EDF. hvdroecological monitoring around nuclear plants: reporting on the long-term evolution of aquatic ecosystems

For over 40 years, EDF has worked alongside partners from the world of science (IRSTEA, IFREMER, ONEMA and universities) to design and put in place a method for monitoring aquatic environments around nuclear plants. In addition to physical and chemical parameters such as temperature, amount of oxygen dissolved and nutrients, the programmes track a number of biological parameters on the number and composition of plant communities (phytoplankton, macrophytes) and animal communities (macro-invertebrates, fish) that live in the river and on the bottom. First and foremost, these parameters ensure that the regulatory requirements on water discharge and use can be respected. In addition, the long-term data on the physical, geochemical and biological properties of water is a rare and invaluable scientific tool for analysing and understanding the long-term evolution of aquatic ecosystems in bodies of water. estuaries and marine environments.



ightarrow Graph of evolution in fish species richness in bodies of water over the past 25 years



plants in the Loire, Seine and Rhone over the last 25 years (1979-2004)

#### **Brand image**

Some companies or sectors suffer from a bad image when it comes to biodiversity, as the 2013 biodiversity barometer shows for the cosmetic or taking actions to limit its impact. industry, carried out by IPSOS for the UEBT (Union for Bioethical Trade): Dialogue with shareholders "the majority of consumers say they do not have faith in the ways companies As monitoring biodiversity can prevent biodiversity and guaranteeing fair pay to local populations during the sourcing process). 87% of consumers say they would like to be better informed about how companies source their natural do not adhere to the minimum ethical and environmental regulations for sourcing natural ingredients." (Source impact on the company's strategy. IPSOS).

These figures confirm how important transparent communication on biodiversity can be for a company. Biodiversity indicators are a clear means of communication and have a clear starting point. In addition, transparency on biodiversity policies is an opportunity to show the actions the company is taking, leading to a stronger local presence.

#### Sourcing

Eroding biodiversity can make companies vulnerable, depending on the raw materials and ingredients they use. Measuring dependence on raw materials that may become rare is particularly helpful in guiding research and development.

#### Location

Studying biodiversity and the impact a company has on its surroundings can bring to light difficulties with the site itself. The impact it has can change completely depending on the area it is located in (wetlands, forest, near farm

1 http://www.theiirc.org/

land, etc) and depending on the activities planned for local biodiversity. Indicators provide a basis for anticipating the impact a project may have on biodiversity which can lead to changing the location

source their natural ingredients or help anticipate certain risks, it is (particularly with regard to respecting attracting increasing interest from shareholders who have now good knowledge about the challenges and benefits of biodiversity and expect the company to report on its exposure to biodiversity risks as it does for other ingredients and the vast majority would risks. In addition, draft frameworks even be prepared to boycott brands that for integrated reporting (IR)1 require companies to include this information in the value of the company if it has an



Analysing, knowledge, reporting,

communication, anticipating;

biodiversity is now part of the strategic

goals of a number of companies and

spurs directors at the highest levels to

get involved more actively.

# **3** Developing and selecting indicators for the business

The quality of reporting tools is often a direct result of this development process.

The survey and initial thoughts generally give the company's team that deals with the environment the wherewithal to suggest a first set of indicators. In fact, given the range of objectives and the different temporal and spacial scales, it's not easy to come up with just one indicator to represent the relationship between the company and biodiversity: there is no alternative to environmental resources; if there were, this would lead to strategies that would probably endanger biodiversity. To make this group of indicators practical in the long term, the company must make a compromise between what it would like to do and what it can do, based on the available resources, the costs and its strategic goals. Choosing guantitative and qualitative indicators depends on the company's range of sites and the nearby species and habitats; beyond that, the allocated budget and access to expertise, human resources and knowledge all play their part.

#### **Creating a dialogue** with management: the financial approach

When choosing these first indicators, companies often prioritise themes that have the biggest financial impact, such as the impact of biodiversity on the market and on turnover, the cost

of compensation or the risk of having to pay for restoration activities in the event of an accident, etc. Naturally, companies are concerned with their bottom line. It's not easy to find a place for biodiversity in this context but, if they are meaningful, statistics can help raise awareness about the issue amongst management. Experience shows that in the linear infrastructure sector, the cost of stopping works once they have started is very high; the risk is therefore higher if stakeholders take action against the project in the name of biodiversity. This makes biodiversity a priority issue for senior management of companies in this sector.

There are several methods for carrying out financial evaluations, but none of them meets all the needs; at this early stage restoration costs can only be a reasonable estimate. The biggest deterrent is the potential that operating permits could be revoked.

Analysis Centre (CAS) led by Bernard Chevassus-au-Louis and entitled "Economic Approach to Biodiversity and Ecosystem Services" proposed the first use values for ecosystem services in relation to the level of biodiversity in France so that they can be used instead of zero to represent biodiversity in socio-economic calculations. As an example, the report

gives metropolitan forest ecosystems a value of £390 per acre per year, which may change based on how often the land is used for leisure or tourism and how the ecosystem is managed. Another example is Đ240 per acre per year for extensively used prairies. These values are now used by some companies, such as motorway companies, in the context of the "avoid. reduce, compensate" triple-pronged approach of Article 2 of Law of 10 July 1976 (see pg. 27). As regards services provided by nature, such as climate regulation or pollination of crops, a recent study<sup>1</sup> found that the cost of doing nothing was far higher than the cost of carrying out biodiversity conservation activities. In this case it's difficult to put a price on the ROI of a company although a real service is provided, nevertheless, this is the goal TEEB is aiming for.

The Foundation for Research on Biodiversity (FRB) has also done some work on biodiversity values. Having surveyed the existing French research The 2009 report from the Strategic landscape in this area, it analysed the expectations of different parties on getting the most out of biodiversity and also carried out an analysis of some economic sector initiatives. There are a range of values attributed to biodiversity - intrinsic, heritage, instrumental, option - and they can change considerably depending on the organisations involved and the circumstances.

services an economic value would help them find a place in the economic sphere, but it does raise a number of both ethical and practical questions. The stakes are high and a number of initiatives are moving in this direction. Finally, the FRB study confirms that, "legislation plays an essential role in the recognition or nonrecognition of these biodiversity values by actors".

#### You can download the key points of these studies at:

http://www.fondationbiodiversite. fr/images/stories/telechargement/

#### Creating a dialogue with stakeholders

Creating a dialogue with stakeholders is essential once the process of defining and

Giving biodiversity and ecosystem rolling out biodiversity indicators reaches a certain point, to ensure acceptance by the company, that the reporting is recognised and that the actions are relevant.

> After working on the issue internally in the first instance, it is in the company's interest to enter into a dialogue with its stakeholders to benefit from their expertise (particularly the expertise of the scientific community, but also of local naturalist or environmental associations, which are often more aware of local particularities, in the

areas where a detailed inventory has not been carried out), to understand their needs and priorities and include these in the ultimate data on a local and consolidated group level. Consulting stakeholders is all the more interesting as many of them must be involved in the activities for preserving biodiversity throughout operations or the activities to rehabilitate the site, so the company

needs to gain their buy-in to the project.

Choosing a smaller set of indicators, which are considered joint priorities, makes it easier for the general public to understand and digest the results, but this doesn't prevent the company from taking things further when working with experts.

For a number of years, quarry operators have been working to reduce their impact on biodiversity and to re-landscape the sites after use. Studies carried out with scientists on the presence and preservation of species and also landscape integration - an essential factor for focused monitoring and management - have allowed the profession to develop a great deal of knowledge and a well-informed handle on biodiversity, as the Lafarge inset on biodiversity explains.

The linear infrastructures sector faces an unusual challenge: the high number of stakeholders along a work site stretching several dozen or hundreds



#### VINCI, systematic research in partnership with stakeholders

Transport infrastructure (motorways, airports) concession-• Another example is the partnership between Eurovia construction activities, earth-moving and quarrying and the Natural Heritage Department of the French National Museum of Natural History (see Eurovia inset, activities have long operating cycles and a direct impact on natural environments. VINCI has been utilising Coordination pg 17) which, amongst other things, defined a biodiversity Biodiversité for some years now (which unites Group indicator tailored to its own activities. environmental specialists and environment managers from subsidiaries) and works very closely on projects in • VINCI Autoroutes, biodiversity operations linked to the partnership with the relevant actors (associations for the motorway Green Package led to environmental studies protection of nature, regional conservation organisations, carried out with experts, associations for the protection research consultants, State departments, environmental of nature, national botanical conservation organisations, experts, universities, scientists, etc) to assess the impact research centres and local councils. These diagnostics of their activity on the environment and biodiversity, put in allowed the group to identify the conflict areas between place activities that can make a difference and establish nature and the motorways, to understand how local indicators so the success of the actions can be monitored. environments work, measure the effect of infrastructures and then plan and execute landscaping projects to favour To do so, having a shared lexicon is essential, as is using fauna and flora. These initiatives are monitored and, concrete and objective benchmarks and engaging with depending on the results, may be reproduced on other sites.

project stakeholders when developing this lexicon. This means the Group benefits from the expertise of its partners and monitoring tools to assess the actions put in place are developed together. A few cases studies:

• On the construction site of the LGV SEA line between Tours and Bordeaux, for example, a protocol called "Organisation of the Conservation of Natural Heritage" was signed by LISEA/COSEA and the various stakeholders, for the implementation of compensatory measures. To ensure all the monitoring and activities that measure the success of these measures are consistent across the board, LPO France guides and manages this stage, involving nature protection associations from Poitou-Charentes Nature, the CREN Poitou-Charentes and environmental experts.

and GRT-Gaz show that to address this issue, companies must define methods using cutting-edge science so that all for a number of the examples in this the associations involved feel they are brochure a neutral, trusted scientific relevant; failing this, we run the risk

designed solely with local requirements in mind. It's interesting to see that institution of unquestionable integrity



• VINCI also works alongside the world of science and, in 2008, entered into a long-term partnership with three ParisTech colleges (MINES ParisTEch, the École des PontsParisTech and Agro ParisTech) in the form of a Chair for inventing green installations and infrastructure. One of the benefits of this collaboration is the development of BioDi(v)Strict, a biodiversity assessment tool for use in urban settings. BioDi(v)Strict runs a diagnostic of areas where biodiversity could flourish, linking through a GIS tool. Biodiversity saturation indices are assessed using representative species data (breeding birds, reptiles, butterflies, etc). The project team can suggest meaningful changes on the basis of these indices.

of kilometres. The experiences of Vinci of too many inconsistent indicators plays a significant intermediary role to guarantee that the approach of the many partners is methodologically consistent.



#### GRTGAZ, the contribution of easement strips to ecological continuity

Ecological continuity allows species to relocate, an essential part of adaptation. Faced with growing urbanisation, the need to connect natural spaces has become pressing. The partnership between the French National Museum of Natural History and the GRTgaz Île-de-France and Val-de-Seine areas carried out the first survey of the flora on the easement strips of the natural gas transport network in the Île-de-France area.

The survey ran for three years to produce a global review of the existing floral diversity. The study aligned research on the description of the condition and dynamics of biodiversity on the GRTgaz network with the database of the National Botanical Conservatory for the Paris basin (CBNBP).

The survey was conducted on 100 km of easement strips of the 500 km total in the Île-de-France network and in the Eure-et-Loir network in a forest environment. In total. almost 600 species were detected between 2007 and 2009 (over one third of modern flora in the Île-de-France). 40% of flora in the Île-de-France can be found on easement strips. A number of unusual species (120 indigenous species) were observed. Biodiversity on easement strips is particularly remarkable in the forests of Saint-Germain-en-Laye and the Bassée valley.

Regional species that had not been seen for several years were rediscovered. Five regional and one national rare species were discovered.

Five plants that are remarkable as they are very rare were observed

- St. John's-wort (Hypericum montanum L)
- Peach-leaved bellflower (Campanula persicifolia L.)
- Violet limodore (Limodorum abortivum (L.) Sw.)
- Woodland arctic cudweed (Omalotheca sylvatica (L.) Sch. Bip. & F.W.Schultz)
- Slender broomrape (Orobanche gracilis Sm.)

The other insight from the survey carried out by the National Botanical Conservatory of the Paris basin is that easement strips compensate for the near disappearance of hedges and borders in Île-de-France. These areas between woodland and fields, like easement strips, help species move and reproduce.

The straight strips of grass growing on top of the pipes show the huge value of letting biodiversity thrive without being overwhelmed by thick forest cover. In France and the rest of Europe, biodiversity is fragmented and scattered in small areas.

The CBNBP study shows that easement strips play an important role in the Île-de-France where biodiversity is particularly disrupted. They offer the straight lines that are essential for migrations and join spaces back up - they really do represent ecological continuity. The indicators put in place to manage the green and blue belts must highlight this benefit.



This approach of carrying out a survey, reflecting and consulting is shared by a number of EpE members who have implemented indicators. It helps identify some characteristics that are shared by pertinent indicators.

# **4** What makes a good biodiversity indicator?

Whether an indicator is successful or not depends on how it has been developed.

In the absence of a unit of measurement like a "ton of carbon dioxide equivalent" for climate change, legitimising a company's choice of biodiversity indicators it has selected as part of its policy and reporting process is no easy task. To fulfil the different functions set out above, the indicators the company selects must have certain characteristics. For some sectors, for example for linear infrastructures and mining and quarry operator, methodologies based on long-standing practice have already been put in place. The relevant indicators are therefore already legitimate and used by companies in these sectors. It's not as simple for other sectors, however.

The experience of EpE members allows us to identify some general trends as to how relevant indicators are developed. These are summarised below.

#### Indicators based on science

The best way of making a biodiversity indicator legitimate is having it validated by scientists. As we have seen, a company chooses the indicator to respond to a specific issue or requirement. The indicator must combine both spatial information, such as the nature of the site, the activity and to be:



its impact, and temporal information, such as how an area changes compared to a benchmark. To be of scientific importance, the measure must be applicable in the long term and suitable consideration existing knowledge and tools (inventories, protected areas, etc).

#### A company's impact indicators

Above all, measuring the impact of an activity must be done by a third party in line with methods validated by an external scientific body. When this is the case the company's indicator needs

- Reliable, i.e. it only registers impacts caused by the company, and does show any impact the company has,
- Accurate,
- Specific, i.e. able to distinguish between the impact of the company and the influence of other pollutants; this is key in a suburban or densely populated area.
- Time-related, i.e. can show the impact shortly after and a long time after an accident or general operations.

Companies can fulfil these requirements by using the services of a scientific body, as shown in the RTE example on the following page.

The insights gained from these indicators in the long term allow companies to predict the consequences of their operations on biodiversity and ecosystems, so they can focus on for comparison. A team of scientists activities that have a reversible rather brings the significant advantage of than irreversible impact. They also defining and validating the methodology make it possible to know which type of the indicator is based on, taking into activity or which product most requires action to reduce the company's impact.



#### RTE. indicators for monitoring the impact of activities on ordinary biodiversity

#### Study of bird mortality on power lines

RTE, the operator of the French public power transmission system, would like to **reduce the impact of its installations** on bird populations as much as possible.

Since 2004, RET and ERDF have been working in partnership with the French League for the Protection of Birds (LPO) and France Nature Environnement (FNE) as part of the French National Bird Committee. It is a consultative body that meets four times per year to bring to light best practices and provide guidance for actions that aim to prevent bird collisions and electrocutions.

RTE wishes to make use of **robust scientific data shared** by RTE and nature protection associations, which would make it possible to quantify the impact of the power transmission system on national bird populations and to reduce it as much as possible. This ambition is shared by the members of the National Bird Committee. To respond to this need, since 2012 and for a period of three years, RTE has been funding a study called, "Study of bird mortality caused by collision with high-voltage and very high-voltage power lines in France". This study is under the aegis and within the framework of the MNHN (French National Museum of Natural History).

In addition to quantifying the impact of the power transmission system on bird mortality as a result of collision, the protocol and monitoring put in place as part of this study will provide information so that the parts of the system that are a hazard for birds can be updated, it will also assess the relative efficacy of RTE's various anti-collision systems. Finally, the data acquired will improve scientific knowledge about existing conservation programmes.

#### Stock indicators

Using stock indicators makes comparing different scales of quantitative data possible by using a methodology that is often defined scientifically by local efforts and the evolution of an indicator.

Mapping at-risk sites before choosing indicators for the sites means the together to define the species to monitor factors. and the methodology they will use to set benchmarks and monitor the species.

In France, species monitoring programmes such as that of the National Museum of Natural History or the LPO for birds means that companies all over the experts. However, it can be difficult to country can choose the indicator which is establish the link between the company's most relevant to the location of the site.

The most frequently measured stock indicator companies use is ordinary biodiversity. In reality, it is rare for an company can identify scientific industrial site to be located in an area biodiversity monitoring programmes in that is home to what are referred to as the vicinity and the databases available on flagship species. However, it is just as local, regional, national and international important, if not more so, to monitor levels. When this information doesn't ordinary biodiversity because it is a exist, the company and scientists work crucial asset and threatened by many



#### LAFARGE, a dedicated indicator to assess the biodiversity of quarries

Lafarge introduced a specific indicator dedicated to assessing the specific biodiversity in the range of habitats found in quarries. Employed as part of a voluntary approach, it is a way of gathering knowledge about nature and of taking biodiversity into account. It was developed, along with the methodology to follow when implementing it (a technical guide), in the context of a partnership with the French Committee of the IUCN and the WWF. The Long-Term Biodiversity Index (IBL) allows users to estimate the biodiversity of a quarry at any given moment and to monitor its progress over time, ideally by making a comparison with the pre-operations status. The data gathered to calculate the indicator can be used to help guide environmental management policies and the process of rehabilitating quarries. The method used for calculating the IBL is intended to be used on all Lafarge guarries around the world, as it is fairly general and can be adapted to a range of environmental, scientific and regulatory contexts.

Environmental surveys which assess heritage species - protected and/or endangered species - are needed before the IBL can be put in place. When calculating the index, the extent of the threat and protection levels for the various surveyed species is assessed, as well as the surface area of each habitat. The indicator

#### **Bioindicators**

scientifically validated to represent the condition of an environment.

The first category of bioindicators measures whether a species is present or abundant. The measured species is often what is referred to as an "indicator species" that can act as a warning that a whole ecosystem is becoming impoverished. When the scientific team proposes this indicator, a threshold value which must not be passed is also defined. The indicator or indicators

Bioindicators are indicators that are assess the area's state of health in comparison to a benchmark state. They combine the natural variation of the area in space and time and the impact of different human activities. This type of indicator is often used for bodies of water.

> The example on the following page shows that some bioindicators are still in development. The aim of the study funded by EDF is precisely to improve our knowledge of butterflies and to be able to use them as a reliable bioindicator around the world.



produces a score from 0 to 6 to reflect the ecological value of the site. The IBL must be calculated every three to five years, depending on the type of quarry and the level of use. There are six steps in calculating the IBL, summarised in the table below:

STEP 1	<b>Choosing the taxonomical groups:</b> Minimum of 2 groups with 3-4 additional groups
STEP 2	Identifying the main types of habitats at the site
STEP 3	Inventories of the species present by type of habitat
STEP 4	Evaluating the ecological value of each habitat for each taxonomical group: <b>7 ecological values:</b> Exceptional - Very high - High - Quite high - Medium - Low - Very low
STEP 5	Establishing the overall ecological value
STEP 6	Calculating the score





#### EDF. FRB/CESAB: LOLA-BMS partnership Butterflies, a model group for monitoring biodiversity

Faced with the wide range of parameters that describe biodiversity, it's handy to be able to refer to abundance changes for certain indicator species that match the circumstances you are trying to assess. Butterflies are a potential indicator and their relevance is well worth exploring, namely by improving our knowledge of their responses to different stresses caused by human activities (agriculture, urbanisation, industry, transport, tourism, etc). The LOLA-BMS project, which aims to determine the response of butterflies to global changes, from a local to a planet-wide level, represents significant progress in assessing how meaningful this bioindicator is. It is cofinanced by EDF and the FRB. The project, carried out by the CESAB (Biodiversity Reporting and Analysis Centre), brings robust and help identify which factors are the cause of which together the directors of some of the largest Butterfly changes in butterfly populations.

Monitoring Schemes (BMS) in the world, statisticians specialising in the analysis of this type of data and renowned macro-ecologists.

After birds, butterflies are the most studied group of animals for evaluating the consequences of planetary changes on biodiversity. Analysis of the dataset that results from butterfly monitoring has revealed significant evolution over time, but a correlation between this evolution and factors of change has not yet been drawn. The project cross references local butterfly monitoring data from Europe, North America and Israel with available data on environmental parameters. The vast majority of data used will make the statistic tests more



#### **Composite indicators**

Composite indicators are made up of data on a number of species of fauna/flora. and information on how rare/endangered they are, etc. A composite indicator uses weighted data to give a global overview, as with bioindicators. Weighting the different components is by no means simple, and it is important to have the support of a team of scientists to create these indicators. Working with stakeholders to ensure everyone accepts the indicator can also be a complex process, as a composite indicator cannot cover the specific issues of the stakeholders and it may be seen as a rejection of the datasets they use to assess the effect of the presence of the company. A number of companies use composite indicators to reflect the sate of biodiversity on their sites or close by.

Sita has worked alongside the French National Natural History Museum to develop two types of composite indicators: the ecological quality indicator (IQE) and the ecological potential indicator (IPE).

#### SITA FRANCE, an operational approach

that involves:

- the ground.



ecological guality of the site. methodology used.

The three over-arching criteria considered: the heritage value and functionality of ecosystems and the **diversity** of habitats and bird life. Adjustments to the identified parameters and the scoring system are made based not just on the dataset resulting from the inventories of 29 SITA sites in France over four years, but also using available bibliographic data as a reference. A lighter version of the indicator, based on just one day of inventories, the ecological potential indicator (IPE) was developed using a similar structure.

By the end of 2013, IQE diagnostics will have been carried out at 46 waste treatment sites. The programme is being driven forward by an officer appointed by the MNHN as part of the partnership between SITA France, and the Department of Natural Heritage at the MNHN. In order to roll out the diagnostic process to more waste treatment sites and consolidate site relations with nature association partners, training on how to use this tool has been delivered since 2012. For a company like SITA that has a number of sites, the problem is made even more complex by the need to combine these IQEs to create a consolidated indicator at group level.



Another category of bioindicators is composite indicators which use a range of parameters to represent the general status of an area. The different biological variables must be combined using coefficients. Scientists' contributions lie in both the choice of parameters and the method of combining them, based on ecological equivalences in the numbers of given organisms.

#### BIOINDICATORS biological indicators for monitoring environments

#### GLOBAL BIOLOGICAL NORMALISED INDEX (IBGN) FOR AQUATIC ENVIRONMENTS

physical and chemical analyses.

and aquatic systems. It is based on the analysis of fresh water as insects, molluscs, worms and crustaceans detected in a sample of sediment taken from the rivers, upstream and downstream from water discharges. The results are expressed in a score, the maximum score indicating an undisturbed river. Analysing the faunal composition is a way of assessing the status of the environment and whether or not it has been



## to preserving biodiversity

Since 2006, SITA France, which manages substantial portions of land, particularly landfill facilities, has been committed to a structured approach

• Identifying and monitoring sites of high ecological importance,

• A diagnostic of the ecological value of each treatment site: inventories and measures of the ecological quality of the sites using a **dedicated indicator (IQE)**, • Defining a biodiversity **management plan** and setting in motion activities on

• Monitoring performance: periodic measurement of the IQE to ensure the management plans put in place are effective.

Experts from the MNHN worked alongside SITA to develop an ecological quality indicator (IQE) which aims to assess the long-term effectiveness of the management plans at each facility. The result of six days of on-site studies, the IQE allows for a standardised diagnostic of fauna and flora, can identify the strengths and weaknesses of biodiversity management measures and assesses the

Validated by the MNHN scientific committee, an article on this multi-criteria indicator was published in the review La Terre et la Vie [The Earth and Life] in June 2013. The publication of this article led to the indicator being recognised by the scientific community and validated the



# Deloitte.

#### **DELOITTE.** composite indicators

These indicators are made up of several sub-indicators So composite indicators are used to provide a precise which are then combined to give a joint score. They allow users to take into consideration the status of biodiversity, in all its complexity and "diversity", whilst condensing the information to give comparable results. In addition, they must take into consideration not just intra- and interspecies variability, but also ecological continuity and the presence of protected species, etc.

A number of composite indicators are available for companies to use, with differing degrees of complexity. A relevant composite indicator that describes the state of biodiversity must have the following characteristics<sup>1</sup>:

- (1) Proportionality. If all the representatives of all the species decrease by a common factor, the indicator must also decrease by the same proportion.
- (2) Reliability. If each species is as abundant in one year as the next, the indicator must be the same for both they take are. vears.
- (3) Sensitivity to appearance and loss of species. The appearance or loss of species in the ecosystem must not be given a disproportionate weight.
- (4) Consistency. If all species are in decline (or increasing) in a system the indicator should decline (or increase). If a species disappears from the ecosystem, the indicator must decrease.
- (5) A fixed benchmark year. Some indicators use a benchmark year to calculate the changes of biodiversity over time. The indicator must not be so sensitive that it is affected by the choice of benchmark year for the constituent species indexes.
- (6) Spatial invariance. The indicator must not be sensitive to changes in the spatial scale.

The following composite indicators are most used by research consultants:

- The Simpson index, which estimates the probability that two randomly selected components of an ecosystem belong to the same species.
- The Shannon index, which reflects the heterogeneity of the biodiversity of a given ecosystem.

quantification of biodiversity. Simplified versions have been developed for use by companies, in particular the IQE and IPE indicators mentioned earlier.

In addition, tools have been developed to make these indicators more practical for companies, with particular reference to the indicators proposed by the Convention on Biological Diversity (Marine Trophic Index, Connectivity/ fragmentation of ecosystems, etc) or the Corporate Ecosystem Services Review by the WRI and the WBCSD.

With these tools at their disposal, French companies can meet the Grenelle II environmental obligations, which require them to publish and have verified the actions they take to protect biodiversity. Thanks to composite indicators, companies can track how effective the steps



A final example of scientific partnerships is RTE, which launched a project to measure biodiversity on its network. The challenge here was to assimilate a wealth of information about land that is physically both very long and very narrow, and which does not constitute an autonomous ecosystem.

#### partnerships with scientists to monitor biodiversity

RTE.

#### Study of biodiversity in the power transmission system network

With 100,000 km of power lines, of which 15,000 are in protected natural areas, RTE's facilities interact with natural environments. Building new facilities and maintaining vegetation are the two main activities that have an impact on these natural surroundings.

Studies have been carried out to provide a better understanding of this and to allow for more effective management: since 2009, RTE has been working in partnership with scientists from the Irstea (National Institute for Research on Science and Technologies for the Environment and Agriculture, formally Cemagref) and

These studies found that pylon bases represent a **valuable** the **CBNBP** (National Biological Conservatory of the Paris refuge area for biodiversity, notably in farmland, Basin), a body of the MNHN. particularly as the vegetation underneath pylons is The CBNPB has studied the floral biodiversity of 320 km perennial. They confirmed the results of the CBNCP of power lines in Île-de-France where **clearings** have been studies and widened the findings to include butterflies. In cut to enable the power lines to pass. These inventories addition, these indicators showed that the flora in these brought to light that clearings created under power lines forest clearings is richer than flora in the surrounding for operations are refuge areas for floral biodiversity, forest, because, in addition to species preferring open particularly areas that are open, where rare or precious spaces, the forest flora also grows there as well as in the biodiversity can often be found. The data gathered was forest. Studies with the same scientists are on-going, to analysed from the angle of contribution to ecological reinforce the knowledge acquired and translate it into continuity. operational recommendations to drive change in RTE's The Irstea studies covered three themes: studying the floral management practices, in order to improve preservation of biodiversity in current operations, and in particular in the context of vegetation management operations.

Re

biodiversity under pylon bases, studying floral and butterfly biodiversity in these forest clearings and studying wild bees in the hedges of the forest clearings.

Adapted from the article Desirable mathematical properties of indicators for biodiversity change, A.J. van Strien, L.L. Soldaat, R.D. Gregory, Ecological Indicators, 2011



To carry out these studies successfully, Irstea implemented biodiversity indicators to represent the quality of the inventoried biodiversity, moving away from just expressing how rich the total area was in biodiversity. These indicators take into account the quality of the species inventoried: protected, rare, heritage, common, invasive, etc. Although they were developed in the specific context of these studies and for the department of Loiret, these indicators are relevant for all land habitats, so are universal.

#### Methodology challenges

Results can change from one year to the next based on unpredictable phenomena such as weather conditions (for example, the reading at a fixed date may note the presence of tadpoles instead of frogs as usual). This is why the measures must smooth out these different phenomena as time passes. Support from a scientific team makes it easier to interpret these disparities and what may appear to be a sign of extinction. They are becoming increasingly frequent as a result of the natural variability of weather conditions, and climate change which makes it difficult to draw comparisons between the presence of a species from one year to the next.

Long-term measures sometimes highlight changes in species behaviours such as changes made in connection with climate change. Companies alone rarely have the right voice to make these arguments heard by stakeholders. which is why support from a team of scientists is so important. The majority of EpE members have also worked with the MNHN to define the principles of the biodiversity indicators they use on their most sensitive sites and how to implement measurement.

#### Credible and recognised indicators

As for non-financial indicators, the credibility of reporting is reinforced by carrying out checks by an independent body. This is particularly applicable to the context of biodiversity, as a number of parameters are monitored and the integration methods (measurement, weighting, etc) are decided on a case-bycase basis. These external bodies could be research consultants, scientists or NGOs provide greater opportunities for local dialogue and scientists are instrumental in developing and

interpreting indicators. Indicators help guide choices by basing the choice of species to plant as part of rehabilitation programmes on the future state of the climate and biodiversity and not on the current state. The box below illustrates how indicators are used in collaboration with local stakeholders. With the same be taken over a long period of time to objective of transparency, companies

make use of official databases (the IUCN Red List) to choose the one or more species they will measure. Above all. monitoring biodiversity indicators using measurement campaigns is usually carried out as part of a partnership



#### SÉCHÉ ENVIRONNEMENT. trees and plants bear the brunt of climate change

In the context of its replanting programmes, the nature department of Séché Environnement set itself the priority of preserving biodiversity and diversifying the environments to create areas that are consistent with the surrounding countryside. Amongst other things, this master landscaping and planting plan uses specific and highly localised indicators to track trends in the behaviour of flora as the climate changes. Since 2005, each tree has been inventoried in a geographical information system and is regularly monitored (tree dead/tree in good condition).

Plantations in particular are monitored as they are a marker of climate change in the long term. The Mediterranean climate is creeping northwards, a scientific phenomenon detected in France by a team of researchers from the INRA and the Centre for Functional and Evolutionary Ecology (CEFE).

Climate change threatens to destabilise current endemic species (predominant beech trees) and in time would lead to the arrival of southern species. On this premise, and following the census of remarkable trees carried out between 1998 and 2001 in collaboration with Mayenne Nature Environnement, one species in particular stood out to the nature specialists as it meets a number of criteria and requirements: Quercus ilex (holm oak), some examples of which are present in Mayenne, some of which for almost 200 years, even though this species is mainly a southern species.

The holm oak does not like water, is evergreen and prefers a hot, dry climate, an important factor in light of the acidic soil at the operating site in Changé, In light of all these advantages, the SéchéEnvironnement nature department has been involved in planting holm oaks in and around a number of its sites for the past five years.

A monitoring programme was set up to observe the evolution of these trees. After five years of the project, the results are entirely positive, with a planting success rate of 95% - a level which has vet to be reached for other species planted - and the trees are in a very satisfactory state of health.

Efforts to maintain these oaks and hazelnut trees, which are cited as being fragile to climate change are continuing. These plants are part of planting programmes, along with a host of diversified indigenous plants and are sometimes even present in hedges like medlar trees or service trees.

with a scientific organisation or with an association; these partnerships replace more general studies or monitoring, whether it is on a local level with an association, national or even international levels in partnership with

laboratories. In all instances, biodiversity indicators, like financial indicators, are built in a way that makes them verifiable. traceable and reproducible.

#### **BASF AGRO, BIODIVERSID,** a double network of farms for monitoring indicators



The aim of the BiodiversID programme is to work together to create user-friendly biodiversity indicators, with a focus on insects and fauna. It was launched in 2012, at the Farre<sup>1</sup>, BASF Agro and Biodiversity Network for Bees initiative in association

with a number of other partners. The programme has a scientific steering committee and a dual network of 50 farms (12 experimental farms and some outreach farms) and vineyards. The data gathered and the existing landscape features (hedges, grassy borders, apicultural set-aside, etc) on each site and the censuses carried out by the farmers will provide verification of how meaningful the selected indicators are and test the relative value of each measure for biodiversity. The socio-economic aspect of farming is also taken into account through a range of indicators, including the food output of the farm using Perfalim, a socio-economic indicator developed by Céréopa<sup>2</sup>. The indicators put in place as part of this programme go through various stages of analysis: Step 1: evaluate the quality of existing biodiversity

- scale of farm
- Scoring how the farm is run 50 indicators monitored over seven themes: working the soil, harvesting, crop protection, animal production, vegetable production, structure of the countryside and economy.
- Measuring the quality of the countryside 9 environments and 10 guality/environment indicators: sea, prairie, isolated trees, lines of trees, set-aside, buffer strips, low walls, natural and linear wooded hedges and ditches/paths.

#### Step 2: take concrete action to manage or rehabilitate: management and rehabilitation catalogue and advice with indication of prices

• From grassy borders to hedges with a range species via apicultural set-aside or wild fauna

#### For more information go to:

productivite et biodiversite/conjuguer productivite et biodiversite sommaire.html

1 Forum des Agriculteurs Responsables Respectueux de l'Environnement [Forum of Responsible and Environmentally-Respectful Farmers] 2 Centre d'étude et de recherche sur l'économie et l'organisation des productions animales [Centre for study and research on the economy and organisation of animal production]



- Differentiated management of some crops (alfalfa, prairie, etc) best management or harvesting practices, use of nestina boxes. etc.
- Creating ecological corridors through farms (Marchélepot farm in Picardy) or across wider areas (Symbiose programme in Champagne-Ardenne).
- Managing biodiversity over time (managing the gite and the cover based on food and breeding needs)

#### Step 3: measure the results

Farmers monitor biodiversity using four indicators selected and validated by the scientific committee:

- Bees and wild pollinators: 1 reading/month
- Monitor beehive and insect-attracting flora: 1 reading/month
- Grey and red-legged partridges, pheasants: 2 readings/year
- Birds: 2 readings/year

#### Tools:

- 1 IT database and dashboard for farmers or facilitators
- 1 report per farm including a map of the farm project
- 4 feedback meetings per year

#### Some national indicators the network monitors:

- SET, average protected farmable area of biodiversID farms: 32.5% (regulatory requirement in 2012: 4%))
- Food-producing capacity of biodiversID farms Arable crops: 4050 ppl fed/farm (calories), i.e. 17.9 ppl/acre
- Area of bee-keeping cover planted in France in 2013 with our partners (Biodiversity Network for Bees, distributors): 15.000 acres

## http://www.agro.basf.fr/agroportal/fr/fr/enjeux\_et\_engagements/programmes\_de\_recherche\_agronomique/conjuguer



#### **Reproducible indicators**

#### In time

Immediate biodiversity measures can show a very high standard deviation in the data due to conditions at the time, such as the weather conditions, as mentioned above. So measures need to be applied in the long term to put the results obtained with immediate measures into perspective and take into account the potential cumulative effects which can result from an over-reaction to a trend. The first year of using the indicator or set of indicators is not necessarily representative; over time a statistician can get to grips with the uncertainty factor. We all know that there can be boom years for cherries or caterpillars or jelly fish, but measures must be constructed to deal with this.

#### In space

This type of indicator can compare and contrast the company's different plantations and compare the results achieved against national benchmarks. For example, if the company compares the regional stock (birds, frogs and toads and bats, etc) indicator results for the same geographical area from it own sites and from protected areas such as regional or national nature parks, it can compare how populations are evolving and moving.

#### VEOLIA, group-level consolidated indicators for

monitoring and reporting on the biodiversity policy

In the context of its 2012-2014 environment plan and with the aim of better monitoring and guiding the steps taken at its sites, Veolia has defined specific biodiversity indicators, associated with **objectives**:

- Number of sites having carried out a biodiversity **diagnosis** using the internal tool (Water / Cleanliness / Energy) including proportion of sites with a high biodiversity value that have implemented a relevant action plan (Cleanliness) 75%
- Number of sites with an **action plan** for restoring local biodiversity (Water)
- Proportion of principle countries where a country-specific **preservation plan** has been put in place and carried out (Cleanliness) 75%

In order to do so, sites were ranked based on value and risk status (using multiple criteria) at group level and several indicators were included in the annual **environmental reporting** campaign and subsequently consolidated.

So the process of implementing diagnoses (and preparing local action plans if necessary) is monitored for **all group activities**, in particular those relating to the Water and Cleanliness arms of the business.

Veolia Eau has committed to surveying the number of facilities (drinking water production sites and water purification plants) where a diagnostic has been carried out and a plan of action set in motion to restore local biodiversity, with a view to increasing this number. The Cleanliness division, in line with the 2012-2014 environmental plan, has set itself the goal of rolling out action plans to 95% of sites with a potentially significant risk to biodiversity rating by 2015 (based on prior assessment of the risk status of each site.)

In addition, to ensure the national issues are taken into consideration, Veolia Propreté, the Cleanliness arm of the business, asked its **six key countries** (China, Australia, United States, Germany, UK and France) to prepare and roll out a biodiversity preservation plan. This takes the form of a national road map that respects the group's objectives and includes a number of actions depending on local challenges:

- Preserving and re-introducing endangered species,
- Rehabilitating or creating natural habitats and ecological continuity,
- Respecting the principles of differentiated management for natural spaces,
  Informing employees and clients through institutional and scientific
- partnerships.

In addition to indicators, the site-level action plans also involve implementing local indicators to steer its biodiversity efforts that cannot be consolidated at group level.

Indicators that can be consolidated at group level allow companies to follow a global environmental policy for which local biodiversity management indicators that cannot be consolidated can be useful, as shown in the inset below.

Measuring in both time and space allows companies to assess the trend of its overall impact on biodiversity and consequently progressively integrate biodiversity into the global strategy and scale this down and tailor it to local sites. One of the difficulties is consolidating local indicators at group level. For this to be possible, certain levels of similarity are desirable for local indicators. Only some indicators are consolidated at group level.



#### SAINT-GOBAIN, testing a mapping method for use around the world

Saint-Gobain is trying out a new method for assessing the biodiversity sensitivity of its sites. A mapping project combining 8 criteria is currently in the test stage at 50 sites in 25 countries.

In the context of its goal to minimise the impact of its activities on the environment, Saint-Gobain launched a biodiversity action plan on a group level; it has 4 hubs and 193,000 employees in 64 countries.

The first strand consists of improving Saint-Gobain's knowledge of natural heritage and in particular the level of sensitivity of its sites in relation to biodiversity. The method must be usable around the world.

A sample of 50 sites was selected to represent the majority of the group's activities (flat glass, gypsum and pipelines, etc) and the key countries where it is present. They comprise industry and service-sector sites, and also quarries.

This study - essentially a mapping and a bibliographic study - is built on a grid with 8 criteria:

- Proximity to natural/semi natural area
- Proximity to area that is regulated and/or classified sensitive
- Proximity to wetland
- Water stress status
- Potential for integration into a green/blue corridor
- Potential presence of sensitive species and/or habitats
- Anthropogenic pressure
- Risk of soil artificialisation

The results will allow the group to draw up a preliminary list of priority sites for biodiversity and finalise the criteria and their weighting to aid the selection and management processes. This method will then be rolled out progressively, with sites having a significant impact on the environment taking priority.

# Conclusion

# **Companies,** ecosystems within ecosystems

In terms of measurement, a number of companies are in fact considering biodiversity without necessarily being conscious of it, as the vast majority of environmental reporting can be considered as biodiversity reporting: measuring effluent and waste or the water, air or greenhouse gases footprint - these are all included in biodiversity indicators. The first step to finding a place for biodiversity in companies is becoming aware of this, particularly in the case of companies that don't come into direct contact with nature through their business. Beyond that, it is often a question of indirect interactions: choosing and using indicators makes it easier to grasp and manage these interactions. Indicators can highlight corporate dependencies on certain raw materials, nearby fragile areas or the impact on biodiversity of certain materials used.

#### What is the next step, once awareness has been raised, the measurement tools are in place and regulatory requirements fulfilled?

Slowing down the erosion of biodiversity is no mean feat; even the scientific community can't prescribe specific measures with absolute certainty. In his work Biodiversity is now1, Bernard Chevassus-au-Louis, recommends some key, simple and practical actions: don't do anything irreversible, allow nature to adapt over time as much as possible... These principles are relatively easy for companies to apply as, rather than significant undertakings, they require common sense and observation. Learning about biodiversity is at the heart of the issue: implementing observation, monitoring indicators and workshops with local stakeholders is the best way to gain a better understanding of how biodiversity changes over time and the inherent consequences and risks. The steps to take can therefore be selected based on the ability of those steps to bring about local biodiversity adaptation, whilst respecting the precautionary principle. This brochure presents the measures implemented by companies that notice that very often supporting biodiversity only causes a minor increase in the costs of their business. It also expresses the importance of observing, measuring and therefore defining and using carefully selected indicators.

After a few years, sites with monitoring programmes can even become areas with the richest areas of local biodiversity, even if the biodiversity has changed, provided that they are managed with a view to supporting biodiversity. This is the case of some quarries after they have been rehabilitated; the rehabilitated area is then classified, protected and maintained by associations and the state. An example of operations actually enriching local biodiversity. Although it is not measurable, creating value in this way is recognised and can constitute a competitive advantage for the company.

The next step is to consider the company's ecosystem in its entirety; this needs exploring in greater depth and other actors must be informed about the same issues. A company's ecosystem stretches far beyond the confines of its physical sites. The process of finding meaningful indicators to measure interactions that are more indirect - but not necessarily less important - should be continued and expanded. This theme is the focus of the Biodiversity Commission for the period 2014-2016. Even the most practical and efficient approach still requires the participation of everyone to stand up and meet the challenge. Creating a dialogue around the indicators remains the most effective vehicle.

1 La biodiversité c'est maintenant, collection : la Terre et l'Homme, éditions de l'Aube [Biodiversity is now, collection: Earth and Mankind]

#### Acronyms

CAS	Centre d'Analyse Stratég
CBD	Convention on Biological
CBNBP	Conservatoire Botanique
	[National Biological Cons
CEFE	Centre d'Ecologie Fonction
	[Centre for Functional an
CEREOPA	Centre d'étude et de rech
	productions animales [C
	and organisation of anim
CESAB	Centre d'analyse et de Sy
	[Biodiversity Analysis and
CEV	Corporate Ecosystem Va
CSR	Corporate Social Respon
DPSIR	Driving force, Pressure, S
EEA	European Environment A
EMAS	Eco Management and Au
ESR	Ecosystem Services Revi
FCEN	Fédération des Conserva
	[Federation of Natural Sp
FNE	France Nature Environne
FRB	Fondation française sur l
	[French Foundation for R
GHG	Greenhouse Gas
GRI	Global Reporting Initiativ
IBGN	Global Biological Norma
ICPE	Installations Classées po
	Installations Classified f
INPN	Inventaire National du Pa
	[INATIONAL INVENTORY OF INA
IPBES	Interngovernmental Plat
IPE	Indicateur de Potentialité
IUE	Indicateur de Qualite Eco
IRSTEA	Institut national de Rech
	Science and Technology
ICD	Installations do Stockage
	International Union for th
	Lique de Protection des (
MEA	Milloppium Ecosystem A
MED	Mission Economia da la l
	Ministère de l'Écologie d
MEDDE	[Ministry for Ecology Sus
мини	Museum National d'Histo
SME	Système de Managemen
CNP	Stratégie Nationalo nous
	Société Nationale de Dra
SITT	National Society for the
SDN	Service du Patrimoino M
TEER	The Economics of Ecosys
WRCCD	World Business Council
110030	

ique [Strategic Analysis Centre] Diversity National du Bassin Parisien servatory of the Paris Basin] ionnelle et Evolutive nd Evolutionary Ecology] herche sur l'économie et l'organisation des Centre for study and research on the economy nal production] ynthèse sur la Biodiversité d Review Centrel luation nsibility State, Impact, Response Agency udit Scheme iew atoires d'Espaces Naturels paces Conservatories] ement la Recherche pour la Biodiversité Research into Biodiversity] /e lised Index our la Protection de l'Environnement for Environmental Protection] atrimoine Naturel atural Heritage] form on Biodiversity and Ecosystem Services é Ecologique [Ecological Potential Indicator] ologique [Ecological Quality Indicator] erche en Science et Technologies pour iculture [National Institute for Research in for the Environment and Agriculture] e de Déchets [Landfill Sites] he Conservation of Nature Oiseaux [League for the Protection of Birds] ssessment Biodiversité [Economic Mission for Biodversity] du Développement Durable et de l'Énergie stainable Development and Energy] ire Naturelle [National Natural History Museum] nt Environnemental · la Biodiversité [National Biodiversity Strategy] tection de la Nature Protection of Nature] laturel [Natural Heritage Department] stems and Biodiversity for Sustainable Development



