
REPORTING ON NATURAL CAPITAL

GUIDANCE ON A PRACTICAL APPROACH

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FOREWORD

Data is a topic that gives many businesses, institutions and governments headaches. They are either missing, available but cannot be interpreted for the targeted objective, incomprehensible or for paying users only. Natural capital is precisely a theme where data are increasingly important and many companies do not easily have it at their disposal. An area of increasing action for the private sector, the lack of (applicable) data is often raised as a reason why natural capital efforts do not (fully) develop or scale up.

Still, we should not forget that many companies already do have natural capital-related data gathered over the years. For example on biodiversity, emissions and water use. The challenge for these data is to regard them in a natural capital context. This challenge has been taken up in the project **Accessible reporting on natural capital**. In this project, CREM and Arcadis have developed and piloted a reporting approach that helps companies to communicate more effectively on their relationship with natural capital by assessing corporate data already available in a natural capital context. An assessment that turned out to be more challenging than foreseen even given the experience of CREM and Arcadis with sustainability reporting and the Natural Capital Protocol. This guidance captures the process and results of this assessment, the challenges encountered, conclusions drawn from it and recommendations for follow-up activities. This report is far from a final guidance on natural capital reporting; it is merely a next step in trying to report on corporate efforts with respect to natural capital in an accessible, relevant context.

This guidance could not have been written without the willingness of frontrunner companies to participate as pilots. Their involvement, dedicated time and interest of the following six companies are highly appreciated:

1. Dekker Group: a sand and gravel company
2. Desso (a Tarkett company): a carpet producing company
3. Eneco Holding NV: an energy company
4. FMO (the Dutch development bank): a financial institution
5. Royal Philips NV: a health technology company
6. Vivera: producer of vegetarian and vegan products

Moreover, CREM and Arcadis would like to thank Annelisa Grigg, Head of Business & Biodiversity at UN Environment World Conservation Monitoring Centre, for her involvement as a third-party expert to discuss draft outputs with.

Lastly, CREM and Arcadis would like to express their gratitude to the Dutch Ministry of Economic Affairs for their funding and support, thus enabling this project to take place.

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1 INTRODUCTION

1.1 Natural capital

Natural capital is an indispensable asset for the business community. A worrying issue therefore is the fact that its stocks and services – like fresh water, agricultural resources and pollination – are facing challenges like degradation, overexploitation and extinction; globally but even more severe at certain locations. By reporting on its natural capital performance, a company can show an understanding of its impacts and dependencies on this capital, and hence better manage its related risks and opportunities.

For the purposes of this paper, natural capital is regarded as:

The stock of renewable and non-renewable resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people. The benefits provided by natural capital include clean air, food, water, energy, shelter, medicine, and the raw materials we use in the creation of products. It also provides less obvious benefits such as flood defense, climate regulation, pollination and recreation.

Natural capital is one of several other commonly recognized forms of capital. Others include financial, manufactured, social and relationship, human, and intellectual capital. Natural capital supports all of the other capitals by providing essential resources, that support a healthy planet and underpins thriving societies and prosperous economies.¹

1.2 Pilot reporting on natural capital

With mechanisms emerging to understand the ways in which the value of natural capital can be integrated into corporate decision making, there is an increasing need to develop and disclose appropriate natural capital indicators at company and site level. Such disclosures would ideally be placed within the context of sustainability reporting already being undertaken (such as that undertaken against the Global Reporting Initiative reporting requirements). The question is ‘How?’

A number of initiatives are currently being developed (2017), linking corporate environmental metrics and targets within a natural capital context. These initiatives are international in nature. For example, the Cambridge Institute for Sustainability Leadership is working with Kering to develop biodiversity metrics as a part of their environmental profit and loss account. However, a framework that can help to place existing corporate information in a natural capital context has yet to be developed. Previous experiences in the Natural Capital Protocol pilot testing in 2015 and 2016 showed that companies asked for more guidance on how to integrate natural capital into reporting.

¹ Natural Capital Coalition, <https://naturalcapitalcoalition.org/natural-capital/>

As natural capital was not (yet) a topic covered by e.g. integrated reporting and the Global Reporting Initiative, companies did not know how to use collected natural capital data in explaining their sustainability performance.

In order to frame the emerging discussions on natural capital indicators around existing business practice and ground it in pragmatism, CREM and Arcadis developed a pilot project to undertake a 'quick and dirty' assessment of current sustainability reporting of a selected number of Dutch companies against a natural capital framework. Why? There are two key reasons:

1. Sustainability reports already provide data on, for example, biodiversity, emissions, water use, and the origin of raw materials. There are relatively simple improvements that help companies to establish a link between this information and the emerging natural capital agenda. Linking water use to water scarcity data, linking emissions and other pressure factors to actual impacts on biodiversity, etc. A pilot will not be able to deliver a complete set of answers on how natural capital reporting could take place, but it will identify quick wins that will help companies move forward today in anticipation of the development of future natural capital focused reporting initiatives.
2. Starting from scratch is always difficult. It is therefore helpful that a diverse set of studies have been undertaken/ are in the process of execution that can be used as input for a future reporting protocol. A series of practical, case studies can provide useful background information to feed into a larger, future initiative on natural capital reporting.

1.3 Objective

The objective of the pilot project has been the following:

To develop and pilot an approach for companies to improve the reporting on their natural capital efforts by capturing relevant data already available within the company and presenting the same in a natural capital context.

The project results have been captured in this guidance. While it is only a next step in the challenging world of natural capital and far from finished guidelines, the lessons learned collected and approach piloted can guide other companies wishing to explore the reporting pathway.

The project kicked off in December 2016. The first quarter of 2017 was used to approach pilot companies and develop an approach. Liaising with pilot companies and data collection took place in the second quarter of 2017, while July and August 2017 were used for interpretation and reporting.

1.4 Document structure

This report consists of the following sections:

- Section 2 presents a guidance on natural capital reporting, explaining how companies can start reporting and providing some supporting documents;
- Section 3 describes the process and findings with respect to the natural capital reporting pilots with six companies;
- Section 4 concludes with conclusions and next steps.

2 GUIDANCE ON NATURAL CAPITAL REPORTING

2.1 Introduction

The Natural Capital Protocol (NCP) was drawn up in 2016 with the global engagement of stakeholders and is regarded as the leading standardized framework for corporate natural capital assessments. It was therefore decided to use the NCP as a point of departure for reporting on natural capital and draw up a format that corresponds with the steps identified in the NCP.

This chapter presents a generic guidance on natural capital reporting, which is supported by a reporting format and data collection sheet that were developed within the context of this project. This output has been used during the piloting phase, results of which are shared in section 3.

Disclaimer: While the NCP was used to process relevant corporate pilot data in a reporting format, this is not an official NCP or Natural Capital Coalition document.

2.2 Starting natural capital reporting

The project findings show that the following basics can enable companies to start reporting on natural capital:

1. A format to organize information collected
2. A data collection sheet
3. An approach for data collection

They are elaborated in the following sections.

2.2.1 A format to organize information collected

Most companies will communicate about their environmental and social performance through, for example, a sustainability report, their website, social media or a newsletter. These media can also be used to communicate about a company's natural capital performance. This project focused solely on sustainability reports, as it could not cover all different ways of integrating natural capital information in different communication media. This turned out not to be easy either, since there is not a universal format for a sustainability report. A new format was therefore developed within this project to structure the disclosures relevant for a company's natural capital performance (see Annex I). This format proved necessary to structure the information collected, which varied substantially in nature. The data and information contained in this format can be used for and copied to any communication medium one may deem fit, although it is recognized that the current output may be too technical in nature to use for any and all communication to stakeholders. Moreover, it is recognized that companies may need expert support to interpret data available in a way that valuable information can be shared on their natural capital performance in the given format.

The reporting format developed is built on the steps identified in the NCP to organize natural capital related data. As figure 1 shows, the Protocol framework covers four stages, “Why”, “What”, “How”, and “What Next”. Protocol stages are further broken down into nine Steps, that contain specific questions to be answered when carrying out a natural capital assessment.²

The reporting format developed by CREM and Arcadis can be found in Annex I. The approach is far from finished but this format drawn from the NCP appeared to be useful within the project to get an initial understanding of how company data might look if examined through a natural capital lens.

Note: The NCP based format presented in Annex I provides an overview of the ‘ideal’ situation from an NCP perspective. It includes reporting on impact pathways running from environmental impacts (inputs and non-product outputs) via natural capital impacted, down to the value of significant impacts to business and society. Also, it includes considerations of dependencies on natural capital stocks and changes of these resources. This is of course a picture that deviates from the reality of most companies and reports. However, providing insight in the “perfect picture” (although NCP is also still work in progress) serves an important purpose: it shows a company how and where the information covered in the sustainability report fits into this perfect picture and what information is still lacking. In other words, it shows what is needed to complete the puzzle.

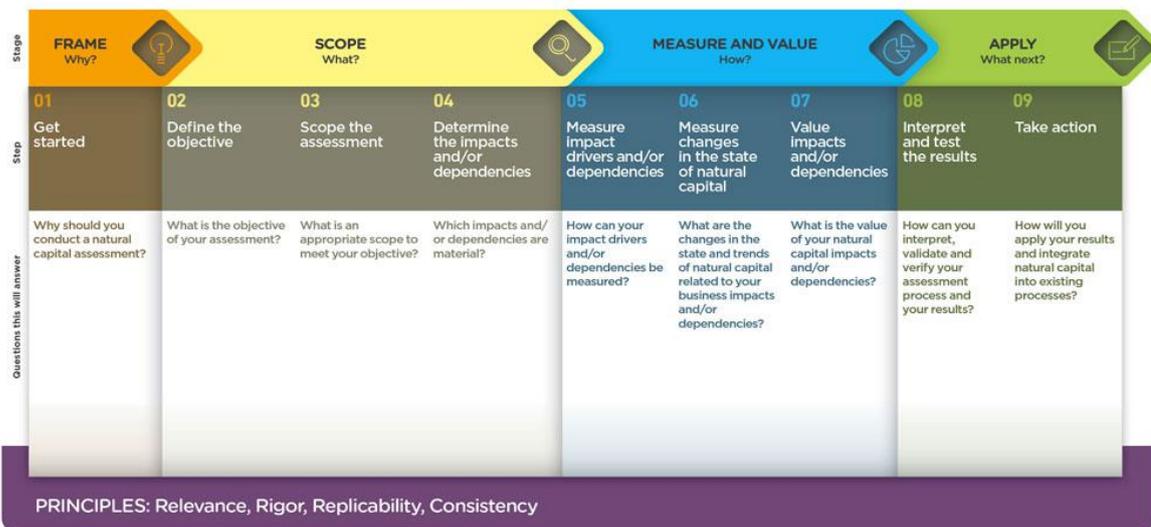


Figure 1: Nine steps in the Natural Capital Protocol (<http://naturalcapitalcoalition.org/protocol/>)

² <http://naturalcapitalcoalition.org/protocol/>

2.2.2 A data collection sheet

Data are needed for reporting. The aim of this project was to look through a natural capital lens at relevant data already available at companies. Data can be found in sustainability reports, but the search was also for 'hidden' data. Data collected for the application of permits, financing of projects or procurement that seemed irrelevant for sustainability reporting, but could prove to have an added value when it comes to a company's natural capital performance. Key question to answer within this project therefore was: what data were or could be made available by the pilot companies to move towards natural capital reporting?

Within this project, a data collection sheet was developed that companies can use to:

1. get an understanding of what kind of data to collect and how it can be relevant for / connected to natural capital;
2. categorize corporate data available;
3. explore their levels of ambition in terms of reporting on natural capital.

This data collection sheet is attached as Annex II. It shows four ambition levels for reporting:

Level 1: Qualitative disclosure on a natural capital impact or dependency, qualitative interpretation of the effect on natural capital

At this level, a company reports qualitatively on certain impacts or dependencies (relevant for its own operations or in its supply chain) and makes a qualitative link to the relevant natural capital stock; a simplified example:

Operations XX consume a lot of ground water, which has a minor impact on the ground water levels.

Level 2: Quantitative disclosure on a natural capital impact or dependency, qualitative interpretation of the effect on natural capital

At this level, a company reports quantitatively on certain impacts or dependencies and makes a qualitative link to the relevant natural capital stock; a simplified example:

Operations XX consume 25,000 liters of ground water per day, which has a minor impact on the ground water levels.

Level 3: Quantitative disclosures on both the natural capital impact / dependency, and the effect on natural capital

At this level, a company reports quantitatively on both a certain impact or dependency (relevant for its own operations or in its supply chain) as well as the effect on the relevant natural capital stock; a simplified example:

Operations XX consume 25,000 liters of ground water per day, which cause a drop in the ground water levels of 1.5%. Research proved that this drop is negligible given the:

- uptake by other users: the total uptake is less than the regeneration capacity of the catchment area;
- ongoing yearly replenishment of the stock due to consistent rainfall.

Level 4: Valuation of natural capital impact / dependency

At this level, a company reports how it values – economically or otherwise – the impacts caused or the dependencies present as a result of its natural capital resource use; a simplified example: The rainfall patterns seem to shift as a result of climate change. Local farmers are concerned about the future water demand by operations XX. As such, the water use by operations XX will be monitored on a yearly basis, and assessed in the context of other water demands. Moreover, company XX – together with other stakeholders in the water basin – has engaged a water body expert to draw up a water allocation map (looking at supply and demand in the region & subsequent division), taking into account the rainfall trends. This comes from the fact that the company understands the value of continuous water resources for its operations, the needs of other stakeholders as well as the importance of its license to operate.

2.2.3 An approach for data collection

Data collection is a process. Reporting asks for data showing the results of many corporate efforts in the field of a variety of topics, which all took place prior to writing a company's (sustainability) report. If a company wishes to report on its natural capital performance, it is therefore essential to start including natural capital elements in business tools used throughout the year, such as stakeholder engagement, impact assessments and SWOT analyses. Equally relevant is the involvement of internal and external sources in the data collection process (such as colleagues and suppliers) to understand and use their added value. This requires the development of a well-thought out approach, as 'natural capital' is a concept that interlinks with social, financial and environmental performance.

Data collection

Not all boxes in the data collection framework (Annex II) will need to be filled out. Choices will have to be made on products/services, materials, natural resources, ecosystem services, regions, etc. (relates to the scoping stage of the NCP), and the ambition level in reporting to adhere to. A materiality analysis is one of the key business tools that can help companies to prioritize which topics to be measured and managed, and to which extent (see box 1).

Box 1: Global Reporting Initiative (GRI) and materiality assessments

The purpose of the GRI Standards is to guide organizations through the process of preparing sustainability reports focused on material aspects. As such, the GRI provides useful information and tools on how to perform a materiality assessment. For example, it points out that a combination of internal and external factors should be used to determine whether an aspect is material, including factors such as the organization's overall mission and competitive strategy, concerns expressed directly by stakeholders, broader social expectations, and the organization's influence on upstream (such as supply chain) and downstream (such as customers) entities. Assessments of materiality should also take into account the basic expectations expressed in the international standards and agreements with which the organization is expected to comply³.

In principle, this approach can also be used to determine which natural capital impacts and dependencies are most relevant for a company to first focus on. It is beyond the scope of this project to check whether or not the GRI materiality assessment adequately covers the specific points of natural capital (as mentioned in the NCP).

³ <https://g4.globalreporting.org/how-you-should-report/reporting-principles/principles-for-defining-report-content/materiality/Pages/default.aspx>
<https://g4.globalreporting.org/how-you-should-report/how-to-define-what-is-material/Pages/default.aspx>

Missing data

The data collection sheet can be filled out for the priority topics set. But most staff filling out this sheet are likely to find that they need more data. Where can such data be found? Sources could be:

- **colleagues** from the finance, procurement or impact assessment department may have relevant data that was collected to enable or support their work.
- **suppliers** could provide data on origin, production / extraction methods, and natural capital impacts and dependencies of the products delivered;
- **research institutes and NGOs** have many location-specific and generic studies that could help to establish the natural capital context of corporate data;
- **(local) authorities** may have insights in the resources present in the different regions and the demands of other users, that can be of relevance to understand the extent to which the company's natural resources' use is socially and environmentally sustainable;
- **experts** – generic ones, but also specialized experts on e.g. water or soil– can help to map the natural capital picture of a company, targeting the general relationships between a company and natural capital or addressing specific issues;
- **third party commercial data providers** may have collected data that the company is in need for.

It could be the case that data collection is beyond the capability of a company, for example, tracing back the origin of a commodity. A sector-wide initiative to work on transparency and data collection could then be an opportunity to move towards.

Data complexity

When it comes to data collection on material topics, important challenges to understand are the complexity of data and the aggregation of data (see also section 3 on project findings). For example:

- A project may take place in different biotopes causing different kinds of impacts and asking for different natural capital dependencies during operations.
- A product may consist of different materials, each with its own level of impact, scarcity, transparency in terms of origin, extraction method, dependencies, production region, etc.
- A portfolio with similar projects or products may have different ways of categorizing data or different focus areas for data collection across the portfolio.

Solutions can be sought in filling out a set of data collection sheets for, for example, a single project or product, or developing solutions to add data. Both can be quite time-consuming, which emphasizes the importance of a well-thought out data collection approach, and the due involvement of internal and external data resources (see 'missing data' above).

3 PILOT PROCESS AND FINDINGS

3.1 Introduction

Part of this project was to pilot natural capital reporting with companies. The generic guidance in section 2 – including the Annexes referred to – was drawn from the approach that was learned and developed through such pilots.

This section describes the process undertaken with the pilot companies, the challenges encountered and the key findings.

3.2 Pilot companies

The target group for this pilot project consisted of Dutch businesses that already reported on their sustainability performance, and wished to present a clearer link between their activities and the actual effects these companies have on the natural environment and society. Moreover, pilot companies were selected that each had a different connection to natural capital because of different activities, different value chains, different sizes, and different regions in which they are active.

Companies that agreed to pilot the approach did so because:

- Natural capital reporting was already on the agenda, so the timing of the project was very good.
- Companies were seeking for options to make the topic of 'natural capital' more tangible, and this project contributed to that aim.
- Companies were curious to learn about the project process and deliverables, and whether it would help them to improve reporting.

Those companies that did not participate did so for three main reasons:

- The companies were interested, but were not in a position to allocate time to participation.
- Targeted companies did not issue a sustainability report.
- The frontrunner companies approached gave precedence to other sustainability initiatives and did not prioritize reporting/ the topic of natural capital in reporting.

Pilot companies that committed to participation were:

1. Dekker Group: a sand and gravel company
2. Desso (a Tarkett company): a carpet producing company
3. Eneco Holding NV: an energy company
4. FMO (the Dutch development bank): a financial institution
5. Royal Philips NV: a health technology company
6. Vivera: producer of vegetarian and vegan products

3.3 Pilot process

The following steps were undertaken with the pilot companies

1. **Point of departure: sustainability reports**
2. **Additional data collection**
3. **Adding natural capital context**

These steps are elaborated in the following sections.

3.3.1 Point of departure: sustainability reports

The participating pilot companies each issue a sustainability or integrated report. Data relevant for natural capital contained in these reports were categorized using the data collection sheet developed (Annex II). It appeared that most reports did not provide much concrete and quantitative information on natural capital elements, apart from CO₂ emission data. Almost all pilot companies, for example, had rather precise information on their CO₂ footprint, and Vivera explicitly explained different efforts undertaken, e.g. production of biogas from the dirt extracted through its water purification process for the electricity and heating of houses. FMO has an ambitious target to double greenhouse gas emissions avoided by 2020 compared to 2010-12 levels.

Philips and Desso were in part exceptions. Philips provided a large amount of quantitative figures on topics relevant for impacts on the environment and public health (e.g. waste, water use, emission of hazardous substances, VOC emissions). However, the information was reported on the level of continents or the world, rather than per production site, making it impossible to make the link to local natural capital stocks. Desso has due material management following its commitment to Cradle to Cradle, though this information is also not specific enough to report on actual natural capital changes (for example, the origin of materials is often not known).

Qualitative information in the sense of giving examples or storytelling was more prevalent than quantitative data. The data collection sheets completed for the pilot companies therefore showed that most data were to be placed in the boxes of ambition levels 1 (*Qualitative disclosure on a natural capital impact or dependency, qualitative interpretation of the effect on natural capital*) and 2. (*Quantitative disclosure on a natural capital impact or dependency, qualitative interpretation of the effect on natural capital*). Moreover, it showed that quite some data deemed relevant for the business to assess and value impacts or dependencies on natural capital resources were absent. Data gaps were primarily seen at the topics of:

- Materials the company is dependent upon (amounts, origin, production/ extraction methods)
- Land use and the impacts thereof, also throughout the supply chain or related to investments
- Discharges/ emissions other than CO₂

A topic that receives much attention in studies and the news is increasing global water shortages. Therefore, also in case that the topic would be *immaterial* for the company, it could be considered to explicitly refer to the issue of 'water use'. Primarily Desso and Philips paid explicit attention to water. Desso highlights the importance of water stewardship in its introduction, and Philips shared its ambitions and performance related to water usage in its sustainability report, and indicated that this is one of the key focus areas.

Desso also presented information on the result of a study on the groundwater extraction for its most water-consuming production facility, including potential impacts on the surrounding ecosystem. However, Desso's dependency on the resource in the context of water availability trends or other users seemed not to have been taken into account in this study.

3.3.2 Additional data collection

The pilot companies were asked to provide additional data that would help to draw up a picture of their natural capital performance. This proved quite a challenge – actually, even bigger than expected when designing the project, as it was believed that suppliers or 'hidden' information sources within companies (such as impact assessments undertaken, procurement departments or finance applications) could supplement the data given in sustainability reports. But:

- **Supply chains are not always transparent:** for example, companies procure commodities that cannot be traced back to the place of production. E.g., Vivera purchases soy beans at the commodity market⁴ and Desso minerals from a commodity trader. Even the country of production is not clear with these products. Also, the steel of windmills that Eneco procures and some semi-finished products bought by Philips cannot be traced back to their origins. This generally is a challenge that cannot be tackled by a company alone. Eneco, for example, previously tried to gather information on the steel used for the production of windmills, but this proved unsuccessful.
- **Information was commercially sensitive:** for example, the concrete sector – in which Dekker Group is active – has traditionally been conservative when it comes to sharing production information. The company's linkages with natural capital could, however, better be explained if these could be tied to production data. FMO assesses potential investments on several natural capital relevant topics as part of its due diligence process, but these reports cannot be disclosed due to the market sensitive information they contain.
- **Information available was not always appropriate for the purpose of natural capital reporting:** for example, information from environmental assessments proved too complex for non-experts to translate in an accessible natural capital reporting format, especially when trying to add results from different assessments. E.g., Dekker Group – that commissions environmental assessments for each of its projects – experienced that backtracking is very challenging. It appeared that retracing data that was collected for a different purpose in the first place was not easy, and data found did not easily translate into the natural capital data collection sheet developed for this project. The same is true for FMO; many assessments are being undertaken as part of the due diligence process, but data generated in this respect could not be aggregated to the company level as it tends to flag risks rather than generate data.

⁴ A commodity market is a physical or virtual marketplace for buying, selling and trading raw or primary products, and there are currently about 50 major commodity markets worldwide that facilitate investment trade in approximately 100 primary commodities. Commodities are split into two types: hard and soft commodities. Hard commodities are typically natural resources that must be mined or extracted (such as gold, rubber and oil), whereas soft commodities are agricultural products or livestock (such as corn, wheat, coffee, sugar, soybeans and pork). (source: <http://www.investopedia.com/terms/c/commodity-market.asp>)

- **The business case for ‘natural capital’ is not always clear:** the project showed that a natural capital scan (or materiality analysis) of company operations is not usually undertaken. ‘Natural capital’ receives increasing attention from the business community, but this has not really translated yet to thorough analyses (following the NCP, for example), as a result of which data relevant for the natural capital context are often absent.

The search for additional data also provided interesting new insights. Eneco, for example, had commissioned research into the future availability of biomass for its bio heat installation to secure that the resources dependent upon would be available for the longer term. This information is very relevant to get an understanding of the linkage between the installation and natural capital, but was not shared in Eneco’s integrated report. Another example is Philips that had undertaken a risk analysis related to water use in its supply chains, that was not reported externally but could be used in its natural capital report.

Solutions through the search for data

Importantly, the exercise of finding missing data also delivered solutions. Dekker Group, for example, has drawn up a data collection sheet for its projects to retrieve and produce natural capital related data on its infrastructure projects. A solution for Vivera is to show its awareness of the potential natural capital impacts and dependencies of the protein resources procured, and couple this to action; for example, the target of Vivera to move towards vegan products to reduce its ecological footprint, and its ambitions in terms of European supply of protein resources to better trace their origin. Furthermore, Eneco could deliver detailed natural capital related data on two facilities in this project, which formed a good start to reflect on the corporate relationship with natural capital. For Desso, the search confirmed that a materiality assessment for Tarkett group (its parent company) in terms of risks and dependencies on natural capital is a priority. The outcome of such an assessment can enable Tarkett to make well-informed decisions on potential follow-up efforts.

Insights

Generally, pilot companies indicated that they became more aware of the relevance of natural capital impacts and dependencies for their operations, the challenges of data collection, and the need to move forward on collecting relevant data. These insights can be taken along in or may lead to new sector initiatives, frontrunner actions (e.g. Green Deals) or studies into data collection. Moreover, the pilot companies now better realized that they already deliver some positive contributions to the conservation of natural capital by decreasing their CO₂ footprint, reducing waste, focusing on a circular economy, supporting Sustainable Development Goals, conserving biodiversity, sustainability certification, etc.

3.3.3 Adding natural capital context

Environmental data from the sustainability reports and additional data collected were used by CREM and Arcadis to write sample natural capital reports for each of the participating pilot companies. Key items of the format presented in Annex I were used to draw up these reports: making the transition from ‘mere’ data to the impact and dependency pathways of the NCP and understanding the effects on its business and society (see figures 2 and 3 below). The sample reports served to explore how pilot companies can address their relationship with natural capital in communication with its stakeholders.

The contents of the reports have been discussed with the respective pilot companies, but they are the full responsibility of CREM and Arcadis.

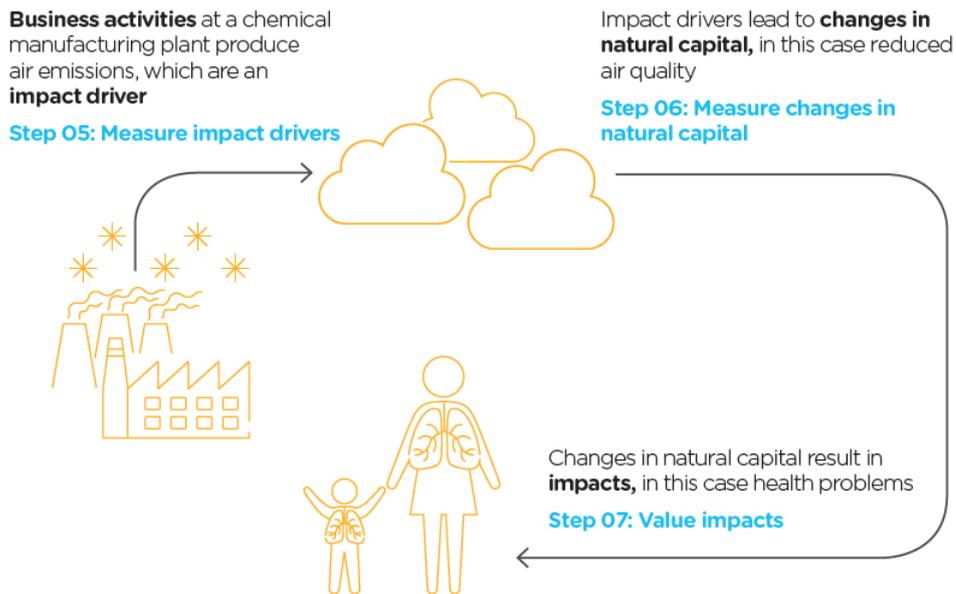


Figure 2: Generic steps in impact pathways (source: <http://naturalcapitalcoalition.org/protocol/>)

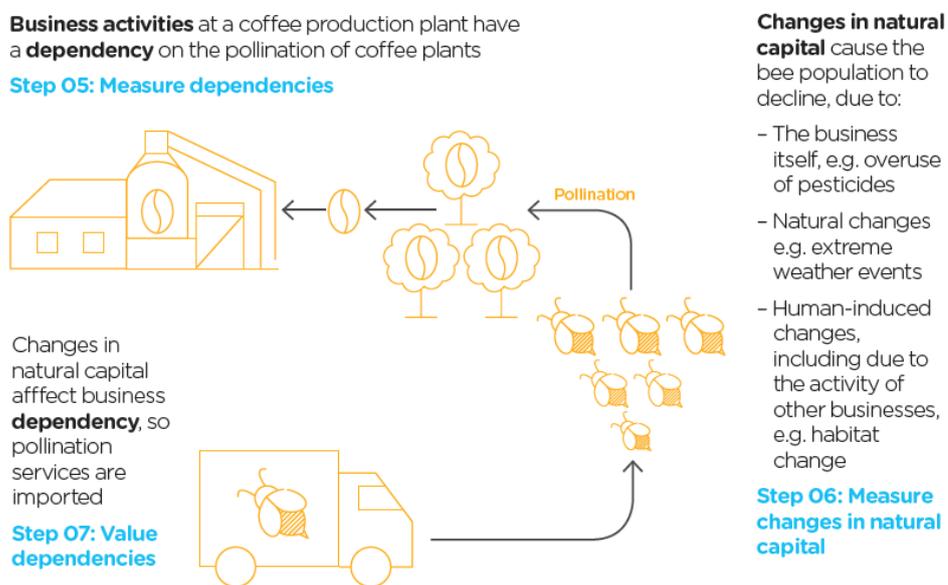


Figure 3: Generic steps in dependency pathways (source: <http://naturalcapitalcoalition.org/protocol/>)

Some results

The pilot reports focused on a natural capital interpretation of environmental data available, hence did not fully address all steps listed in Annex I. Moreover, they were built around data that could be made available by the pilot companies within a short timeframe. Contrary to expectations at the outset, almost all information was of a qualitative nature and/or not location-specific. As such, the information presented by the pilot companies was generally too limited to give a quantitative / meaningful context to occurring changes in the state of natural capital as a result of corporate activities (*step 6 of the NCP, see figure 1*).

The sample reports written are composed of the following components:

1. **Introduction of the relationship of the company with natural capital:** this section points to relevant aspects of the corporate mission, focus points, sustainability values, etc. that substantiate the importance of natural capital for the company, and **includes the scoping** – an explanation of what part of the company operations is covered by the report. The scoping was done on the basis of available data or focus areas of the company in question, not on the basis of a natural capital materiality assessment.
This touches upon step 3 of the NCP; see figure 1.
2. **Impacts on natural capital:** quantitative and qualitative impact-related data collected throughout the pilot have been incorporated in tables listing inputs and outputs. A qualitative natural capital context has been added per item, showing how the input or output relates to natural capital. In addition, a company-specific impact pathway has been included in each of the reports (see figure 2), as well as actions undertaken to address impacts.
This touches upon steps 4 and 5 of the NCP; see figure 1.
3. **Dependencies on natural capital:** quantitative and qualitative dependency-related data collected throughout the pilot have been incorporated in tables. A qualitative natural capital context has been added per item, showing how the dependency relates to natural capital. In addition, a company-specific dependency pathway has been included in each of the reports (see figure 3), as well as actions undertaken to address dependencies.
This touches upon steps 4 and 5 of the NCP; see figure 1.
4. **Natural capital – the way forward:** this section elaborates on opportunities to improve the reporting on impacts and dependencies on natural capital, and how companies are managing them. This has partly to do with collecting data differently, gathering additional data, and interpreting data in a different way.
This touches upon step 9 of the NCP; see figure 1.

The two tables below give examples of how certain impacts and dependencies (not company-specific for this purpose) have been presented in a natural capital context.

Table 1: Corporate impacts perceived in a natural capital context

Impacts	Natural capital related data	Natural capital context (by CREM and Arcadis)
Inputs		
Water use	<p>Data found in sustainability reports</p> <ul style="list-style-type: none"> • Total amount of water intake in a given year in m3 • % of water purchased • % of water extracted from ground water wells • Total amount of water reused in m3 <p>Missing data To further substantiate water use data, information about location-specific sources and volumes is relevant to include. This information could be used e.g. to place water use in the context of water scarcity maps to see where impacts may be most severe. Moreover, it helps to give more detailed insights in the natural capital context.</p>	<p>Water is increasingly scarce in certain regions. Also (drinking) water pollution is a recurring issue, challenging the availability of sufficient (drinking) water.</p> <p>As the availability and access to sufficient water (drinking, processing, etc), is under pressure, it is important to take into account the source and volume of the water used for own operations or those of the suppliers (can be either water sources from groundwater wells or water that is purchased) versus local availability: the use of groundwater may create impacts on the (future) availability of this water for other users and ecological needs, and on the quantity of the available water. Ground water levels may drop and can cause desiccation in the area that disrupt the ecosystem and its services, impacting flora and fauna species present. If water is sourced from surface water bodies or e.g. wetlands, there can be impacts on biodiversity and the soil quality. Moreover, the drying up of wetlands causes the emission of methane, a several greenhouse gas.</p> <p>Linking circular economy and the stock of water provides insight in how circular activities can help to reduce impact on natural capital by e.g. heat exchange through water and reuse of contaminants of water.</p>

Impacts	Natural capital related data	Natural capital context (by CREM and Arcadis)
Outputs		
Greenhouse gas emissions	<p>Data found in sustainability reports</p> <ul style="list-style-type: none"> • Quantitative data on CO2 emissions • Qualitative / quantitative data on reduction efforts and results <p>Missing data Information on how climate change effects have occurred and impacted the production sites of the company and those of the suppliers; and how occurring effects have been mitigated or addressed.</p> <p>Also: most companies only focus on scope 1 and scope 2 emissions. Missing data also concern emissions on scope 3 level.</p>	<p>CO2 equivalent emissions are known drivers for climate change. Climate change can cause major social and environmental disruptions on the local level such as draughts or floods, affecting different elements of natural capital. Volumes can change (e.g. the production of crops), biodiversity can be impacted (flora and fauna species that cannot adapt to changing circumstances) and ecosystem services such as soil fertility may decrease.</p> <p>The effects of climate change also impact companies that must deal with changing weather patterns (more heavy rains, or extended periods of draught, changed heat management, etc) potentially affecting own operations of those of suppliers. Adaptation to the impacts of climate change is complex and costly, and a reduction of CO₂ emissions in the next decades is therefore essential – as underpinned in the Paris Climate Agreement. Company ambitions e.g. to run operations carbon neutral, produce own green energy or swift to electric cars contributes to the fight against climate change and, in this way, also to the conservation of different natural capital elements.</p> <p>The other way around: companies can also play a role in fighting climate change by conserving natural capital; this contributes to carbon sequestration and climate mitigation. When it comes to compensation or offsetting of emissions as part of a strategy to reduce emissions to zero, a natural capital friendly initiative such as the UN's REDD+ initiative can therefore be an option. REDD+ stands for countries' efforts to Reduce Emissions from Deforestation and forest Degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks. Companies can participate in projects that reduce greenhouse gas emissions.</p>

Table 2: Corporate dependencies perceived in a natural capital context

Dependency	Natural capital related data	Natural capital context (by CREM and Arcadis)
Consumptive		
Water use	<p>Data found in sustainability reports</p> <ul style="list-style-type: none"> • Total amount of water intake in a given year in m3 • % of water purchased • % of water extracted from ground water wells • Total amount of water reused in m3 <p>Missing data To further substantiate water use data, information about location-specific sources and volumes is relevant to include. This information could be used e.g. to place water use in the context of water scarcity maps to see where impacts may be most severe. Also, it needs to be placed within the context of other users of resources within water-scarce areas.</p> <p>This will help to give more detailed insights in the natural capital context.</p>	<p>Water is needed to keep own production and/or production of suppliers going. As such, it is an essential resource that should be carefully managed. Given the importance of water, it is essential to assess the needs of other users, ecological needs, availability and quality of the water that is required for own operations and processes, together with forecasts in terms of water supply. Influences such as climate change, business developments and urban developments should be included to do a proper forecast, as these may cause changes in the amounts of water that can be allocated to parties. Information deriving from an assessment can substantiate data about (shared) impacts and dependencies on water, and anticipate potential (operational) disruptions.</p> <p>In addition, linking water use to possible (local) water issues such as scarcity can be valuable information. Information about possible conflicts about water availability and mitigation measures is relevant to regard water use in the context of natural capital.</p> <p>Linking the concept of circular economy⁵ with the stock of water provides insight in how a circular economy can help to reduce impacts on natural capital by e.g. heat exchange through water and reuse of contaminants of water.</p>
Materials	<p>Data found in sustainability reports</p> <ul style="list-style-type: none"> • Type of materials used • Volumes • % of reuse <p>Missing data</p> <ul style="list-style-type: none"> • Origin • Extraction / production methods • Future needs • Alternative materials (that can replace key materials on which the company depends) • Sensitivity of materials to decline, e.g. the fact that pollination services are declining will impact on some materials and others not <p>Pilot companies have mentioned ambitions in relation to circular economy in their reports. Circular activities in principal lead to decreased dependency on new materials, though new demands may arise in the form of water use for recycling, green electricity to replace fossil energy, bio-based materials to replace fossil-based materials, green infrastructure to replace technical solutions, etc. The report could give data on the balance of materials and other resources needed and their trends.</p>	<p>Companies in general depend on natural capital stocks, providing the required natural resources. This can be minerals, fossils, but also bio-based resources. The availability and quality of resources is under pressure as a consequence of e.g. climate change effects, a loss of biodiversity, increasing water scarcity, and over-exploitation of productive soils.</p> <p>Reducing the dependency on scarce/ finite materials and focusing on circular processes/ products are possible solutions to manage dependencies on materials. A first step towards understanding to which extent a company is dependent on materials is to undertake a materiality assessment to find out which material deserve attention from a natural capital point of view (taking into accounts origin, trends).</p>

⁵ A circular economy is an economic system where products and services are traded in closed loops or 'cycles'. A circular economy is characterized as an economy which is regenerative by design, with the aim to retain as much value as possible of products, parts and materials. This means that the aim should be to create a system that allows for the long life, optimal reuse, refurbishment, remanufacturing and recycling of products and materials. (<https://kenniskaarten.hetgroenebrein.nl/en/knowledge-map-circular-economy/definition-circular-economy/>)

Two examples below show a company-specific impact pathway and a company-specific dependency pathway (both anonymized) as incorporated in the sample reports.

Table 3: A pilot example of an impact pathway

Impact pathway
<ul style="list-style-type: none"> ▪ An impact driver is the procurement of materials as input for the production process. ▪ All these materials come from factories or extraction sites that need land, while related production processes may cause disturbance and pollution (e.g. emissions to air, oil spills). The procurement thus is an impact driver, and a change in natural capital may occur when habitats are degraded due to land conversion, water use, dust, noise, etc. ▪ A change in natural capital can create impacts, in this case reduced wellbeing of people living in the vicinity of the production sites.

Table 4: A pilot example of a dependency pathway

Dependency pathway
<ul style="list-style-type: none"> ▪ A company depends on water for its operations. This water is sourced from an adjacent surface water body. ▪ Over-exploitation due to more stakeholders using the same resource and a reduced water supply due to drought in the upstream areas, leads to water stress and a reduction in the availability of water. ▪ This change in natural capital available forces the company to either seek alternative, costly water sources or to find an alternative way to continue its operations.

Some reflections by the pilot companies

The piloting was a first try for the companies involved to review environmental data through a natural capital lens. Reflections on the pilot, including the data collection sheet and the make-over, are:

Data collection sheet

- The sheet serves as a good checklist for e.g. new projects to assess which inputs, outputs and dependencies occur, and what data are available.
- Some data available concern the entire company, some concern a project or a resource procured for specific products. The sheet does not cater for such variety in data.
- The sheet is comprehensive, but leaves room for discussion on what data exactly are being asked; this is partly due to the fact that measurement methods are not universal/ clear for each topic – how do you measure, for example, good will or nature experience?
- The data sheet proved less suitable for financial institutions such as FMO. The reason for this is that they adhere to international guidelines and standards in their assessments, such as the OECD Guidelines (Organisation for Economic Co-operation and Development) and IFC performance standards (International Finance Corporation). These refer to natural capital topics using different subdivisions than the ones on the data sheet, e.g. ecosystem services, biodiversity and habitats. The data available within FMO could therefore not easily be translated to the format of the data sheet.

Adding natural capital context

- The sample report gives a clear but mostly rather technical background to better understand how operations impact and depend on natural capital. It needs considerations as to how to bring the message along to stakeholders in a (visually) attractive way.
- The makeover shows the relevance of data collected so far and gives food for discussion with stakeholders; also about data being absent.
- It asks for ecological knowledge to make the connection between environmental data collected and actual changes in natural capital (including resulting impacts, effects on dependencies, associated risks and opportunities).

Next steps considered include:

- To think about, and potentially develop, a dashboard that rates a company's natural capital performance against key indicators; the technical information from the sample reports can be used as input for this rating.
- To think about – in collaboration with stakeholders like scientific institutions, authorities and other businesses – the development of a central database containing natural capital relevant data for public use; this supports the use of unambiguous data that enables the comparison of corporate performances.

3.4 Generic pilot findings

Working with the pilot companies and writing sample natural capital reports have resulted in general insights as to the challenges and opportunities for natural capital reporting. Three key findings are presented below:

1. Today's sustainability reporting does not properly provide natural capital context-based information, nor is there easily found suitable data 'hidden' in other parts of the company

Working with the pilot companies demonstrated that information essential to understand the actual impacts and dependencies on natural capital is generally not sufficiently available. In those cases where the company's interactions with natural capital did get disclosed, this was rarely translated to an impact or dependency and associated risks and opportunities. Not surprisingly, this is especially clear if one goes back to the extraction or primary production phase where activities on the ground are known to interact most with natural capital. At the start of the project, however, it was assumed that more relevant data could be generated during the pilots to actually make a statement on likely changes in natural capital as a result of the pilot companies' operations. This was based on the assumption that there are information channels within the company / with stakeholders that can be better exploited by raising the 'right' issues and seeking for information relevant to natural capital impacts and dependencies. Unfortunately, the timeframe of around two months to collect additional data was too short to extensively liaise with different stakeholders. Still, the pilot companies better understand now what kind of additional information is required, so this data search can be continued after the project.

2. Established environmental/sustainability reporting topics have clear links with natural capital and offer opportunities for natural capital reporting

Companies are not considering environmental (and social) issues through a natural capital lens, but instead are focusing data on quantitative information that fails to take into account the context in which the company is operating and the trends in resources. As such, the company's reporting processes, data and disclosures are not providing the information required to manage risks or identify them. However, it became clear during a project meeting with the pilot companies that natural capital as a topic is still relatively new, and this business case for paying attention to this topic is not always seen throughout companies. This implies that sustainability staff needs entry points to get 'natural capital' on the reporting agenda. A number of existing sustainability topics that companies are trying to contribute to have a clear link to natural capital, such as the Sustainable Development Goals (SDGs), circular economy, greenhouse gases/ climate, raw materials, water and waste. These offer great motivations for companies to extend their reporting in terms of looking at the data through a natural capital lens.

For example, the importance of natural capital as supplier of circular services (e.g. renewable energy, biotic cycles, and water needed for recycling processes) can justify attention for a company's impact and dependency on this capital. The same goes for natural capital as driver behind social development in the context of the SDGs (see box 2). Companies expressing ambitions to contribute to the achievement of the SDGs can be asked for their contributions to conserve natural capital for its life support function. This kind of entry points were declared essential and very useful by the pilot companies.

Box 2: Sustainable Development Goals

Reporting on the sustainable development goals means that different elements of natural capital are already touched upon, either directly or indirectly. SDGs 14 (life below water) and 15 (life on land) directly concern one of the stocks – flora and fauna- of natural capital. But also SDG 12 (responsible consumption and production) implies less / more efficient use of natural resources, which positively impacts natural capital. Nature-based solutions, and natural capital products and services can also be employed to realize SDGs 6 (clean water and sanitation), 7 (affordable and clean energy) and 13 (climate action). For example, wetlands can be used for storing and cleaning water or offsetting, and reforestation can help to sequester greenhouse gas emissions.

At the same time, a healthy natural capital is a condition for goals on eradicating poverty (SDG 1) and zero hunger (SDG 2). This can drive corporate commitment to assess its natural capital performance.

3. It asks for a process to enable a shift in reporting: a materiality analysis is key for a good start and approach on data collection

The fact that natural capital comprises all renewable and non-renewable stocks of resources on earth is something that the pilot companies find difficult to make tangible in their daily operations. They considered it essential to introduce some form of prioritization to allow corporate effort to be directed at those issues that it can most readily address and that pose the greatest risk or opportunity for the business or society. In that sense, it would help to do a natural capital materiality analysis. This will generate a kind of hotspot map that identifies those parts of the company's operations that could best be managed to deliver positive outcomes for natural capital and most effectively manage business risk and opportunity. Such priority areas should drive strategy and management plans which should allow definition of management objectives and indicators to monitor their delivery. Those in turn should drive data collection.

4 CONCLUSIONS AND NEXT STEPS

4.1 Conclusions

The following conclusions can be drawn from the project activities undertaken:

1. Data are key

Self-evidently, one needs data for proper reporting. Especially in the context of natural capital reporting, these are (perceived as being) hard to find. Apart from the actual absence of certain data, companies may lack the abilities to interpret data in a natural capital context, and data are difficult to add. Three specifics are highlighted here:

- An approach based on impacts and dependencies
Looking at the formats in Annexes I and II developed in line with the NCP approach, one can see that there is an explicit distinction between impacts and dependencies. This sometimes gives rise to duplication. For example, the topics of 'materials' and 'water' are listed both as impact drivers ('inputs') as well as dependencies ('consumptive'). A distinction between impacts and dependencies is understandable from a natural capital point of view. However, this complicates the inclusion of such data in current reporting, as companies are used to report on a certain topic as a whole, for example: water, raw materials, waste, circular economy or climate change (an approach that is easier to communicate to stakeholders and in line with reporting standards such as the GRI).
- Backtracking is difficult
The data in sustainability reports were generally not specific enough to give a clear picture of impacts, dependencies and the associated effects on natural capital stocks. The 'hidden' data that were expected to be found through impact assessments undertaken, procurement processes, supplier assessments, etc. could deliver more specific data (was the assumption at the outset). Environmental impact assessments, for example, produce quite detailed knowledge on the likely effects of intervention. Surprisingly, it appeared that backtracking – *retracing data that was originally collected for a different purpose and translating the same into the natural capital data collection sheet developed for this project* – was very difficult and way too time-consuming to undertake in this pilot project. The sample natural capital reports could therefore not deliver much information on actual changes in natural capital due to corporate operations (and operations in the supply chains). They merely delivered qualitative information on the natural capital context of the data that could be produced.
- Natural capital context asks for new data
A natural capital approach offers new insights on a company's reliance on natural resources over traditional environmental approaches because it:
 - considers the dependency of companies on natural capital stocks and flows;
 - recognizes the finite nature of resources;
 - recognizes the need of shared users of that resource.

However, this 'new' thinking asks for data not commonly collected by companies, such as trends of materials or (future) uses by other stakeholders, which complicates reporting on these issues. It asks for more/ different quantitative information and location specifics. Environmental data like '*the use of @@ m3 of water*' are not sufficient to make a statement on the actual changes in natural capital stocks and flows; they should be considered in a context that takes account of climate change and changing weather patterns, local ecological needs, local urban growth and associated water demands, development of industry, etc. to understand if that water intake is 'little', 'too much', etc. This context is important for companies to understand their position in the landscape and potential impacts on their operations and those of their suppliers/ customers, and thus forms the basis for well-informed decision-making. Not only in terms of environmental constraints, but also in terms of:

- What constraints are regulations/ society going to place around the business? (for example, in terms of greenhouse gas emissions);
- How does this link to business risks/ opportunities? (considering, how does a business relate to its peers?); and
- How would a company need to adjust its approach/ processes to face (upcoming) challenges?

2. Use of the project deliverables is promising, but requires efforts

The project produced two deliverables that support companies intending to report on their natural capital performance: a reporting format and a data collection sheet (Annexes I and II). The documents in themselves are accessible, but the absence of data is likely to hinder companies to complete the formats. So a search for data will probably be part of the exercise. Also, some expert advice will be needed for the collection and interpretation of data, in case one lacks ecological knowledge.

It was also noted that it would be helpful to develop a separate data collection sheet for businesses and (financial) institutions that assess their clients, investments, suppliers, etc. according to international standards and guidelines (e.g. OECD guidelines and IFC performance standards). A natural capital data collection sheet on impacts and dependencies does not match with such an approach.

An obvious approach is to start small, trying to do the exercise for a defined project or material. Ideally, the selection of a defined case is based on a materiality assessment, but other arguments – such as data availability – may prevail. The results may be too technical to communicate via popular communication channels, but could be discussed with some key stakeholders to move the topic forward. Also, they can deliver input for informed decision-making and directions for further use.

4.2 Potential follow-up activities

This project touches upon the first natural capital reporting steps that companies can take. A number of potential follow-up activities was identified during its implementation:

1. Linking with existing reporting frameworks

In this project, data available with pilot companies have been captured and placed in a natural capital format to give a first insight into how a company can more effectively report on its interaction with natural capital. However, most companies will already have a reporting format, and these samples will probably not fit in there. A logical next step therefore is to link the project output to existing well-established reporting frameworks, and see how a match can be established. Businesses reporting in compliance with the criteria of, for example, the GRI already include different aspects of natural capital in their integrated or sustainability reports, be it water, air, soil or flora & fauna (see Annex III). In most reports, these aspects are not envisaged as being part of the natural capital storyline whereas in fact they are.

Moreover, it makes sense to look at materiality assessments used to select topics to report on. A lack of awareness as to the significance of/ relationships with natural capital stocks and flows can cause for this topic not be duly considered by a company and its stakeholders.

Linking with existing reporting frameworks will give natural capital reporting a sense of credibility and reduce the cost burden for companies trying to do this work.

2. Address data collection and interpretation

Data challenges are universal and opportunities should be looked at to see where and how companies can best be supported. There is the way of larger studies into the collection and disclosure of data, but there are also quick wins to identify that can more easily be followed up. An idea worth considering in this respect is to properly include natural capital elements in business tools used throughout the year, such as materiality analyses, stakeholder engagement, impact assessments and SWOT analyses. This idea derived from a project finding that environmental impact assessments ('Milieueffect Rapportages') deliver very relevant data for natural capital reporting, though it is costly and time-consuming to retrieve these afterwards. It would make perfect sense to ask the expert drawing up the impact assessment to fill in a natural capital data collection sheet at the same time. Another idea is to better include suppliers in data collection.

Moreover, the pilots showed that better support on how to obtain data ('What (universal) measurements can be used?') and interpret available data would also benefit companies. In addition, pilot companies indicated that data collected should ideally enable them to rate their efforts: how good are they in terms of natural capital performance?

3. Enable frontrunners

Several pilot companies have indicated that they are interested to further work on this topic, for example, developing possible natural capital reporting indicators, working on specific data collection sheets, or applying a corporate hotspot analysis to decide on natural capital priorities. As this is only the start of a challenging path, it makes sense to invite interested companies to explore their needs, wishes and seize opportunities present. Ideas to enable frontrunners include the set-up of a Community of Practice and the establishment of a Green Deal. It can also make sense to connect the frontrunners to the Community of Science to be established by IUCN NL, or the EU B&B Network.

4. Attractive reporting, how?

In trying to look at environmental data through a natural capital lens – the question popped up as to how the topic of natural capital can be integrated in existing reporting in an attractive way. This ties in to one of the findings of the pilots, namely that the sample reports proved too technical for communication to the larger part of the stakeholders. It is clear that visuals rather than text help hugely in getting the message across. Examples in Annex IV show the difference!

5. Scaling up

Scaling up to ensure that 'natural capital' becomes a common topic to think about and integrate in reporting is essential for the future. A vehicle to involve when scaling up is the Natural Capital Coalition. It is the initiative issuing NCP, which is regarded as today's standard of how companies can get a grip on their relationship with natural capital. This report can be used to feed NCP processes and thoughts on reporting.

ANNEX I: NATURAL CAPITAL REPORTING FORMAT

A natural capital reporting format was developed within this project to structure the disclosures relevant for a company's natural capital performance. The reporting format developed is loosely structured around the stages identified in the Natural Capital Protocol (NCP) to organize natural capital related data. As figure 1 shows, the NCP framework covers four stages, guiding companies from a first exploration of the relevance of natural capital for their business (Why?) to the eventual application in day-to-day business (What next?). Protocol stages are further broken down into nine Steps, that contain specific questions to be answered when carrying out a natural capital assessment.⁶



Figure 1: The four stages of the Natural Capital Protocol (source: <http://naturalcapitalcoalition.org/protocol/>)

This NCP based format provides an overview of the 'ideal' situation from an NCP perspective. It includes reporting on impact pathways running from environmental impacts (inputs and non-product outputs) via natural capital impacted, down to the value of significant impacts to business and society. Also, it includes considerations of dependencies on natural capital stocks and changes of these resources. This is of course a picture that deviates from the reality of most companies and reports. However, providing insight in the "perfect picture" (although NCP is also still work in progress) serves an important purpose: it shows a company how and where the information covered in the sustainability report fits into this perfect picture and what information is still lacking. In other words, it shows what is needed to complete the puzzle.

The approach is far from finished but this format drawn from the NCP appeared to be useful within the project to get an initial understanding of how company data might look if examined through a natural capital lens.

⁶ <http://naturalcapitalcoalition.org/protocol/>

NATURAL CAPITAL REPORTING FORMAT

Developed by CREM and Arcadis based on the Natural Capital Protocol

Note: NC = Natural Capital

1. Natural Capital Protocol (NCP) steps in reporting

1.1 Introduction

- Brief explanation of the NCP approach
- Brief explanation of Frame, Scope, Measure & value and Apply

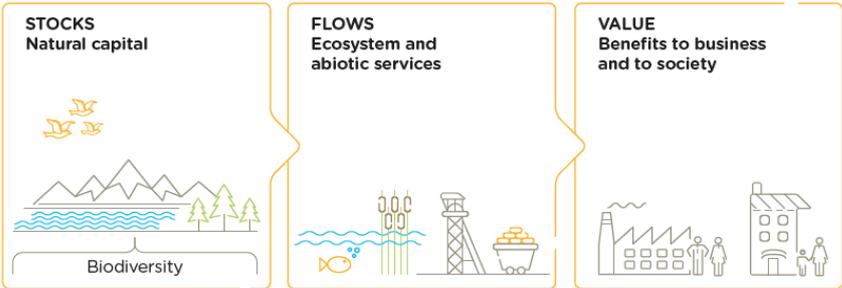


Figure 1: Natural capital stocks, flows, and values

1.2 Frame of NC assessment / report

FRAME STAGE
Why?

- Explanation of the expected value of NC to the company, based on dependencies and impacts and related risks and opportunities.
- Reporting on:
 - Why NC might be important to the company
 - Consider the following risks and opportunities: operational, legal and regulatory, financing, reputational and marketing, societal
 - The internal support for a focus on NC
 - How it links to other capitals and existing reporting

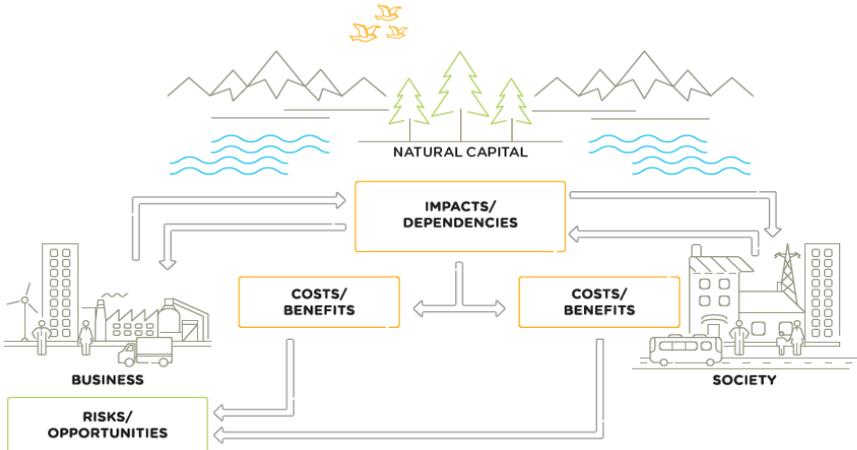


Figure 2: Natural capital impacts and dependencies: conceptual model for business

1.3 Scope NC assessment / report

SCOPE STAGE
What?



Explanation of the scope of the NC assessment / report.

Scope of the assessment

- Report on:
 - What part of the organisation the NC report covers
 - What part of the supply chain the NC report covers
 - What product(s) the NC report covers
 - What values are included: value to the company and/or the value to society

Materiality: Materiality criteria may include: operational, legal and regulatory, financing, reputational and marketing, societal.

- Report on:
 - The criteria the company uses to decide on material NC issues
 - The results of this materiality analysis

1.4 Measure & value in reporting

MEASURE AND VALUE STAGE
How?



Impacts on Natural Capital

Impact pathways:

1. inputs and non-product outputs
2. change in NC
3. impact on the business
4. Impact on stakeholders

- Report on:
 - How inputs and non-product outputs link to NC
 - The process by which the company had determined these linkages e.g. stakeholder inclusive assessment conducted?
 - Whether the NC will change as a result of the business activities
 - To what extent NC will change as a result of external factors or trends e.g. competition for resource use
 - How the impacts on NC may affect the business (consequences)
 - How the impacts on NC may affect other stakeholders (consequences)
 - The most significant impacts (e.g. from a risk perspective)
 - The value of this impact (qualitative, quantitative or monetary)

See impact table (Annex !)



Figure 3: Examples of how business can impact natural capital

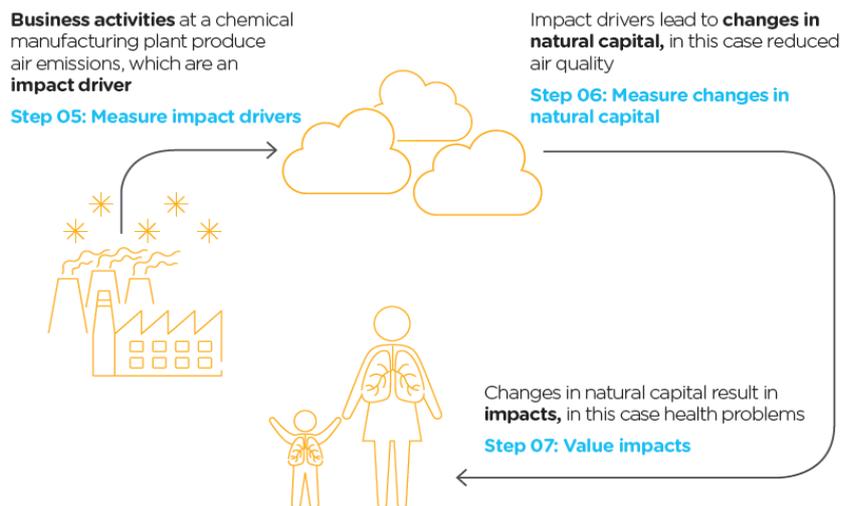


Figure 4: Generic steps in impact pathways

Dependency on Natural Capital

Dependency pathways

1. Dependencies on NC
2. Observed or potential future changes in NC
3. Impact on business e.g. impact on ability to secure supply

- Report on:

- What NC dependencies are relevant for the company
- The process by which the company had determined these linkages e.g. stakeholder inclusive assessment conducted?
- Observed or future changes in this NC (resulting from internal and external factors) (short-medium-long term)
- How this NC dependency may affect the business (consequences)
- The most significant dependencies
- The value/cost of this dependency (qualitative, quantitative or monetary)

See dependency table (Annex II)

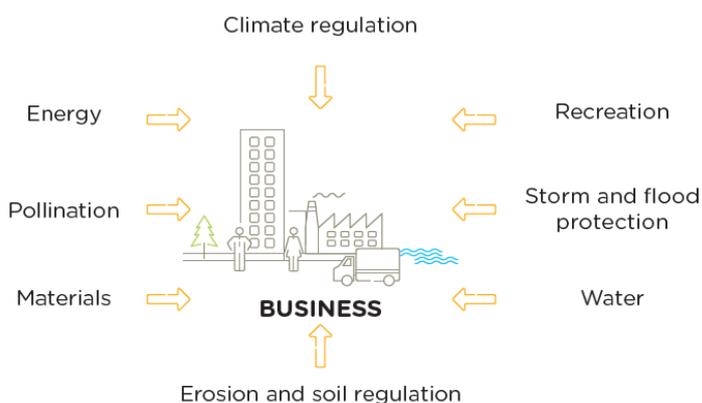
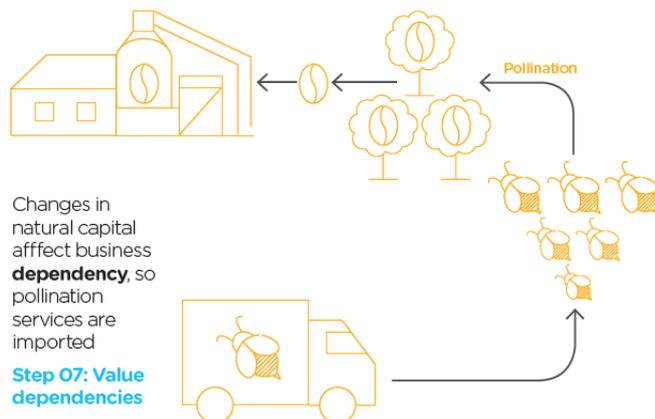


Figure 5: Examples of business dependencies on natural capital

Business activities at a coffee production plant have a **dependency** on the pollination of coffee plants

Step 05: Measure dependencies



Changes in natural capital cause the bee population to decline, due to:

- The business itself, e.g. overuse of pesticides
- Natural changes e.g. extreme weather events
- Human-induced changes, including due to the activity of other businesses, e.g. habitat change

Step 06: Measure changes in natural capital

Figure 6: Generic steps in dependency pathways

1.5 Apply in reporting

APPLY STAGE
What next?

- Report on:
 - Strengths and weaknesses of the NC assessment
 - Further assessments and data collection needed
 - The actions you are planning to take as a result of the NC assessment
 - To what extent you will engage with stakeholders affected
 - To what extent you will integrate the concept of NC into your business operations

Annex I: Example table on impacts

Data can be qualitative or quantitative.

Impacts	NC impacted	NC change from business activity?	NC change external factors/trends ?	Impact on business? (operational, legal, financing, reputational, societal)	Impact on other stakeholders?	Significant impact?	Value of significant impacts to business	Value of significant impacts to society	Action?
Inputs									
Water									
Abiotic resources									
Biotic resources									
Non-product outputs									
Emissions									
Waste									
Etc.									

Annex II: Example table on dependencies

Data can be qualitative or quantitative.

Dependencies	NC change from business activity?	NC change external factors/trends?	Impact on business? (operational, legal, financing, reputational, societal)	Significant impact?	Value of significant impacts to business	Action?
Resources						
Water						
Abiotic resources						
Biotic resources						
Services						
Productive						
Regulating						
Cultural						

ANNEX II: DATA COLLECTING FRAMEWORK FOR REPORTING ON NATURAL CAPITAL

Data are needed for reporting. Within this project, the data collection sheet below was developed that companies can use to:

1. get an understanding of what kind of data to collect and how it can be relevant for / connected to natural capital;
2. categorize corporate data available;
3. explore their levels of ambition in terms of reporting on natural capital (an explanation can be found in section 2.2.2).

The topics covered concern own operations and (where possible) supply chain activities (upstream and downstream)

Business impacts and dependencies on NC		Ambition level in Natural Capital (NC) reporting			
		1. Qualitative indication of topic, qualitative interpretation of NC impact/ dependency	2. Quantitative indication of topic, qualitative interpretation of NC impact/ dependency	3. Quantitative interpretation of both the topic and NC impact / dependency	4. Valuation of NC impact / dependency
IMPACT DRIVERS	<i>EXAMPLES of potential report content</i>				
<i>Inputs</i>					
Water use	<i>Volume of ground / surface water consumed</i>				
Terrestrial ecosystem use (land use)	<i>Area used by agriculture, forest plantation, area disturbed / rehabilitated by mining - including land use change</i>				
Fresh water ecosystem use	<i>Area used for water purification, fish spawning and infrastructure</i>				
Marine ecosystem use	<i>Area used by aquaculture, seabed mining</i>				
Materials	<i>Volume of minerals extracted (+ % from certified sustainable sources)</i>				
Wild catch (overexploitation)	<i>Volume of wild-caught fish, mammals, harvesting of medicinal plants (+ % from certified sustainable sources)</i>				

		Ambition level in Natural Capital (NC) reporting			
		1. Qualitative indication of topic, qualitative interpretation of NC impact/ dependency	2. Quantitative indication of topic, qualitative interpretation of NC impact/ dependency	3. Quantitative interpretation of both the topic and NC impact / dependency	4. Valuation of NC impact / dependency
Business impacts and dependencies on NC					
Outputs					
GHG emissions	<i>Volume of carbon dioxide, methane, nitrous oxide etc.</i>				
Non-GHG air pollutants	<i>Volume of particulate matter, VOC's, nitrogen, SOx, etc.</i>				
Water pollutants	<i>Volume of nutrients, heavy metals, contaminants (e.g. pharmaceuticals), warmth discharged to water body</i>				
Soil pollutants	<i>Volume of waste discharged and retained in soil</i>				
Solid waste	<i>Volume of waste by classification, material or disposal method</i>				
Disturbances	<i>By noise, light, movement of man and machine</i>				
DEPENDENCIES	EXAMPLES of potential report content				
Consumptive					
Energy	<i>Solar, wind, hydro, geothermal, biofuel, fossil fuel</i>				
Water	<i>Fresh water (ground, surface or rain) or sea water</i>				
Materials	<i>Wood fiber, genetic resources, metals, minerals, plant and animal material</i>				
Nutrition	<i>Human or animal food</i>				

Business impacts and dependencies on NC		Ambition level in Natural Capital (NC) reporting			
		1. Qualitative indication of topic, qualitative interpretation of NC impact/ dependency	2. Quantitative indication of topic, qualitative interpretation of NC impact/ dependency	3. Quantitative interpretation of both the topic and NC impact / dependency	4. Valuation of NC impact / dependency
Non-consumptive					
Regulation of physical environment	<i>Flood attenuation, water quality regulation</i>				
Regulation of biological environment	<i>Crop pest control, pollination</i>				
Regulation of waste and emissions	<i>Waste assimilation, noise and dust regulation</i>				
Experience	<i>Nature based tourism & recreation</i>				
Knowledge	<i>Information from nature (e.g. biomimicry)</i>				
Wellbeing and spiritual / ethical values	<i>Employee satisfaction, stress release</i>				
Goodwill	<i>Social license to operate</i>				
Permits	<i>Legal license to operate</i>				

ANNEX III: NATURAL CAPITAL VERSUS GRI G4

The table below gives a general overview of the overlap between the reporting criteria of the GRI G4 standards and the stocks of natural capital. The 'x' indicates whether the GRI criteria (partly) reports on either an impact (imp) or dependency (dep) for a particular natural capital stock.

GRI G4			Natural Capital Stocks									
			Flora & fauna		Air		Water		Soils		Minerals	
Code	G4 Sub-section	Description	imp	dep	imp	dep	imp	dep	imp	dep	imp	dep
G4-EN1	Materials	Materials used by weight or volume		x								x
G4-EN2	Materials	Recycled input materials used		x								x
G4-EN3	Energy	Energy consumption within the organization	x		x							
G4-EN4	Energy	Energy consumption outside of the organization	x		x							
G4-EN5	Energy	Energy intensity	x		x							
G4-EN6	Energy	Reduction of energy consumption	x		x							
G4-EN7	Energy	Reductions in energy requirements of products and services	x		x							
G4-EN8	Water	Water withdrawal by source		x			x			x		
G4-EN9	Water	Water sources significantly affected by withdrawal of water	x				x					
G4-EN10	Water	Water recycled and reused	x				x					
G4-EN11	Biodiversity	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	x									
G4-EN12	Biodiversity	Significant impacts of activities, products, and services on biodiversity	x									
G4-EN13	Biodiversity	Habitats protected or restored	x	x								
G4-EN14	Biodiversity	IUCN Red List species and national conservation list species with habitats in areas affected by operations	x									
G4-EN15	Emissions	Direct (Scope 1) GHG emissions	x		x							
G4-EN16	Emissions	Energy indirect (Scope 2) GHG emissions	x		x							
G4-EN17	Emissions	Other indirect (Scope 3) GHG emissions	x		x							
G4-EN18	Emissions	GHG emissions intensity	x		x							
G4-EN19	Emissions	Reduction of GHG emissions	x		x							
G4-EN20	Emissions	Emissions of ozone-depleting substances (ODS)			x							
G4-EN21	Emissions	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	x		x					x		
G4-EN22	Effluents and Waste	Water discharge by quality and destination	x				x					
G4-EN23	Effluents and Waste	Waste by type and disposal method	x							x		
G4-EN24	Effluents and Waste	Significant spills	x				x			x		
G4-EN25	Effluents and Waste	Transport of hazardous waste										
G4-EN26	Effluents and Waste	Water bodies affected by water discharges and/or runoff					x					
G4-EN28	Products and Services	Reclaimed products and their packaging materials										
G4-EN29	Compliance	Non-compliance with environmental laws and regulations	x		x		x			x		x
G4-EN32	Supplier Environmental Assessment	New suppliers that were screened using environmental criteria	x	x	x	x	x	x	x	x	x	x
G4-EN33	Supplier Environmental Assessment	Negative environmental impacts in the supply chain and actions taken	x		x		x			x		x
G4-EN34	Environmental Grievance Mechanisms	The management approach and its components	x		x		x			x		x

ANNEX IV: VISUALS FOR COMMUNICATION

Visuals rather than text help in getting the natural capital message across, which is shown by the examples below.

Example 1: Definition of natural capital

Rather than talking about stocks of renewable and non-renewable sources, and elaborating on ecosystem services, this visual below shows a clear picture of what are the components of natural capital.⁷ Natural capital is the stock of renewable and non-renewable resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people.

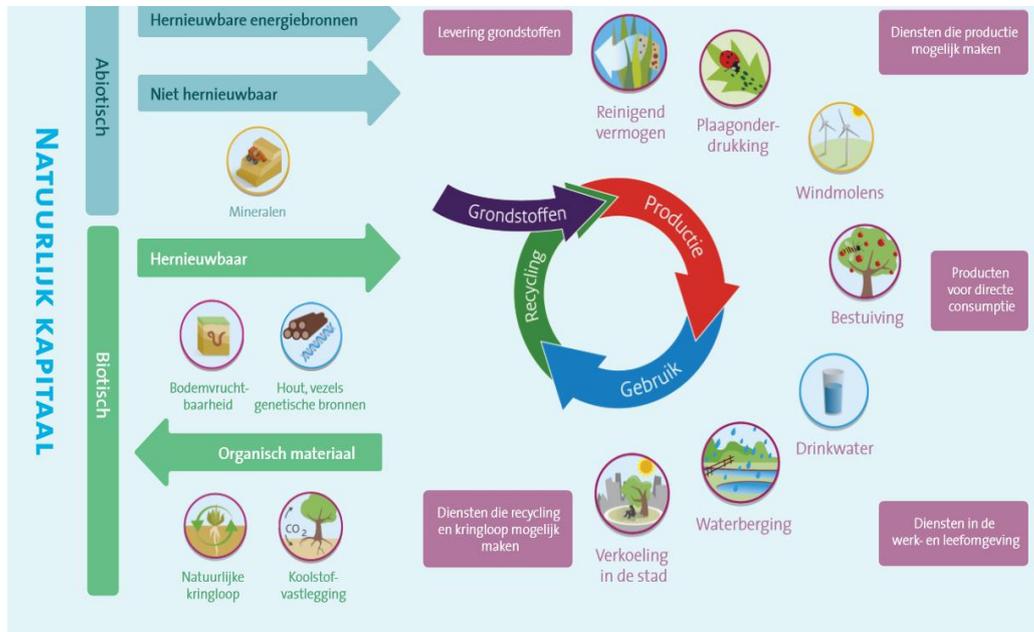


Bron: PBL, RIVM, WUR, CICES 2014

⁷ <https://kenniskaarten.hetgroenebrein.nl/kenniskaart-natuurlijk-kapitaal/gerelateerde-termen/>

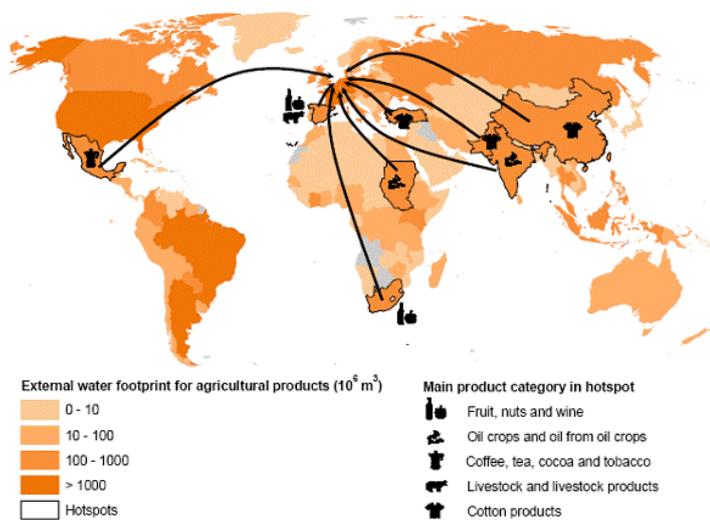
Example 2: Natural capital and circular economy

There are many ways in which natural capital and circular economy are linked. Key relations are the fact that natural capital delivers products, inspiration and services to the circular economy, and that circular activities contribute to the conservation of natural capital stocks by efficiently (re)using resources. All linkages are clearly presented in the Dutch visual below⁸.



Example 3: Natural capital and water scarcity

It takes quite some text to explain the external water footprint for agricultural products consumed in the Netherlands and the countries considered as hotspots, i.e. the countries where the external water footprint of the Netherlands has a relatively high environmental impacts. The visual below shows it in one glance⁹.

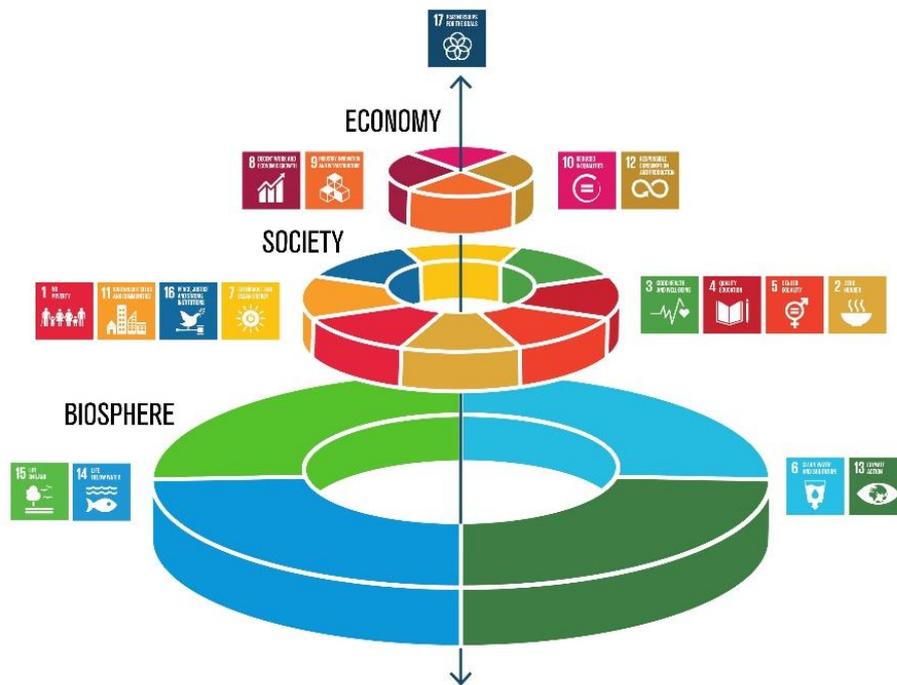


⁸ Natural Capital and a Circular Economy: facts, figures and examples; CREM, 2016.

⁹ <http://temp.waterfootprint.org/?page=files/Netherlands>

Example 4: Natural capital and Sustainable Development Goals

One of the key deliverables of natural capital to mankind is food. It was concluded that actually all the sustainable development goals are directly or indirectly connected to sustainable and healthy food. This emphasizes the crucial role of natural capital in achieving the SDGs, as is shown by the visual below¹⁰.



¹⁰ <http://www.stockholmresilience.org/research/research-news/2016-06-14-how-food-connects-all-the-sdgs.htm>

