Case study Summary sheet

Context

CASE STUDY

Footprint use category: Corporate level
Assessment time: 2020

Perimeter

	LUEFN Pressure	CC Pressure	Aquatic Pressures
Scope 1	✓	✓	✓
Scope 2	✓	✓	✓
Scope 3 – Tier 1	✓	✓	✓
Scope 3 – Rest of value chain	✓	✓	✓
Scope 3 – Downstream	☐	✓	☐

COMPANY'S IDENTITY

VATTENFALL

Industry
Utilities

Sub-industry
Production of electricity

2019 turnover
16.8 billion EUR

Unlisted
100 % owned by the Swedish state

Why?
Compute biodiversity impacts of Vattenfall and identify biodiversity hotspots and opportunities all along Vattenfall's value chain

When?
2020 impacts

How often?
One off, to be renewed later to track progress and monitor changes

What?
End-to-end (Scope 1, 2 and 3 upstream) impacts. Additionally downstream Climate change impacts have been assessed when data was available.

For who?
Internal use for the environmental and strategy teams. Also for external communication with the SBTN within the Corporate Engagement Program

How detailed?
Corporate level, detailed at business units' level and taking into acount data at various levels, including sites and purchases categories

DATA COLLECTED

Item	Description	Source
Land occupation	Surfaces (ha) and Corine land cover information for Scope 1 Upstream Scope 3 surfaces for woody biofuels and for leased offices (ha) Upstream Scope 3 surfaces also for the Distribution business unit and for wind farms (ha)	Vattenfall's internal reporting tool and Environmental Product Declarations (EPD) (all data are for 2020)
Water consumption and withdrawal	Volumes of water consumed and withdrawn (m^3) Flooded areas and regulated areas surfaces in ha and river monthly flows for the hydropower module (for 1 river)	
GHG emissions	GHG emissions for Scopes 1, 2, 3 upstream (and 3 downstream for one Business unit) (t CO_2-eq)	
Ecotoxicity	Scope 1 quantity of Mercury released in the air (in t)	
Raw material purchases	Upstream Scope 3 quantities of extracted coal and natural gas; oil; forage products; extracted uranium; waste as fuel; biomass fuels (mainly wood chips and pellets) and blast furnace gas	
Purchases	Breakdown of direct and indirect purchases by procurement category (in EUR)	
Turnover	Total turnover and breakdown by industry and business unit (in EUR)	
Energy	Electricity bought per country	

Footprint analysis

RESULTS

All results excluding Ecotoxicity impacts

Terrestrial static footprint
1 200 MSA.km²

Terrestrial dynamic footprint
90 MSA.km²

Aquatic static footprint*
1 600 MSA.km²

vertically integrated (Scope 1, 2, 3 upstream)

**DISCLAIMER: Due to historical conversion of rivers with hydroelectric dams. The hydropower module is still experimental, and results should not be considered with the same accuracy as the terrestrial impacts.*

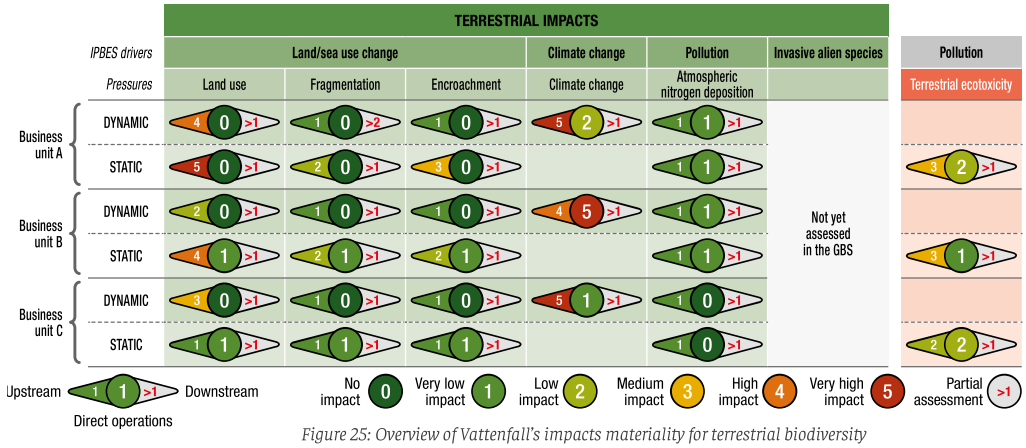

Figure 25: Overview of Vattenfall's impacts materiality for terrestrial biodiversity

KEY MESSAGES

- Land use impacts are material and mainly linked to land occupation needed for the distribution grids and raw material production (natural gas extraction, woody fuels and energy crops).
- Important Climate change impacts, mainly from fuels combustion (and sales of gas in downstream). The main impact comes from greenhouse gas emissions and impacts are connected to all scopes.
- Aquatic static impacts are also material, mainly through the Hydrological disturbance pressure linked to hydro power operations (the hydropower module in the GBS is however still experimental).

IMPROVEMENTS SUGGESTED BY CDC BIODIVERSITÉ

- Link strategic suppliers to spending data and thus to EXIOBASE industries to refine the value chain mapping.
- Refine the GBS to better reflect impacts due to hydrological disturbances caused by dams.
- Improve knowledge about the management intensity of forests and grasslands (*e.g.*, below power lines) to better identify the associated Land use categories.

5.1 Vattenfall

5.1.1 Context and objectives

Vattenfall is one of Europe's largest producers and retailers of electricity and heat, operating predominantly across Sweden, Germany, the Netherlands, Denmark and the United Kingdom. With over 100 years' experience, Vattenfall wants to make fossil free living possible within one generation and is driving the transition towards a sustainable energy system.

Aligned with a 1.5-degree scenario, the company's 2021 roadmap to fossil freedom targets a 77 % reduction in Scope 1 and 2 emissions by 2030 (with a 2017 baseline), driven by growth in renewables and a phasing out of fossil fuels. By 2040, Vattenfall hopes to reach net zero through a ~95 % reduction in emissions, neutralising the remaining emissions with carbon removals.

Biodiversity and environmental protection are also of paramount importance at Vattenfall, as the company works towards a Net Positive Impact on biodiversity by 2030. To achieve this goal, Vattenfall channels significant investment into biodiversity research and champions several local & voluntary biodiversity projects.

To advance this mission further, Vattenfall has partnered with CDC Biodiversité and Deloitte Sustainability France to assess its biodiversity footprint and set relevant Science Based targets for nature using the Global Biodiversity Score (GBS). The assessment comprises several steps, such as value chain mapping, identifying priority locations and suggesting target scenarios for 2030, while ensuring continued alignment with the Science Based Targets Network (SBTN).

See our Section 1.3 for more details on the SBTN's framework to help companies set targets.

5.1.2 Methodology

Using financial and operational data from 2020, and focusing on Vattenfall's principal operations and markets, the biodiversity footprint assessment covered hydropower, onshore wind, heat, electricity distribution, nuclear and gas sales in Sweden, Finland, Denmark, Germany, Poland, the Netherlands and the United Kingdom. All Scopes (1, 2, 3 upstream and downstream) were considered in the assessment, for both terrestrial and aquatic realms.

To highlight Vattenfall's ability to drive change over time, the level of influence was indicated for each type of data. For example, data for external purchases (oil, gas, electricity, coal, uranium) were awarded a "Low" level of influence but data related to directly owned and/or monitored activities within Vattenfall were attributed a "High" level of influence. This approach allowed Vattenfall to pinpoint the low-hanging fruit, where it can take immediate action.

5.1.3 Results aligned with SBTN recommendations

5.1.3.1 STEP 1 - ASSESS

Sector-level materiality assessment:

One of the first steps of the assessment was screening potential impacts from Vattenfall activities. Using the SBTN Sectoral Materiality Tool, which builds on ENCORE data, both very high and high materiality impacts were identified.

Value chain map:

Financial data was also used to map upstream impacts in Vattenfall's value chain, linking each business unit with relevant EXIOBASE industries. The EXIOBASE industries with the greatest negative impacts were then highlighted in the map. Strategic suppliers were also linked to business units, as they could not be directly linked to EXIOBASE industries.

Company level refinement:

Vattenfall's biodiversity impacts were viewed through two lenses - Scope and pressure - across both terrestrial and aquatic ecosystems. Results were also displayed in a simpler format, which indicates the share of impacts caused by each pressure for each level. The share of impacts ranged from 0 % to 50 % and above, in 6 categories: 0 when there is no impact, 1 for very low impact (0-1 %), 2 for low impact (1-5 %), 3 for medium impact (5-20 %), 4 for high impact (20-50 %) and 5 for very high impact (>50 %).

Figure 25 summarizes the shares of impacts of each pressure. For example, upstream impacts caused by Land use pressure represent 20 % to 50 % of business unit A's total terrestrial dynamic impacts, while Scope 1 Climate change impacts only represent between 1 and 5 % of business unit A's total terrestrial dynamic impacts (but Upstream Climate change impacts represent more than 50 % of those impacts).

Impacts on aquatic ecosystems were also computed and are non-negligible. Impacts are mainly due to the Hydrological disturbance pressure linked to hydropower operations. However, the hydropower module developed together with Vattenfall for GBS is still experimental and needs further development.

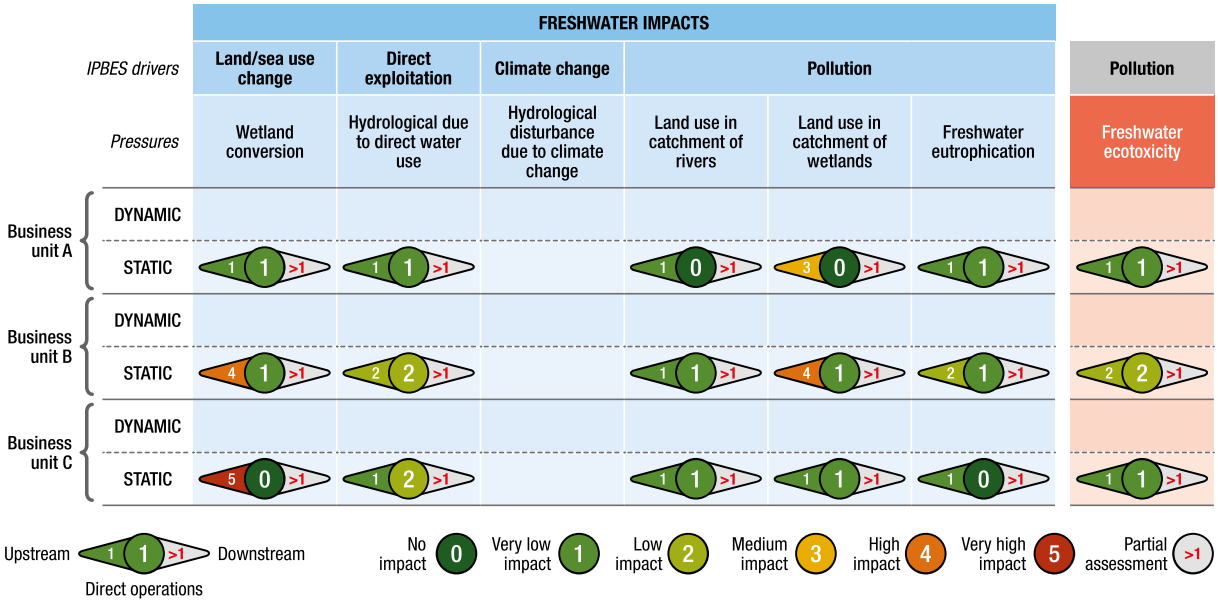

Figure 26: Overview of Vattenfall's impacts materiality for aquatic biodiversity

5.1.3.2 STEP 2 INTERPRET & PRIORITIZE

The GBS also identified where potential impacts could be reduced instantly, with varying levels of influence, enabling Vattenfall to easily spot quick wins and highlight immediate relevant focus areas.

The assessment provided clarity on which part of the footprint in MSA.km² per level of analysis (a business unit for example) has a total, high, medium or low level of influence. In Vattenfall's case, 33 % of terrestrial dynamic impacts were identified as those that could be reduced in the short term and most of them related to a single business unit. Conversely, most of terrestrial static and aquatic static impacts were identified as "Low" level of influence and would be difficult to reduce in the short term.

The assessment revealed two business units as having major impact, while also having the potential to drive change in the short term. The major source of impact was also highlighted, and examples of actions were provided to bolster Vattenfall's biodiversity action plan.

Climate change stood out as the major terrestrial dynamic pressure for Vattenfall's activities.

5.1.3.3 STEP 3 MEASURE, SET, DISCLOSE

The results of the assessment confirm that Vattenfall is on the right track regarding its current climate mitigation, local biodiversity enhancement measures and biomass sourcing strategies (such as sourcing certified biomass). While the biodiversity footprint assessment does provide a first measurement of the 2020 impact on ecological integrity, further refinement is necessary. Some uncertainties should also be reduced to build a robust baseline against which Science Based targets could be set.

In the assessment, different actions falling under the SBTN mitigation hierarchy - Avoid, Reduce, Restore and Regenerate - were modelled with a 2030 impact trajectory to help Vattenfall set appropriate targets. For Climate, the GBS was used to estimate the biodiversity impact reduction that could be expected if Vattenfall follows and reaches its climate roadmap to reduce GHG emissions. The GBS was also used to estimate expected impact reduction on biodiversity from the coal phase-out roadmap.

5.1.4 Lessons learnt

The next step for Vattenfall will be to evaluate its current strategies and targets within the three core areas highlighted by the BFA results and integrate them into its biodiversity strategy.

As an example, Vattenfall has identified biodiversity hot spots along the power line corridors and have developed, and in some cases implemented, special management plans for those areas. The next step is to undertake similar activities for transformer stations in the power grid. The objective of these interventions is to implement biodiversity enhancing measures focusing on pollinators while reducing maintenance costs. In 2022, a geographic analysis of 50 stations was conducted. Six were selected as having high potential for site inventories based on existing or nature conservation potential, the station area's character, and the neighbouring area's natural attributes. Proposals for biodiversity-enhancing measures have been drawn up for the sites, such as favouring meadow plants or leaving certain areas untouched to maximise their contribution as food for pollinators. The target is to implement measures on six sites in 2023. Vattenfall is also implementing actions related to other pressures, such as Climate change.