Value Chain Analysis

CO2 Performance Ladder level 5 requirement

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VEENIX EPCM

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1 Introduction

1.1 What is a value chain analysis?

The purpose of this scope 3 value chain analysis is to gain insight into the most material scope 3 emissions in tonnes of CO_{2eq} (GWP) and where they occur in the chain. In order to identify effective opportunities to reduce scope 3 emissions and who should be approached for this (the so-called chain partners).

A value chain is defined as a certain line of supplying and purchasing companies and organisations.
Value chain analysis and analysis of CO2 emissions is one of the value chains that an organisation is active in.

FCC Construcción S.A. (NL) is considered a small company (base year 2020 and up following year 2021) and to comply with the CO2 performance ladder has executed one value chain analysis. Based on the observations, specific reduction options are formulated. This complies to the CO2 Performance ladder requirement 4.A.1, 5.A.1, 5.A.2-2 and 5.A.3.

1.2 Activities FCC Construcción SA (NL)

According to the KVK (Chamber of Commerce) file FCC Construcción S.A. (NL) is involved in general civil engineering and road construction.

The work by FCC Construcción S.A. (NL), VeenIX BaHo BV, contains study, contracting, construction, execution, management, maintenance and operation of all kinds of public or private works.

1.3 Procurement materials

It involves procurement, processing and transportation of soil within the Veenix BaHo project. See chapter 2.1 for further explanation.

2 Scope 3 emissions and subject analyses

In accordance with the guidelines in the GHG protocol and the CO2 Performance Ladder Handbook 3.1, the analysis of scope 3 was carried out on the basis of an analysis of 15 categories. Subsequently, the choice of the value chain is based on an identification of the most material scope 3 emissions done in Scope 3 Dominance Analysis document.

2.1 Choice for the value chain analysis

The VeenIX A9BAHO project is a large infrastructure construction project that is the entire scope of FCC Construcción (NL). Therefore, the majority of the project's emissions are related to upstream scope 3 activities, which are related to the purchasing of goods, capital goods, fuel and energy related activities and transportation. In Figure 1 these activities are depicted in relation to the different scopes according to the GHG protocol. In Figure 2 the largest scope 1, 2 and 3 contributors related to Figure 1 are visually depicted.

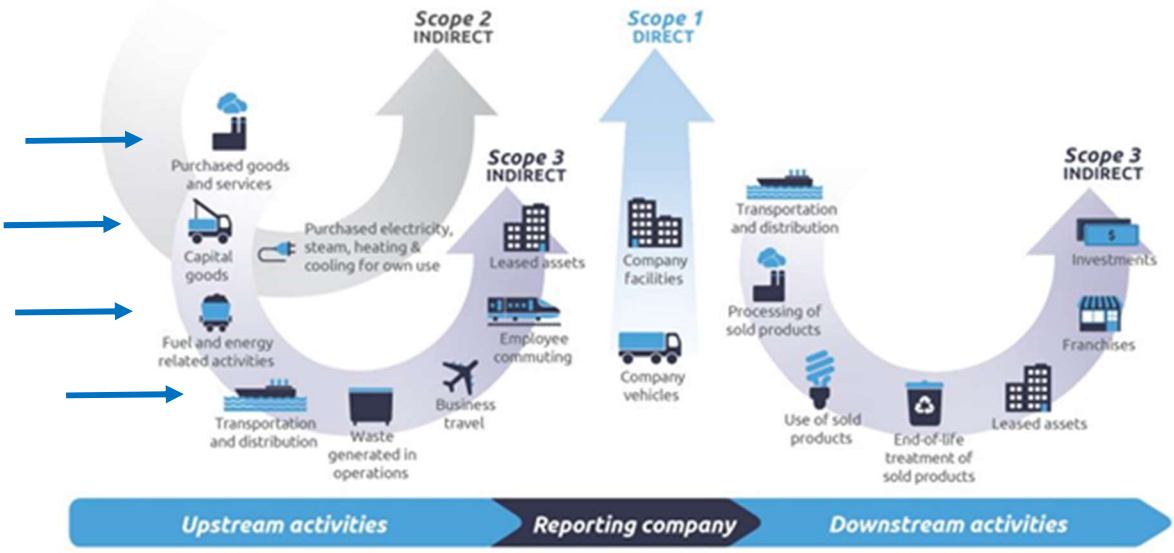

Figure: GHG protocol scope 1, 2 and 3 visualization.

Observing the scope 3 emissions of 2020 and 2021, we have several observations. Based on the financial equity approach of 2020, no execution activities have been taken place, meaning no scope 3 emissions. Subsequently, the financial reporting of year 2021 and the emission footprint of 2021
shows that the largest scope 3 emissions are due to the category downstream transport and distribution (see bottom figure previous page). This resulted in a total of 4.850 tons CO2 emissions. A large part of this can be allocated to the transportation of soil specifically, related to the preparation work prior to the project execution phase.

To tackle the emissions of the project effectively, we need to take a look at the largest sources throughout the project. For this, we have analysed the emissions related to the materials that are needed during the project. From this forecast we concluded a top 5 most dominant materials

See substantiation choice SOIL and other materials "Scope 3 Dominance Analysis".

This list shows that soil contributes 23% to the total expected scope 3 emissions. As emissions related to the purchase, processing and transport of soil are dominant in both 2021 and in the forecast of the project, soil is chosen as the subject for the value chain analysis.

2.2 Description of the value chain

The scope of this value chain analysis contains three activities related to soil works in the VeenIX project. (Depicted in at the bottom figure previous page). Four different scenarios are depicted, depending on the origin and destination of the soil. The first and second scenario describes an empty truck driving to the site, collecting the soil from the site and transferring it to a destination inland (1) or next into a vessel for outbound destinations (2). The third and fourth scenario describes soil that is transferred from a location either inland via a truck (1) or first from an outbound destination via a vessel (2) to the site, in which the soil is discharged and the truck returns empty.

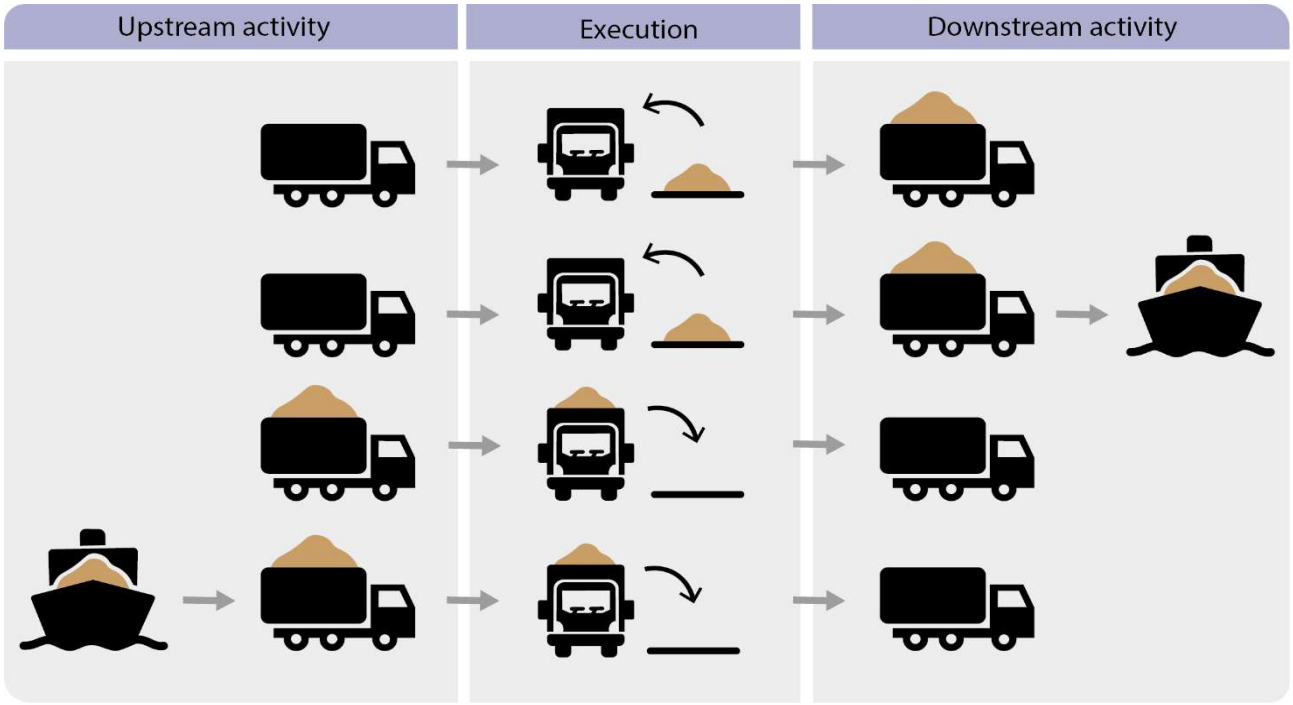

Figure: Activities depicted within scope of value chain analysis of soil works in VeenIX.

2.3 Identify partners in the value chain

As described in 2.1, the financial reporting of 2021 shows that much soil is transported. For these services, there are multiple subcontractors, but is the only execution related company that is placed in the A-supplier list is JdB Groep. JdB Groep BV is hired to transport ground from and to the sites. The total costs for their services in 2021 was 13% of the total execution costs. This turnover generated a CO2 footprint of approximately 4.850 tons.

We assume that the coming years the transport of ground won't be solely done by JdB Groep but possibly also other subcontractors. We are not yet aware of these subcontractors so this may influence the accuracy of the analysis.

3 Value chain analysis: soil transport

3.1 Chain partner

As stated in chapter 2.3, JdB is selected as the chain partner of our value chain analysis. JdB is used to transport ground, building materials and building supplies to and from the project sites. This includes, for example, the transport of mobile equipment as well as the provision of transport for the delivery and removal of soil and building materials to and from the project sites.

3.2 Value chain transport

All trucks used for the soil transport by JdB Groep run on diesel. The CO2 emissions from the downstream transport of soil are solely the cause of the burning of diesel. JDB Groep states in their chain analysis on soil transport that most of the trucks are equipped with Euro 6 engines. We assume that they had at least a 6:5 rate of euro 6 and euro 5. Considering the transport weight, another assumption is that the trucks are 8x10.

4 Reduction possibilities

Based on this chain analysis, specific reduction options can be determined. In the process of identifying promising opportunities to reduce CO2, it is important to take the following in account:

1. The amount of CO2 that can be saved by the measure;
2. To what extent FCC Construcción SA has an influence on the process to which the measure relates, and;
3. The feasibility of the measure.

Several measures that FCC Construcción can take can be divided in three subjects:

1) Means of transport

By imposing requirements on the means of transport used (Euro class) or the fuel used can reduce emissions from transport. For example, the emissions resulting from 1 litre of biodiesel (HVO100) compared to fossil diesel are around 89% lower.

Specific measures:
- Requesting trucks with 80% Euro 6 combustion engine OR 30% electrical
- Improving type of fuel use (example: trucks running on renewable fuel (HVO))

2) Distance

The last variable that applies to emissions due to transport is the transport distance. A measure for this is to plan work in a smart way, so transport over longer distances can be avoided.

Specific measures:
- Reselecting transport subcontractor with less distance to the work

3) Disposal

Disposal of excess soil and supply of soil and building materials over the shortest possible distances. This is already part of standard operating procedure.

Specific measures:
- Reselecting transport subcontractor with less distance to the work
- Create closed soil balance by reusing soil

4) Prevent

A measure to reduce future emissions is to prevent the transport of soil. This can be done by choosing different material or reusing soil that is locally available.

Specific measures:
- Improve design to prevent soil use

Based on the project forecast analysis, we expect that the chain partners for soil works will change in the following years. See document Scope 3 Dominance Analysis.

Attachment: [Scope 1 and 2 of JdB Groep]

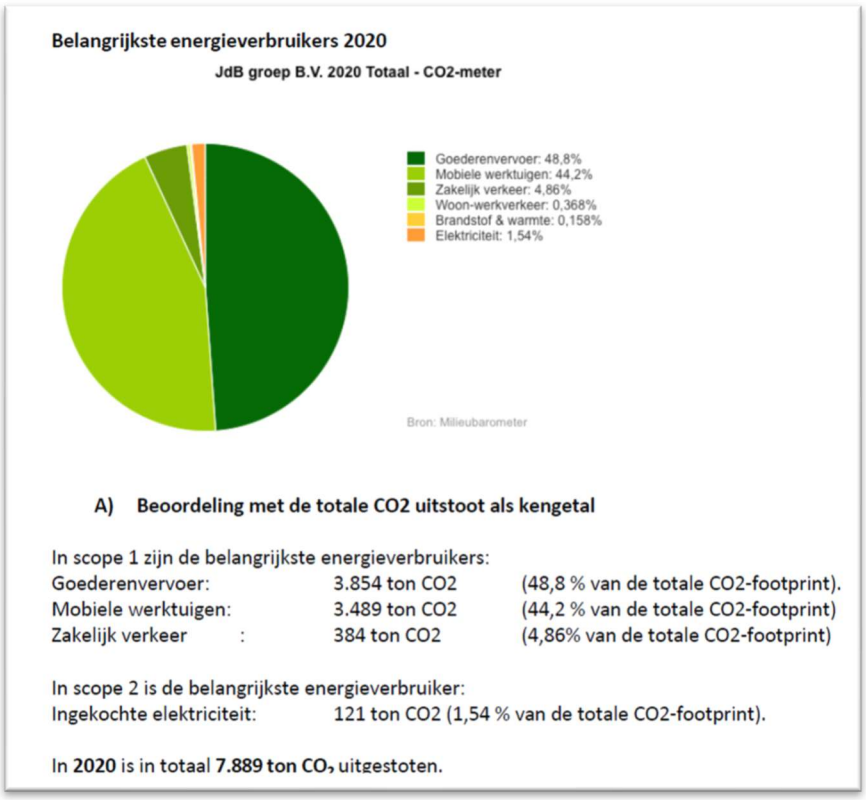

Figure: Scope 1 and 2 of JdB Groep (source: "13295_c6.HB CO2 JDB Groep.docx", p 40, retrieved 23-09-2022).