

CO₂-REDUCTION CHAIN ANALYSIS

COMMUTER TRAVEL

Client: Accenture
Contact: Silke Lepee

Consultant: Eveline Prop
Company: De Duurzame Adviseurs

Date: September 2020



**de duurzame
adviseurs**

Table of Contents

1	Introduction	3
1.1	ACTIVITY ACCENTURE	3
1.2	WHAT IS A LIFE CYCLE ANALYSIS (LCA)	3
1.3	GOALS OF THIS LCA	3
1.4	DECLARATION LEADER / MIDDLEMAN / FOLLOWER	3
1.5	GUIDE	4
2	Scope 3 & Choice LCA.....	Fout! Bladwijzer niet gedefinieerd.
2.1	SELECTION OF THE LCA	5
2.2	SCOPE LIFE CYCLE ANALYSIS	6
2.3	PRIMARY & SECONDARY DATA	6
2.4	ALLOCATION DATA	6
3	Identifying links in the chain.....	7
3.1	CHAIN LINKS	7
3.2	PARTNERS IN THE CHAIN	7
4	Quantifying emissions	9
4.1	PRIVATE CARS	9
4.2	COMPANY CAR.....	9
4.3	ANALYSIS OF PUBLIC TRANSPORTATION	9
	<i>Bus, Tram and Subway</i>	10
	<i>Rental of Green wheels</i>	10
	<i>Train services (subscriptions)</i>	10
	<i>Train services (trips)</i>	11
	<i>Results</i>	11
4.4	OVERVIEW OF THE EMISSIONS IN EACH STEP	12
5	Partnerships	13
6	Improvement opportunities	14
6.1	UNCERTAINTIES AND IMPROVEMENT POSSIBILITIES	15
7	Progress 2019 - 2020.....	16
	Source listing	18
8	Knowledge institute declaration	19

1 Introduction

To achieve level 5 on the CO₂ performance ladder Accenture has conducted a life cycle analysis on one of the GHG (Green House Gas) generating chains. This document describes the Life cycle analysis of (LCA) Commuting Travel. The method used complies with the guidelines of the GHG protocol.

1.1 Activity Accenture

Accenture is one of the world's largest independent providers of technology services. Our Technology professionals lead and implement highly complex technology projects. Working with clients, they design, develop and deliver a wide range of challenging and global IT projects. These professionals may build, test, install and maintain software across a variety of projects and industries working with leading enterprise applications such as SAP, Siebel, PeopleSoft and Oracle or with custom- built applications the field of Analytics, Mobile, Cloud / SaaS and Digital.

Accenture NL is mainly focused on strategy, consulting, digital, technology and outsourcing/operations.

1.2 What is a life cycle analysis (LCA)

A life cycle analysis is a way to visualize the whole chain of emissions that are the result of a product or service. Meaning with the whole chain, the complete life cycle of that product or service. Including the extraction of resources until the end of life of a product.

1.3 Goals of this LCA

The most important goals for this life cycle analysis are identifying CO₂ reduction possibilities, defining the reduction goal and monitoring progress.

Based on the insight on Scope 3 emissions and the life cycle analysis a reduction goal is defined. Within the energy management system, a clear focus is set on reducing scope 3 emissions. Spreading information to partners and other important players, part of a similar chain of activities, is an important part of this goal. Accenture will actively try to involve their most important partners within the sector in achieving its reduction goals.

1.4 Declaration Leader / Middleman / Follower

The CO₂-Preformanceladder states that the objectives of Accenture need to be realistic and ambitious. To assess this an analysis was made of the objectives of peers in the sector. Accenture is leader of the sector compared to other companies. The precursors of the sector have a Level 5 certificate and are looking at challenges within finding

measures to reduce CO₂. Accenture is going for a level 5 certificate and already carried out many reduction measures and is very concerned about their CO₂ reduction. They have an ambitious goal to reduce their CO₂ emissions with 50% in 2020 and already have achieved a lot. Also, they are very involved in their own chain through different initiatives and reduction programs.

1.5 Guide

In this report Accenture presents the Life Cycle Analysis of Commuter travel. The structure of this report is as follows:

Chapter 2: Scope 3 emission & choice in LCA

Chapter 3: Identifying the links in the chain

Chapter 4: Quantify the emissions

Chapter 5: Reduction opportunities

Chapter 6: Source listing

2 Scope of the analysis

The business activities of Accenture are part of the chain of activities to produce a product or service. For these products or services supplies must be bought and produced. Transport, use and processing of these products use energy and emit CO₂ as does the use of supplied goods. To determine the subject of the LCA we have asset the Product Market Combinations (PMC) in which Accenture operates. The table below states these PMC's and the one that Accenture has most influence in.

The total analysis is found in document: 4.A.1 Qualitative scope 3 analyses.

2.1 Selection of the LCA

The ladder requires choosing a topic that has to do with the most material emissions. This concerns relevant emissions in the context of scope 3 for which criteria have been indicated in the GHG Protocol Scope 3 Standard. These are the following criteria:

- The scope the emissions
- Influence of the company on the emissions
- Risks for the company
- Emissions of critical importance for stakeholders
- Outsources emissions
- Emissions identified by the sector as significant /relevant and others

Therefore Accenture has stated in the excel document 'Qualitative scope 3 analysis' what the most relevant PMC's are. Out of these combinations we selected the top two as a guidance for choosing the topic of the chain analysis.

The top two PMC's for Accenture are:

- 1. Strategy & Consulting – Private Parties**
2. Interactive – Private Parties

Next to this Accenture has a couple significant scope 3 emissions:

1. Suppliers
2. Transport
3. Waste
- 4. Employee Commuting**

For this chain analysis we chose a subject that is also relevant when it comes to consulting clients, suppliers and other companies to reduce CO₂ emissions. Every client

has to do with logistic transport and deliveries. Accenture wants to lead by example and therefore this subject can make a great impact in the whole chain.

Since these categories are quite similar in level of influence, Accenture has decided to focus on the most important activity within these PMC's. As you can see in the scope 3 analysis, in every PMC the most important activities are the purchase of fuels and commuter travel. Since Accenture works with over 2000 employees all traveling back and forth from their homes, commuter travel is of big influence on the CO₂ emissions within the chain of Accenture.

Also, Accenture sees more opportunities to influence CO₂ outcomes of this activity. Influence by taking technical measures (type of car), in rewarding systems (mobility budget) or by change of behavior of employees, can be achieved. That is why they have chosen this subject for a second Life cycle analysis. This analysis is of influence on all employees working at Accenture and is meant to change their behavior and enlarge their awareness.

2.2 Scope life cycle analysis

This analysis refers to all commuter travel from Accenture. This includes traveling by public transport, bicycle, private car or lease car. We have chosen to consider all travel from home to office or client directly, as commuter travel. Traveling from hotel to company or from office/client to office/client is considered business travel.

2.3 Primary & Secondary data

	Verdeling Primaire en Secundaire data
Primary data	Type of transport, kilometers,
Secondary data	Fuel (Lease companies), conversion factor (CO ₂ emissiefactoren.nl), Public Transport (NS)

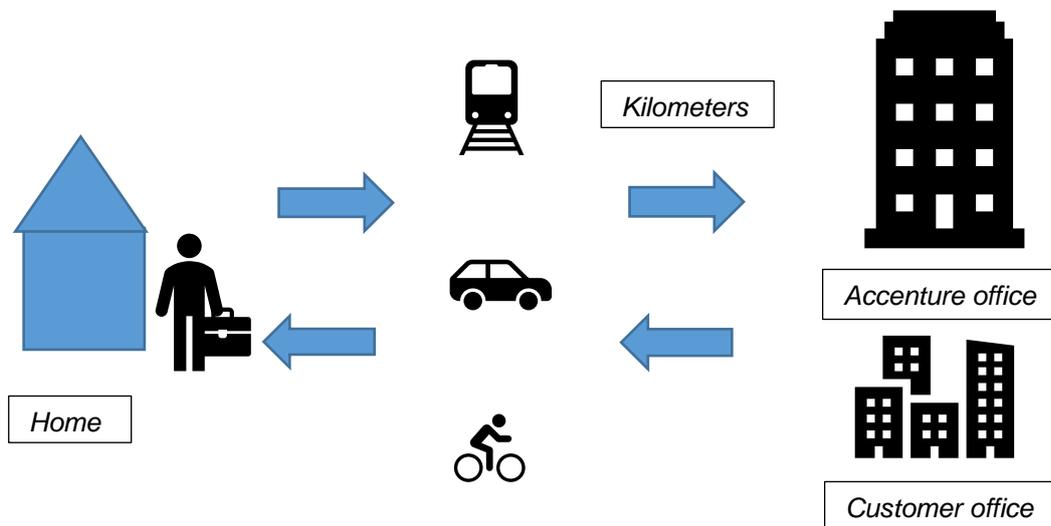
2.4 Allocation data

There is no data that has been allocated in this LCA.

3 Identifying links in the chain

The figure in chapter 3.1 describes the different phases in the chain of Commuter travel. After, the different steps are described.

3.1 Chain Links



The above figure shows different movements, back and forth, in commuting travel of Accenture employees. This includes train transport, car transport and biking. Car transport is divided in to private or company cars and in to Diesel, Gasoline or electric. To calculate the CO₂ emissions, we collected the kilometers that have been declared by all employees.

It is also possible to look at the type of cars and their production process, to the production of fuels and electricity and to the production of trains and bicycles. For this analysis, we focus only on the direct transport carried out by Accenture employees. Because Accenture believes that most of her influence lies here.

3.2 Partners in the Chain

There are many different partners involved in the chain of commuter travel. The most important ones are described below.

Accenture Employees

The most important partner in commuter travel are Accenture employees. It is their decision on how to travel, where and when. They will have the biggest impact on CO₂ emissions.

Accenture NL

Accenture facilitates HR-policy and rules. They make the decisions on mobility policy and rules.

Athlon and Leaseplan

These are the fleet owners of the company cars of Accenture. Their supplies of different car types and prices can influence the CO₂ emissions of Accenture.

Governmental organizations – mobility management

The government is responsible for all infrastructure and public mobility. Through their policies, they can influence the choice for transport and rules for CO₂ emissions.

Oil companies

They are the most important suppliers of fuels. The burning of fossil fuels causes most of the CO₂ emissions in transport. The development of bio-fuels and alternatives to fossil fuels can have a big impact on the CO₂ outcomes.

NS

The NS is responsible for all train transport. Together with Accenture they are involved in different partnerships to reduce transport by car (fuel consumption) and promote working at home or travelling by public transport.

4 Quantifying emissions

This chapter describes the CO₂ emissions per type of transport from the employees home directly to the office or the client.

4.1 Private Cars

All employees that use their own car register their kilometers including the reason for traveling. This way a division is made between commuter travel and business travel. There is no registration of the type of fuel they use. Because of that we chose a conversion factor for 'passenger transportation fuel unknown' of 0,220 kg CO₂ per kilometer.

Type of transportation	Total amount of km's	Conversion kg CO ₂ /km	Ton CO ₂
Private car (fuel unknown)	4.699.325	0,22	1.033,9

4.2 Company car

All employees of Accenture register their kilometers and the reason for travelling. This means that everyone who drives a company car also register their commuter travel. This way the division is made between commuter travel and business travel. The registration also describes the type of car and fuel type. This gives a detailed overview of the commuter travel with company cars. Of all declared commuter kilometers by car, 88% were with a company car.

Type of transportation	Total amount	Conversion kg CO ₂ /unit	Ton CO ₂
Company Car (Diesel)	1.582.964 l	3,230	5.113,0
Company car (Gasoline)	1.758.353 l	2.740	4.817,9
Company Car (Electric)	155.070 kWh	0,649	100,6
Total			10.031,5

4.3 Analysis of public transportation

Because Accenture is a big company, public transportation covers a lot of kilometers. To gain more insight we explored the data of employees travelling to and from work. We did this for two reasons: to accurately assess the amount of emission due to public transport, and to explore future possibilities by gaining more understanding in the current usage. To do this we split the public transportation data into 4 categories: 1. Bus, tram, subway, 2. Rental Green wheels, 3. Trains services (by subscription data), 4. Train services (by separate trips data). We looked at the data from the first half of FY 2017.

Bus, Tram and Subway

To do an accurate estimation of the bus, tram and subway emissions we analyzed a sample of the specified rides and extrapolated them. We looked at the kilometers of two samples of 10 rides to work and back. 8,57 km was the average amount of kilometers of the first sample and 6,93 km was the average amount of kilometers in the second sample. We concluded that these trips were merely short in nature. For example, the last part of the trip after a train ride or employees living close to work already. Therefore, we felt confident using the average between these two number; 7,75 km, as an overall average in kilometers for this category. We could now estimate the total amount of kilometers in this category by counting the total amount of rows used in this category each month and multiply this number by 7,75 km. Finally, we multiplied this number with the emission of public transportation given by emissiefactoren.nl = 36.

steekproef 1: 10 ritten	maps klm
GVB: Check-in en -uit: Tram . van halte Adm. De Ruijterweg naar halte Centraal Station	7,4
CXX: Check-in en -uit: Bus . van halte Amsterdam, Station Zuid naar halte Schiphol, Airport	13,5
GVB: Check-in en -uit: Metro . van halte Centraal Station naar halte Bullewijk	10,8
RET: Check-in en -uit: Bus . van halte Koninginnebrug naar halte Station Blaak	8,2
CXX: Check-in en -uit: Bus . van halte Amsterdam, Rozengracht naar halte Haarlem, Edisonstraat	20
GVB: Check-in en -uit: Tram . van halte Frederiksplein naar halte Leidseplein	1,8
GVB: Check-in en -uit: Metro . van halte Station Rai naar halte Station Zuid	2
QBZ: Check-in en -uit: Bus . van halte Utrecht, 24 Oktoberplein-Zuid naar halte Utrecht, Spinozaweg	2,1
GVB: Check-in en -uit: Metro . van halte Station Bijlmer Arena naar halte Station Zuid	8,6
CXX: Check-in en -uit: Bus . van halte Schiphol, Airport naar halte Hoofddorp, Bornholm	11,3
gemiddelde aantal kilometers per rit	8,57
steekproef 2: 10 ritten	
GVB: Check-in en -uit: Bus . van halte Dapperstraat naar halte Amstelstation	2,5
GVB: Check-in en -uit: Metro . van halte Amstelstation naar halte Station Zuid	4,5
GVB: Check-in en -uit: Bus . van halte Station Sloterdijk naar halte Bos En Lommerplein	2,3
CXX: Check-in en -uit: Bus . van halte Hoofddorp, Spaarne Gasthuis naar halte Schiphol, Airport	15,7
GVB: Check-in en -uit: Metro . van halte Station Bijlmer Arena naar halte Station Lelylaan	12,7
GVB: Check-in en -uit: Metro . van halte Weesperplein naar halte Station Zuid	9,7
HTM: Check-in en -uit: Tram . van halte Laan Van Noi naar halte Leidschenveen	8,2
GVB: Check-in en -uit: Tram . van halte Rembrandtplein naar halte Karel Doormanstraat	4,5
CXX: Check-in en -uit: Bus . van halte Schiphol, Airport naar halte Schiphol-Rijk, Boeingavenue	8,1
RET: Check-in en -uit: Tram . van halte Kruisplein naar halte 1e Middellandstraat	1,1
gemiddelde aantal kilometers per rit	6,93

Rental of Green wheels

To estimate the use of green wheels we looked at the number of accounts used every month. The available data was only the amount payed. To consider the subscription we subtracted the same number of rows (controlled for doubles) times ten, which is the subscription cost for green wheels for a month. Afterwards we calculated the kilometers using €0,27 per km as an estimate, which is given as the standard average on the green wheel's website. As an emission factor we used 107 given by emissiefactoren.nl.

Train services (subscriptions)

To analyze the train data sufficiently we simply added the costs of train subscriptions declared each month and used the average amount of €0,19 per km. The emission factor for traveling by train we used 6, given by emissiefactoren.nl.

Train services (trips)

For some employees we did have access to the specific train rides measured in kilometers, so here we could simply use the emission factor 6 for train travel (by emissiefactoren.nl).

Results

As showed in the table we can see that the category bus/tram/metro differs a lot depending on the month. This can probably be explained by the season. The other categories also differ a lot. Summed up we found an estimate of 5.757.822,45 km's for

Public Transport data	september	october	november	december	january	february	total km's
Bus/Tram/Metro	5518	20266,25	157063,438	101912,5	113801	110042,25	508603,438
Green Wheels	12600,6296	9666,55556	10508,1852	13501,89	10096,26	9159,22222	65532,7426
Train subscriptions	35020,16	184316,632	970087,535	63725	15683,68	33843,2632	1302676,27
Train trips	520041	545085	625865	1115638	548114	526267	3881010
							5757822,45

the first half of FY 2017.

Although the kilometrage is not small, the emissions are still not significant compared to the footprint as a whole. This can be explained by the low emission factors showed in the table below.

Because the total amount of CO₂ emissions mounts up to only 58,43 ton it is shown that public transport is very beneficial for the company to promote. The more employees use this transportation mode, the higher the reduction, when comparing the emissions to usage of cars. Since not all cars of the fleet are electric, it is very beneficial to invest in the motivation of employees to take public transport more often. When setting the new reduction goals this will be part of the consideration.

Scope 2	Amount of km's	Emissions factor	Ton. CO2
Bus/Tram/Metro	508.603	36	18,31
Green Wheels	65.533	107	7,01
Train subscriptions	1.302.676	6	7,82
Train trips	4.215.265	6	25,29
			58,43

The analysis has been made about the information of the first half of FY2017. As the information of the whole year cannot be analyzed yet, we will double the values of the first six months. The total emissions of FY2017 by public transport have thus been estimated at 116,9 tonnes CO₂

4.4 Overview of the emissions in each step

An overview of the total CO₂ emissions is shown in the table and figure below.

Fase	Emissions (tonnes CO₂) FY2016	Emissions (tonnes CO₂) FY2017
Private Cars	1.016,2	1.033,9
Company Cars	11.866,5	10.031,5
Public transport	44,8	116,9
Bicycles	0	0
Total	12.927,5	11.182,3
Emission per FTE	4,56	4,17
	<i>Reduction</i>	-9%

As can be seen in the table above, the emissions per FTE have decreased significantly with 9%. In the coming years, Accenture will aim to further this decrease to the goal of 40% reduction in FY2020.

5 Partnerships

Accenture knows that the transportation including commuter travel is of big influence on the CO₂ emissions in her chain. Therefore, and because of business travel emissions, they are actively involved in different initiatives and projects working together with NS, ProRail, and different other companies and organizations. Together they work on reducing the impact of commuter travel (and business travel). A good example is their partnership with the NS. For more examples, we refer to the document 'Participation in sector and chain initiatives'.

Another important program Accenture has worked on is the development of the application 'Toogethr' which stimulates carpooling. More information about this app and the results so far are given in the Life Cycle Analysis on Toogethr of Accenture.

6 Improvement opportunities

In this chapter, we will describe the different options for reduction in the chain of commuter travel and how much CO₂ reduction we expect from it.

In the previous paragraphs we showed which reduction is possible by reducing car travels. The main focus of this analysis is to reduce the scope 3 emission – employee commuting. However, to reduce this emission the scope 1 and 2 emissions which are fuel or mobility related need to be taken into account. Employees of Accenture travel between their home address or the client. The percentage of business travels are a less significant. This is why Accenture wants to focus on reducing emissions caused by mobility as a whole.

Accenture wants to reduce CO₂ emissions caused by commuter travel with at least 25% in 2022 compared to 2016.

Expected forecast for reaching the reduction goal:

2017:	5%
2018:	7%
2019:	10%
2020:	15%
2021:	20%
2022:	25%

To accomplish this goal commuter travel needs to be reduced and made more sustainable. Accenture wants to achieve this by adapting the following measures:

- 1300 of the Fleet cars in 2020 will be full electric (around 50% of the current fleet)
- Promoting public transport, especially train transport by offering flexible mobility budgets instead of only lease car contracts.
- Reducing air travels by promoting alternatives
- Promoting use of public transport by offering a NS business card to all her employees
- Promoting and using Toogethr app to stimulate carpooling
- Active involvement in the promotion of a Benchmark that makes it possible to analyze mobility data of the fleet
- Encourage employees to work at home by limiting the amount of office time to 3 days at the office per week and encourage them to work at home.
- Participation in the MEE project – stimulating employees to use public transport instead of the car and encourage them to work at home

6.1 *Uncertainties and improvement possibilities*

While commuter travel is part of the chain of Accenture's work it is not a direct part of the company. Employees can decide if they choose to travel by train, bicycle, private owned car or leased car, dependent on the location of the company. Therefore it is difficult to gain precise data on the locations of employees in their 'commuter-time'. However, estimations can be collected when employees are willing to cooperate. Their cooperation can be stimulated in different ways. Because Accenture asks her employees to fill in their kilometers and description of travel purpose, data was available on all the kilometers driven by car and/or bike for commuter travel purposes. Since most of the Accenture employees travel by car, this gives a good average insight on commuter travel.

Because Accenture has no access to information on the specific type of private cars from employees, the conversion factor was based on an 'average car'. Most of the employees of Accenture have an unlimited registered travel card which they can use for business travel and commuter travel. That is why there is not enough information available to give exact numbers on the kilometers that employees travel by bus, metro or tube. Because this is expected to be less than 1% of the total footprint this will have an insignificant result on the outcomes.

This year, Accenture has built on the existing analysis to improve the insight in commuting by public transport. In the following years, Accenture will further improve her data collection on commuter travel.

7 Progress 2019 - 2020

Accenture has a clear focus when it comes to reducing their emissions caused by the mobility of their employees. In this chapter an overview is given of the measures taken in 2019 and 2020.

Data improvement

Providing the necessary data is quite challenging. Commuter Travel can be divided in scope 2 emissions (business travel) and scope 3 emissions (commuter travel). Accenture employees are given the option of choosing a mobility budget or a NS Business Card. Fewer employees are entitled a lease car. The downside of a mobility budget or a NS business card, is that it's more difficult to divide the travels in the right category of emissions. That is why, the progress in this chain analysis is shown in both scopes.

Anders Reizen

Accenture actively participates in Anders Reizen. This is a coalition of companies that want to change the way we see mobility. This last year a couple of campaigns were launched:

1. Anders Vliegen & Vliegwijzer

During the CEO event in November 2019 the participants in Anders Reizen signed a pledge to reduce CO2 emissions caused by flying with 50% in 2030.

<https://www.andersreizen.nu/nieuws/coalitie-anders-reizen-legt-eigen-vliegverkeer-aan-banden/>

They pledged to do the following:

- Proactive approach chainpartners to research ways to accelerate reduction (booking agencies, airline companies, etc)
- At least 7 best practices before 2022 regarding internal mobility policies
- Publishing the best practices on the website of Anders Reizen to inspire and motivate other companies
- Yearly reports about the CO2-emissions caused by air travels

The following measures will help to reduce air travels:

- Direct flights (no stop-overs)
- Abolish creative ticketing
- Air travel only for flights above 700km
- Set up criteria for business flight
- Virtual meetings as a standard
- Implementing a mobility policy where alternatives are promoted
- Investing in biofuels

Anders Reizen deelnemers



Mobility budget & Together

A mobility budget is offered instead of a lease car or other private mobility expenses. With this budget an employee can make use of all different kinds of public transportation.

Percentages of employees that have chosen for a mobility budget in the Netherlands:

Status at the end of FY19 (= August 31th 2019): 800 employees

Status at the end of FY20 (= August 31th 2020): 1163 employees

Next to the mobility budget every employee gets a NS Businesscard. Below an overview is shown with the amount of users NS Business Card:

Status at the end of FY19 (= 31 augustus 2019): 2164 employees

Status at the end of FY20 (=31 augustus 2020): 2703 employees

This doesn't necessarily mean that every employee uses the card on a regular base.

Reduction

The following reduction has taken place compared to the base year in 2019.

Transportation mode	Emissions (tonnes CO ₂) FY2016	Emissions (tonnes CO ₂) FY2019
Private Cars	1016	580
Company Cars	11866	6769
Public transport	45	380
Bicycles	0	0
Air travel	3459	4001
Total	16386	11730
FTE	2475	2788
Emission per FTE	6,62	5,88
	Reduction	-11%

Source listing

Source / Document	Feature
Handboek CO ₂ -prestatieladder 3.0, 10 juni 2015	Stichting Klimaatvriendelijk Aanbesteden & Ondernemen
Corporate Accounting & Reporting standard	GHG-protocol, 2004
Corporate Value Chain (scope 3) Accounting and Reporting Standard	GHG-protocol, 2010a
Product Accounting & Reporting Standard	GHG-protocol, 2010b
Nederlandse norm Environmental management – Life Cycle assessment – Requirements and guidelines	NEN-EN-ISO 14044
www.ecoinvent.org	Ecoinvent v2
www.bamco2desk.nl	BAM PPC-tool
www.milieudatabase.nl	Nationale Milieudatabase
http://edepot.wur.nl/160737	Alterra-rapport 2064

The structure of this document is based on the Corporate Value Chain (scope 3) Standard. When necessary the structure of the Product Accounting & Reporting Standard was followed (see table below).

Corporate Value Chain (scope 3) Standard	Product Accounting & Reporting Standard	Chapter document:
H3. Business goals & Inventory design	H3. Business Goals	Chapter 1
H4. Overview of Scope 3 emissions	-	Chapter 2
H5. Setting the Boundary	H7. Boundary Setting	Chapter 3
H6. Collecting Data	H9. Collecting Data & Assessing Data Quality	Chapter 4
H7. Allocating Emissions	H8. Allocation	Chapter 2
H8. Accounting for Supplier Emissions	-	Onderdeel van implementatie van CO ₂ -Prestatieladder niveau 5
H9. Setting a reduction target	-	Chapter 5

8 Knowledge institute declaration

De Duurzame Adviseurs have ample experience with contracting Life cycle analysis, making them a Knowledge institute. We would like to refer to the Declaration of Expertise.

This life cycle analyses is composed by Eveline Prop. To ensure the accuracy and the quality of the work it has been checked Lars Dijkstra. Lars Dijkstra has a controlling role with the portfolio of Accenture and has an unbiased view on the documents.

Signed for agreement:

 <p>M.H. (Machteld) Houben, MSc <i>Adviseur</i></p>	 <p>E. Prop <i>Adviseur</i></p>
---	---



Colophon

Authors	Eveline Prop
Title	Life cycle analysis – Commuter Travel
Date	9-10-2020
Version	3.0

Signature responsible manager:

.....