

Scantago ApS

# Greenhouse Gas Inventory

2010/2011

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## ABBREVIATIONS

GHG	Greenhouse gas
GHG Protocol	Report from the World Resource Institute <a href="http://www.ghgprotocol.org/">http://www.ghgprotocol.org/</a>
ICAO	International Civil Aviation Organization
Scope	Predefined set of boundaries for inclusion/excluding GHG emissions in the inventory.
UIC	International Union of Railways
WRI	World Resource Institute

## **INTRODUCTION**

This report is the Greenhouse gas inventory for Scantago ApS, company registration number DK29174881 located on Bødkervej 22 in Holbæk, DENMARK.

The inventory covers the company fiscal year 2010/2011 (2010.10.01 – 2011.09.30).

The applied methodology for the establishing the inventory of direct and indirect emissions related to Scantago ApS, is based on the World Resource document "GHG Protocol" as well as the international standard ISO 14064.

EXIMA has been appointed for the establishment of the inventory by Scantago ApS. As an independent service provider within climate change, we have received all information requested and necessary for establishing a consistent, transparent and accurate inventory of the GHG emissions including identification and quantification of relevant emission sources.

Copenhagen 2011.11.23

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## EXECUTIVE SUMMARY

Scantago ApS is a service provider to the pharmaceutical industry offering advisory services and technical services to manufacturing sites. The majority of the activities relate to operations within Denmark but some international travel activities have been included in this inventory which applies a scope 3.

On behalf of the organization, EXIMA ApS has established GHG accounting practices for this first GHG inventory covering the fiscal year 2010/11 (2010.10.01 – 2011.09.30).

The inventory applies a materiality approach for identifying GHG emission sources and for the fiscal year 2010/11, Scantago was directly and indirectly responsible for the emission of 18 tons of CO<sub>2</sub>-eqv.

The emissions are almost equally distributed between scope 1 (direct), scope 2 (indirect from electricity) and scope 3 emissions (other indirect emissions).

54% of the global GHG emissions relate to road transportation in company cars or in private cars on behalf of the organization.

22% of the global emissions refer to consumption of electricity within the organization, while business travels by air and train contribute by 10%.

This inventory forms the baseline for future GHG inventories and it has thus not been possible to compare current performance with previous years. However, the organization demonstrates in practice a high level of corporate responsibility reflected for instance in the low specific use of gas and the fuel efficiency of the fleet and such practices could be anchored in a company policy and environmental program to be developed in the future.

## METHODOLOGY

### EMISSION SOURCES

Identified emission sources for Scantago are available in the table below categorized by scope:

ID	Scope	Source	Method
	<b>Scope 1</b>		
1		Consumption of natural gas for heating of offices and warehouse.	m/c
2		Consumption of fuels for cars owned by the organization.	m/c
	<b>Scope 2</b>		
3		Consumption of electricity for offices and warehouse	m/c
	<b>Scope 3</b>		
4		Emissions from business travels by air or trains	m/c
5		Consumption of fuels for cars not owned by the organization but used on behalf of the organization.	m/c

**Table 1 - Emission sources for Scantago ApS.**  
c=Calculated; m=Measured; e=Estimated

Emission sources have been identified by applying a materiality approach and the table above lists the sources included in the scope three accounting when taking into consideration CO<sub>2</sub> emissions related to business travels only as scope 3 emission sources.

### CARBON OFF-SETTING

The organization does not apply carbon off-setting of actual GHG emissions, both direct and indirect.

## CALCULATION APPROACH

### **Scope 1**

Emission sources relate to consumption of natural gas purchased from DONG Energy. Based on meter readings for consumption of gas covering the accounting period, the actual demand for natural gas has been measured.

Emission factor for consumption of natural gas is available from the gas supplier and a copy is available in Annex 1 to this report.

The GHG emission related to consumption of natural gas is a multiple of the consumption with the emission factor provided from the supplier of gas.

Scantago operates a fleet of service vehicles and this emission source is considered significant for the emission profile.

The organization has a detailed log of the mileage for each vehicle within the period and the aggregated mileage of the fleet is measured.

Based on information about each vehicle, average emission factors have been identified, applying the Sustainable Energy Ireland Authority on-line carbon emission tool. For individual emission factors, please refer to Annex 3 of this report.

The calculated GHG emission related to operation of the fleet of service vehicles is the aggregated multiple of the mileage of each vehicle with the specific emission factor per km.

### **Scope 2**

Consumption of electricity is measured by a main electricity meter for the company. Based on information about the emission grid factor provided by the energy supplier NEAS-NVE in Annex 2, the GHG emissions have been calculated as the multiple of the consumption and the specific emission per kWh of consumed electricity.

### **Scope 3**

Scope 3 emission sources consist of two contributors:

- Business travels by air and train;
- Travel by road in cars not owned by the organization.

The organization logs all travel activities by destination and mean

## GHG Inventory

of transport for all employees and during the accounting period a total of nine travels by train or air planes have been conducted.

Emissions related to travels by air is based on emissions calculated for each travel by applying the carbon emission calculator developed by the International Civil Aviation Organisation ICAO (<http://www2.icao.int/en/carbonoffset/Pages/default.aspx> )

Carbon emissions related to railroad travels is based on the carbon calculator developed by the International Union of Railways (UIC).

## BASE YEAR GHG INVENTORY

This GHG inventory is considered as the baseline for Scantago ApS GHG accounting as no previous accounting has taken place.

The inventory covering the fiscal year 2010/11 demonstrates a total emission corresponding to 18 ton CO<sub>2</sub>-eqv. The figure below illustrates the breakdown of the global emission into the emission sources included in the scope 3 GHG inventory.

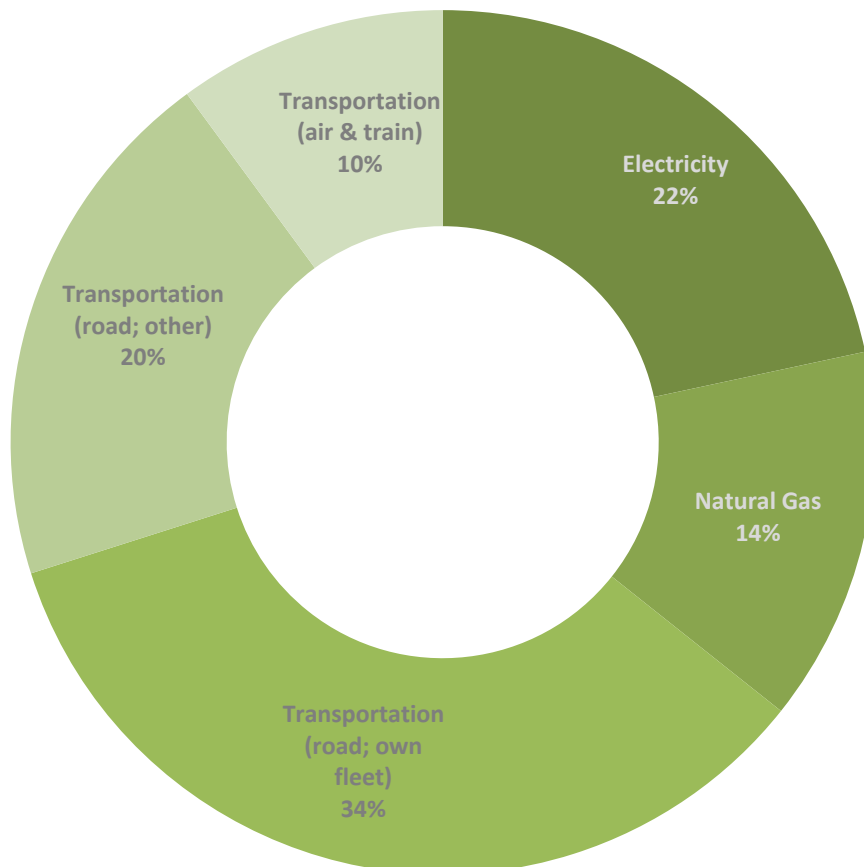
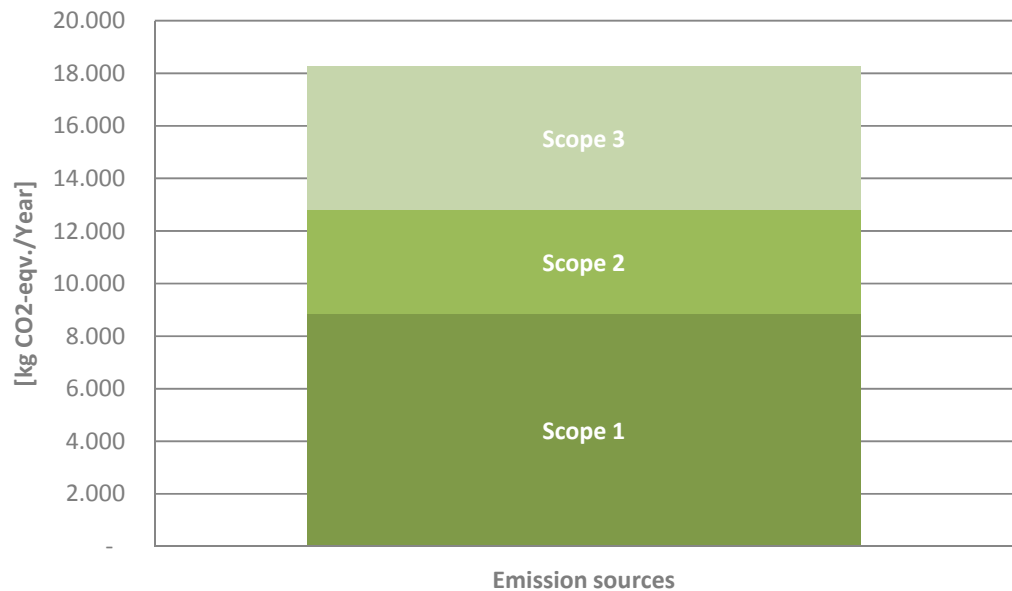


Figure 1 - Breakdown of GHG emissions 2010/11.

## GHG Inventory

Emissions related to transports of employees as part of the business activities represent more than 50% of the global emissions. Indirect emissions from the consumption of electricity is the third largest single emission source, representing 22% of the global emissions

The figure below demonstrates a breakdown of the global GHG emissions by scope and indicates that scope one emissions are only slightly dominating scope 2 and scope 3 emissions in total volumes.



**Figure 2 - Breakdown of GHG emission by scope.**

## **GHG INVENTORY MANAGEMENT**

This inventory provides the basis for monitoring future performance and trend of the GHG emissions by introducing accounting practices at company level and by providing baseline emissions with reference to the fiscal year.

Due to the size and nature of the organization, performance monitoring should be simple and address scope 1 and 2 emissions related to efficiency of the fleet of service vehicles as well as the consumption of electricity.

The organization could also consider introducing formal measures for anchoring current green procurement practices in a policy with relevant guidelines in order to ensure a positive impact on the development of the emission profile.

The specific consumption of natural gas is 70kWh/m<sup>2</sup> per annum which documents a good energy efficiency of the building and use. Nevertheless, the direct emissions from consumption of gas are the most important emission source and it is important to continue the current practices for monitoring consumption.

## ANNEX 1 – EMISSION FACTOR GAS

Average 2010 values for composition and emission of greenhouse gases by consumption of 1m<sup>3</sup> of natural gas in Denmark.

Source of information: <http://energinet.dk/DA/GAS/Gasdata-og-kvalitet/Gaskvalitet/Sider/Vis-gaskvalitet.aspx?Visning=aarsgennemsnit>

2010		Gns.	Min	Max
Metan	mol - %	89,95	85,35	91,81
Ethan	mol - %	5,71	4,87	7,99
Propan	mol - %	2,19	1,45	3,74
I-butan	mol - %	0,37	0,20	0,44
N-butan	mol - %	0,54	0,44	0,78
I-pentan	mol - %	0,13	0,05	0,16
N-pentan	mol - %	0,08	0,04	0,10
Hexan+	mol - %	0,06	0,03	0,09
Nitrogen	mol - %	0,31	0,25	0,98
Kuldioxid	mol - %	0,66	0,24	1,51
Øvre brændværdi	kWh/m <sup>3</sup>	12,122	11,685	12,513
Øvre brændværdi	MJ/m <sup>3</sup>	43,638	42,066	45,047
Nedre brændværdi	kWh/m <sup>3</sup>	10,962	10,559	11,329
Nedre brændværdi	MJ/m <sup>3</sup>	39,461	38,012	40,784
Wobbe index	kWh/m <sup>3</sup>	15,261	14,763	15,348
Wobbe index	MJ/m <sup>3</sup>	54,940	53,147	55,253
Norm. Dens.	kg/m <sup>3</sup>	0,8157	0,7970	0,8590
Rel. Dens.	[-]	0,6309	0,6170	0,6650
Metantal	[-]	72,7	67,9	76,2
H <sub>2</sub> O-dugpunkt	°C	-25,7	-36,7	-7,8
HC-dugpunkt	°C	-12,3	-17,5	-6,7
Svovlbriente	mg/m <sup>3</sup>	2,5	0,9	4,8
Svovl-total	mg/m <sup>3</sup>	2,6	-	-
CO <sub>2</sub> emissionsfaktor	kg/GJ	56,74		

## ANNEX 2 – EMISSION GRID FACTOR

Supplier: SEAS-NVE

Elleverandør: SEAS-NVE  
 Adresse: Hovedgaden 36  
 4520 Svinninge  
 Telefon: 70 29 29 29  
 Hjemmeside: [www.seas-nve.dk](http://www.seas-nve.dk)

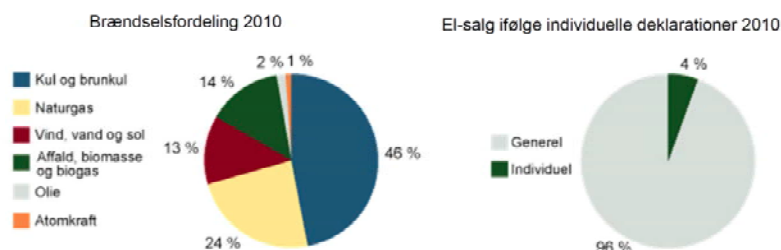


### Generel deklARATION 2010

Deklarationen viser brændselsfordelingen samt de tilhørende miljøpåvirkninger ved almindeligt salg af elektricitet i Danmark. Den generelle deklARATION er beregnet ud fra elproduktionen i Danmark og er korrigeret for udvekslingen af el med nabolandene samt el-salget til de elkunder, der har købt individuelt deklareret elektricitet, fx vindmøllestrøm.

Figuren nedenfor til højre viser hvor stor en del af elforbruget i Danmark i 2010, der er købt som individuelt deklareret elektricitet. Det resterende elsalg er deklareret ved hjælp af den generelle deklARATION.

#### Brændselsfordeling og el-salg ifølge individuelle deklARATIONER



#### Miljøforhold ved forbrug af 1 kWh

Elproduktion fra vedvarende energikilder, der omfatter el produceret fra vind, vand, sol, biogas, biomasse og den bionedbrydelige andel af affald, er kendetegnet ved ikke at medføre CO<sub>2</sub>-emission.

Elproduktion fra vind, vand og sol er helt emissionsfri, mens der ved brug af biogas, biomasse, affald og fossile brændsler (kul, olie og naturgas) dannes en række emissioner til luften og restprodukter.

Emissioner til luften sker bl.a. som drivhusgasser (kuldioxid, metan og lattergas) og som forsurende gasser (svovldioxid og kvælstofilter).

Restprodukter kan ofte anvendes, fx afsvovlingsproduktet gips til byggematerialer og kulasker til cementindustrien. Bioaske bruges ofte til gødsning.

Ved forbrug af 1 kWh fremkommer	Deklaration 2010	Deklaration 2009
<b>Emissioner til luften</b> g/kWh		
CO <sub>2</sub> (Kuldioxid - drivhusgas)	473	470
CH <sub>4</sub> (Metan - drivhusgas)	0,24	0,21
N <sub>2</sub> O (Lattergas - drivhusgas)	0,006	0,007
Drivhusgasser (CO <sub>2</sub> -ækv.)	480	477
SO <sub>2</sub> (Svovldioxid)	0,07	0,09
NO <sub>x</sub> (Kvælstofilter)	0,34	0,39
CO (Kullite)	0,15	0,14
NMVOG (Uforbrændte kulbrinter)	0,05	0,04
Partikler	0,01	0,02
<b>Restprodukter</b> g/kWh		
Kulflyveaske	14,5	15,5
Kulslagge	2,0	2,2
Afsvovlingsprodukter (Gips m.v.)	5,8	5,6
Slagge (affaldsforbrænding)	7,2	9,5
RGA (rovgasaffald)	1,2	1,3
Bioaske	1,1	1,4
Radioaktivt affald (mg)	0,1	0,1

Beregning af miljøforhold og brændselsfordeling er baseret på retningslinjer fra Energinet.dk.

Besøg [www.energinet.dk/eldeklaration](http://www.energinet.dk/eldeklaration) og læs mere om forudsætningerne.

**ANNEX 3 – FLEET EMISSION FACTORS**

<b>Vehicle Number</b>	<b>Registered</b>	<b>Producer</b>	<b>Model</b>	<b>Fuel</b>	<b>kg CO2/km</b>
2	2002	Mercedes Benz	Vaneo 1,7	Diesel	0,157
3	2010	FIAT	Doblo Cargo 1.6	Diesel	0,138
4	2011	FIAT	Doblo Cargo 1.6	Diesel	0,133
5	2011	FIAT	Doblo Cargo 1.6	Diesel	0,133

Source of information:

[http://www.seai.ie/Power\\_of\\_One/Getting\\_Around/HCIYC/](http://www.seai.ie/Power_of_One/Getting_Around/HCIYC/)