

## CO<sub>2</sub> Scope 3 Chain analyses 2017 ICT Group N.V.

*ICT stands for green!*



### History

| Version | Date       | Author            | Description                                                    |
|---------|------------|-------------------|----------------------------------------------------------------|
| 0.1     | 13-10-2017 | Frits Wuts        | Concept                                                        |
| 1.0     | 19-12-2017 | Mark van Eesteren | Concept                                                        |
| 1.1     | 23-03-2018 | Mark van Eesteren | Processing review changes F. Wuts                              |
| 1.2     | 06-06-2018 | Mark van Eesteren | Processing final version number Chain Analysis Gridflex Heeten |

### Reference

| Version | Date                                  | Author            | Description                    |
|---------|---------------------------------------|-------------------|--------------------------------|
| 2.5     | CO2_Boundary_2017                     | Mark van Eesteren | Boundary van ICT Group N.V.    |
| 3.0     | CO2_Chain_Analysis_Loading pole 2017  | Mark van Eesteren | Chain analysis loading pole    |
| 3.0     | CO2_Chain_Analysis_Hosting_2017       | Mark van Eesteren | Chain analysis Hosting         |
| 2.0     | CO2_S3_Chain Analysis_Gridflex Heeten | Mark van Eesteren | Chain Analysis Gridflex Heeten |
|         |                                       |                   |                                |

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## **1 Introduction and scope**

### **1.1 Introduction**

In 2009 Prorail has started with the CO<sub>2</sub> performance ladder. In 2011 the CO<sub>2</sub> performance ladder activities are executed by SKAO to use enable a wider use of the CO<sub>2</sub> performance ladder. Companies which are doing tenders in which in the CO<sub>2</sub> performance ladder is applicable get a fictional discount when they are certified at a certain level of the CO<sub>2</sub> performance ladder. The higher the certificate level the higher the discount. The highest discount of 10% will be obtained when a company is certified at level of the performance ladder. This is a great opportunity for companies to distinguish themselves not only on price and quality, but also on sustainability.

This document is a description of the steps that have been completed to come to the chosen chains. In this description the GHG-protocol “Corporate Value Chain (Scope 3) Accounting and Reporting Standard” is used. At first the aim of analysis is described and the value chain of ICT Group N.V. is described. In chapter 4 the scope of the analysis is recorded and in chapter 5 a data inventory of the scope 3 emissions is described. Based on these analyses in chapter 6 two chains are selected for further analyses. This chains are documented in separated document. The reduction targets are shortly described and the documents ends with a conclusion.

ICT Group N.V. (“ICT”) is focusing his activities on system integration project and secondment. Based on the nature of their activities ICT has limitative influence on the CO<sub>2</sub> emission in his value chain, however the influence is sufficient enough to deploy relevant scope 3 initiatives which result in CO<sub>2</sub> emission reductions.

### **1.2 Aim of the analysis**

The aim of the analysis is to obtain an overview of the ICT indirect CO<sub>2</sub> emissions and to make a choice between two chains which can be investigated in depth on CO<sub>2</sub> emissions and reduction possibilities. This means that for this document a short screening of the indirect emissions is sufficient.

## **2 Method**

This document describes the scope 3 emissions in line with the CO<sub>2</sub> performance ladder 3.0 manual and the GHG-protocol 'Corporate Value Chain (Scope 3) Accounting and Reporting Standard'.

### **2.1 Qualitative method**

For the setup of the scope 3 emissions order information is collected with regard to the ICT activities and their value chain partners. This information is collected based on interviews, but also on the value chain that will be recorded in Annual Report 2017. Based on this information the potential influence of ICT on CO<sub>2</sub> emissions in the chain is determined. This determination is performed on both upstream and downstream emissions.

The target is, based on the indications of the relative size of the CO<sub>2</sub> emissions, to come to a ranking of the most material emission sources which together have the largest contribution to the total scope 3 emission of ICT and at the same time can be influenced by ICT.

### **2.2 Ranking determination**

After the mapping of the scope 3 emissions the ranking is made based on the qualitative method as described in the CO<sub>2</sub> performance ladder manual. After this ICT has chosen two of the most material emission sources for which a chain analysis is prepared.

### 3 Value Chain ICT Group N.V.

For the identification of the ICT scope 3 activities a description of the activities is described.

*Flowchart*

In figure 1 a flowchart of the ICT activities is recorded together with the scope 3 activities.

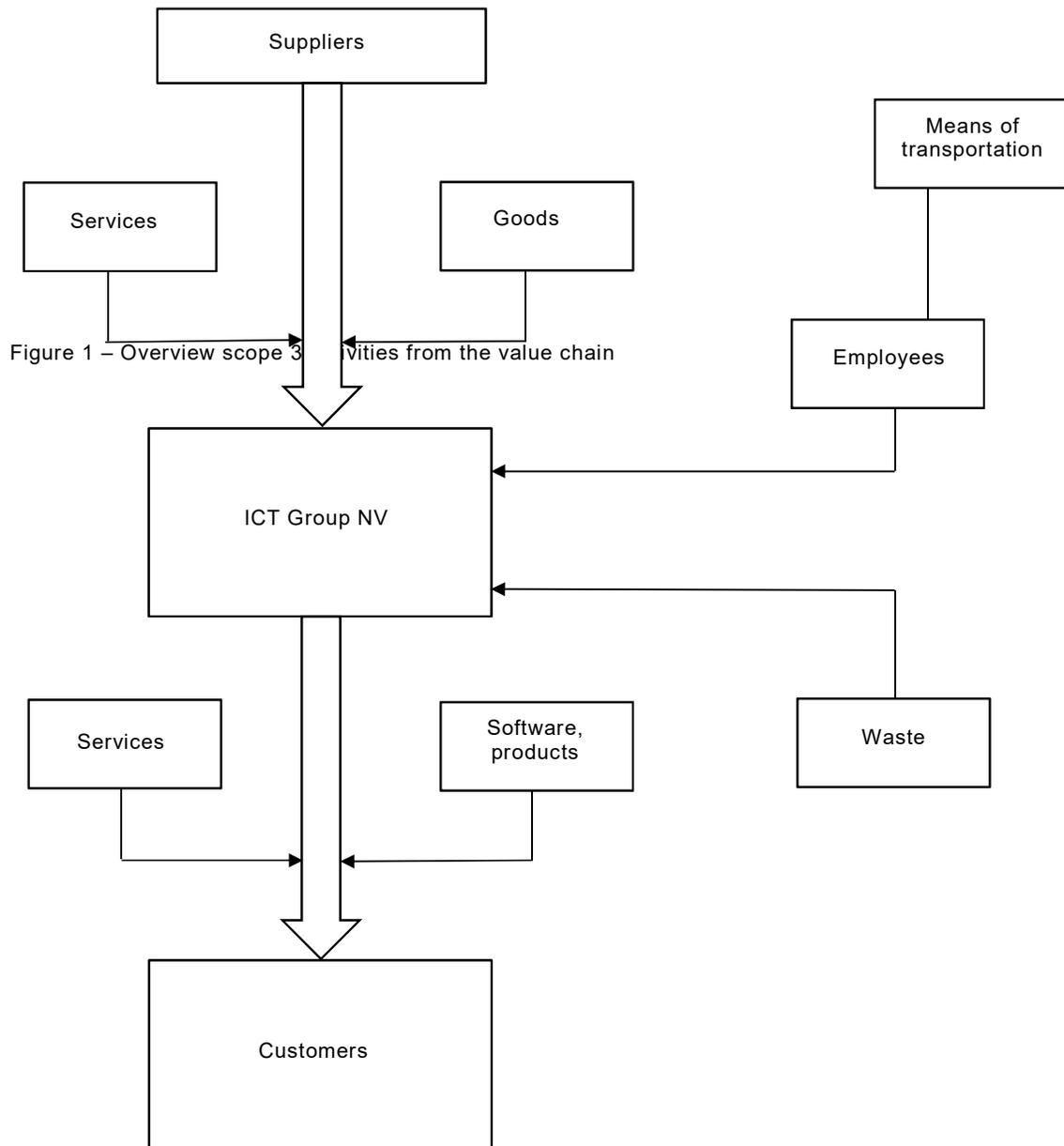


Figure 1 – Overview scope 3 activities from the value chain



## **4 Scope**

The scope of ICT Group N.V. is used as recorded in the Organizational Boundary of ICT Group. The scope of the scope 3 emissions are determined per category, refer to the data inventory in Appendix A.

## 5 Data inventory indirect scope 3 emissions

The GHG protocol for scope 3 emissions describes 15 different emission categories. That are the following categories:

| Upstream                                 | Downstream                                  |
|------------------------------------------|---------------------------------------------|
| 1. Purchased goods and services          | 9. Downstream transport and distribution    |
| 2. Capital goods                         | 10. Processing sold products                |
| 3. Fuel and energy related activities    | 11. Use of sold products/services           |
| 4. Upstream transport and distribution   | 12. End-of-life processing of sold products |
| 5. Production waste                      | 13. Downstream leased assets                |
| <del>6. Business travel to scope 1</del> | 14. Franchise holders                       |
| 7. Home to work travel                   | 15. Investments                             |
| 8. Upstream leased activities            |                                             |

Category 6 is recorded in scope 1 since version 3 of the CO<sub>2</sub> performance ladder manual. For all categories above an analysis is made if these are applicable and what the CO<sub>2</sub> emissions are. This analysis is recorded in Appendix A 'Data inventory'. The results are recorded in the table below.

Table 1

| Scope 3 emission category upstream    | CO <sub>2</sub> -emission (Ton CO <sub>2</sub> ) |
|---------------------------------------|--------------------------------------------------|
| 1. Purchased goods and services       | 7.901                                            |
| 5. Production waste                   | 3,4                                              |
| <del>6. Business travel</del>         | 0                                                |
| 7. Home to work travel                | 46                                               |
| Scope 3 emissie category Downstream   | CO <sub>2</sub> -emission (Ton CO <sub>2</sub> ) |
| 11. Use of sold products (Industrial) | 12.078                                           |
| Remaining categories                  | Not applicable (0)                               |
| <b>Total</b>                          | <b>20.028</b>                                    |

## **6 Selection chains and further analyses**

In previous chapter the ICT activities which result in scope 3 emissions are identified. From these activities two chains have to be analysed in further detail with respect to CO<sub>2</sub> emissions. The aim is, based on indications of relative size, to come to an order of most material/relevant scope 3 emission sources which together have the largest contribution to the ICT scope 3 emissions and could be influenced by ICT.

## 7 Materiality

To select the most material and relevant emissions sources the materiality of the categories (sources) is determined. This determination is performed based on the GHG protocol criteria and the CO<sub>2</sub> performance ladder manual. The criteria are the following:

- The emissions are large relative to the scope 1 and scope 2 emissions of ICT.
- The presence of potential emission reductions on which ICT can have an influence.
- The emissions are a GHG risk for ICT.
- The activities which are outsourced.
- The emissions which are important to ICT stakeholders.

Table 2 provides per activity how important the criteria for the activity. The criteria are further disclosed in Appendix B.

Table 2

| Product/market combinations (PMC), sectors and activities of ICT | Description of activity by which there are CO <sub>2</sub> emissions | Relative share of CO <sub>2</sub> burden of the sector and influence of the activities.                                                                     |                                                                                                                                                             | Potential influence of ICT on CO <sub>2</sub> emissions.                                                                                                    | Order |
|------------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1 PMC                                                            | 2                                                                    | 3 Sector                                                                                                                                                    | 4 Activities                                                                                                                                                | 5                                                                                                                                                           | 6     |
| Automotive                                                       | Sold products (services and goods)                                   | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input checked="" type="checkbox"/> small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | 9     |
| High Tech + HTS                                                  | Sold products (services and goods)                                   | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input checked="" type="checkbox"/> small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input checked="" type="checkbox"/> small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | 7     |
| Machine & Systems                                                | Sold products (services and goods)                                   | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | 10    |
| Logistics and transport                                          | Sold products (services and goods)                                   | <input type="checkbox"/> large<br><input checked="" type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input checked="" type="checkbox"/> small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input checked="" type="checkbox"/> small<br><input type="checkbox"/> negligible | 2     |
| Water & Infra                                                    | Sold products (services and goods)                                   | <input type="checkbox"/> large<br><input checked="" type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input checked="" type="checkbox"/> small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input checked="" type="checkbox"/> small<br><input type="checkbox"/> negligible | 3     |
| Industry                                                         | Sold products (services and goods)                                   | <input type="checkbox"/> large<br><input checked="" type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input checked="" type="checkbox"/> small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input checked="" type="checkbox"/> small<br><input type="checkbox"/> negligible | 4     |
| Digital Transformation                                           | Sold products (services and goods)                                   | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | 11    |
| Energy                                                           | Sold products (services and goods)                                   | <input type="checkbox"/> large<br><input checked="" type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input checked="" type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input checked="" type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input type="checkbox"/> negligible | 1     |
| Logicnets                                                        | Sold products (services and goods)                                   | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | 12    |
| Healthcare                                                       | Sold products (services and goods)                                   | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input checked="" type="checkbox"/> small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input checked="" type="checkbox"/> small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input checked="" type="checkbox"/> small<br><input type="checkbox"/> negligible | 5     |
| Outsourced Services                                              | Sold products (services and goods)                                   | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br><input checked="" type="checkbox"/> negligible | 13    |

|                                     |                                    |                                                                                                                           |                                                                                                                           |                                                                                                                           |    |
|-------------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----|
| Engineering contracts               | Sold products (services and goods) | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br>x small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br>x small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | 8  |
| Strypes Bulgaria (high tech)        | Sold products (services and goods) | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | 14 |
| BMA (healthcare)                    | Sold products (services and goods) | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | 15 |
| Raster (Industry)                   | Sold products (services and goods) | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br>x small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br>x small<br><input type="checkbox"/> negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | 6  |
| ICT Mobile (digital transformation) | Sold products (services and goods) | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | 16 |
| Improve (courses)                   | Sold products (services and goods) | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | <input type="checkbox"/> large<br><input type="checkbox"/> medium sized<br><input type="checkbox"/> small<br>x negligible | 17 |

The category 'sold products and services' is the largest category with respect to scope 3 emissions. The sector influence and the influence of the activities is the largest in the Energy product/market combination. Also because ICT in this category can have the largest influence. Therefore ICT choose to execute chain analyses with respect to the Energy product

In appendix C the relevant product/market combinations, activities and growth of these units are recorded.

The above table is drawn in line with the requirements as recorded in the CO<sub>2</sub> performance ladder manual. The meaning of the columns is as following:

**Column 1: Product / Market combinations, sector and activities**

In column 1 the for ICT relevant sector (markets / themes), company and their activities are recorded. The relevance is based on the current activities, organizational structure and expected growth.

**Column 2: Description of activities by which CO<sub>2</sub> is released**

In this column the CO<sub>2</sub> releasing activities are recorded: e.g. upstream, purchase of services, products and materials and downstream by executing projects and sale of services and products. It is not necessary to recorded the CO<sub>2</sub> emissions per activity.

**Column 3: Relative share of CO<sub>2</sub> burden of a sector**

In this column the CO<sub>2</sub> burden related to the respective sectors in column 1 are recorded.

**Column 4: Relative influence of the activities**

ICT records the estimation of the effect a change or improvement of a activity has on the CO<sub>2</sub> emissions of the emission sources of column 2.

**Column 5: Potential influence of ICT on CO<sub>2</sub> reduction of the sectors and activities**

**Column 6: Order**

ICT determines the order of the most material scope 3 emission sources which together have the largest contribution to the total scope 3 emissions of ICT and can be influenced by ICT.

### **7.1 Selection chains**

Based on the CO<sub>2</sub> performance ladder manual two subjects must be chosen to perform a chain analysis. This choice must be based on the qualitative order as defined on previous page. In a chain analysis ICT investigated what the impact is of the chains on the CO<sub>2</sub> emissions. The chain analysis is an addition to existing published knowledge and insights about these subjects and contribute to an advancing insight within the society.

### **7.2 Chain analysis subjects**

Based on the scope 3 emissions order it is concluded that ICT projects on Energy activities could have the largest contribution to reduce CO<sub>2</sub> emissions. Furthermore, these subjects have a large growth potential in the market.

The selected activities are:

- Loading poles (unit Energy)
- Gridflex Heeten (unit Energy)

The chain analysis are described in the documents CO<sub>2</sub>\_S3\_Chain analysis loading poles\_2017.doc and CO<sub>2</sub>\_S3\_Chain analysis Gridflex Heeten\_2017.doc.

### **7.3 Target and research questions**

The target of these two chain analysis are to obtain a picture on the size of the CO<sub>2</sub> reduction. Based on these chain analysis the actions are determined in which the emission in the chain can be reduced or avoided.

## 8 Reduction targets

The actual and more detailed reduction targets are recorded in the chain analyses documents themselves. The reduction targets can be summarized as following:

Table 3

|                 | Reduction target          | Jaartal te behalen reductie |
|-----------------|---------------------------|-----------------------------|
| Loading poles   | 828 ton CO <sub>2</sub>   | 2016                        |
|                 | 1.242 ton CO <sub>2</sub> | 2017                        |
|                 | 1.863 ton CO <sub>2</sub> | 2018                        |
|                 | 2.794 ton CO <sub>2</sub> | 2019                        |
| Gridflex Heeten |                           |                             |
|                 |                           |                             |
|                 |                           |                             |
|                 |                           |                             |
|                 |                           |                             |

## Appendix A Data inventory

The ICT CO<sub>2</sub> emissions are recorded in table of Chapter 5 of this document. The used data and calculation methods are explained below.

| Upstream                                | Downstream                                  |
|-----------------------------------------|---------------------------------------------|
| 9. Purchased goods and services         | 9. Downstream transport and distribution    |
| 10. Capital goods                       | 10. Processing sold products                |
| 11. Fuel and energy related activities  | 11. Use of sold products/services           |
| 12. Upstream transport and distribution | 12. End-of-life processing of sold products |
| 13. Production waste                    | 13. Downstream leased assets                |
| 14. Business travel to scope 2          | 14. Franchise holders                       |
| 15. Home to work travel                 | 15. Investments                             |
| 16. Upstream leased activities          |                                             |

Table 4

| Upstream Scope 3 emissions                                           | Present within the chain | Covered in scope 1 of 2 | Expenses (million) | Conversion factor  | Size in ton CO <sub>2</sub> per year |
|----------------------------------------------------------------------|--------------------------|-------------------------|--------------------|--------------------|--------------------------------------|
| 1. Purchased goods and services                                      |                          |                         |                    |                    |                                      |
| - Car costs                                                          | Yes                      | Yes                     | 6,6                | 0                  | 0                                    |
| - Housing costs                                                      | Yes                      | Yes                     | 2,3                | 0                  | 0                                    |
| - Audit, advisory and professional services                          | Yes                      | No                      | 1,9                | 0,11 <sup>1</sup>  | 209                                  |
| - ICT services (freelancers + internal IT costs)                     | Yes                      | No                      | 5,1                | 0,12 <sup>2</sup>  | 612                                  |
| - ICT hard and software (cost of revenues and tangible fixed assets) | Yes                      | No                      | 7,1                | 0,87 <sup>3</sup>  | 6.177                                |
| - Office costs                                                       | Yes                      | No                      | 0,6                | 0,08 <sup>4</sup>  | 48                                   |
| - Tangible fixed assets except ICT hardware)                         | Yes                      | No                      | 1,4                | 0,51 <sup>5</sup>  | 532                                  |
| - Other (sales & marketing costs + other general costs)              |                          |                         | 1,9                | 0,17 <sup>6</sup>  | 323                                  |
| <b>1.Total</b>                                                       |                          |                         | <b>26,9</b>        |                    | <b>7.901</b>                         |
| 2. Capital goods                                                     | n.a.                     |                         |                    |                    | -                                    |
| 3. Fuel and energy related activities                                | n.a.                     |                         |                    |                    | -                                    |
| 4. Upstream transport and distribution                               | n.a.                     |                         |                    |                    | -                                    |
| 5. Production waste                                                  | Yes                      | No                      | 163 ton            | 0,021 <sup>7</sup> | 3,4                                  |
| 6. Business Travel (moved to scope 2)                                | n.a.                     | Yes                     |                    |                    | -                                    |
| 7. Home to work travel                                               | Yes                      | No                      | 207.446 km         | 0,220 <sup>8</sup> | 46                                   |
| 8. Upstream leased activities                                        | n.a.                     | Yes                     |                    |                    | -                                    |
|                                                                      |                          |                         |                    |                    |                                      |
| Downstream Scope 3 emissions                                         | Present within the chain | Covered in scope 1 of 2 |                    |                    | Size in ton CO <sub>2</sub> per year |
| 9. Downstream transport and distribution                             | n.a.                     |                         |                    |                    | -                                    |
| 10. Processing sold products                                         | n.a.                     |                         |                    |                    | -                                    |
| 11. Use of sold products/services                                    | Yes                      | No                      |                    | -                  | 12.078                               |
| 12. End-of-life processing of sold products                          | n.a.                     |                         |                    |                    | -                                    |
| 13. Downstream leased assets                                         | n.a.                     |                         |                    |                    | -                                    |
| 14. Franchise holders                                                | n.a.                     |                         |                    |                    | -                                    |
| 15. Investments                                                      | n.a.                     |                         |                    |                    | -                                    |
| <b>Total upstream en downstream</b>                                  |                          |                         |                    |                    | <b>20.028</b>                        |

<sup>1</sup> UC Berkely 2009 Carbon Footprint investigation – Appendix C, page 33 subcategory other administrative services

<sup>2</sup> UC Berkely 2009 Carbon Footprint investigation – Appendix C, page 33 subcategory IT contract labor

<sup>3</sup> UC Berkely 2009 Carbon Footprint investigation – Appendix C, page 33 subcategory IT goods

<sup>4</sup> UC Berkely 2009 Carbon Footprint investigation – Appendix C, page 33 subcategory Facilities management

<sup>5</sup> UC Berkely 2009 Carbon Footprint investigation – Appendix C, page 33 subcategory Furniture

<sup>6</sup> UC Berkely 2009 Carbon Footprint investigation – Appendix C, page 33 subcategory Advertising & Marketing

<sup>7</sup> GHG emission factors, municipal waste – closed loop

<sup>8</sup> [www.emissionfactors.nl](http://www.emissionfactors.nl) – passenger transport - car travel other - fuel unknown

**Table 5**

| <i>Scope 3 subjects (purchased goods and services)</i>   | <i>Database process</i>                                           |
|----------------------------------------------------------|-------------------------------------------------------------------|
| Auto lease                                               | -                                                                 |
| Financial                                                | Management, scientific and technical consulting services          |
| ICT services                                             | ICT costs + hired freelancers                                     |
| ICT hard and software                                    | Cost of materials + own computer equipment                        |
| Office costs                                             | Office supplies                                                   |
| Tangible fixed assets (other than ICT hard and software) | Investment in tangible fixed assets other than computer equipment |
| Other                                                    | Sales and marketing costs + general costs.                        |

**1. Purchased goods and services**

The overview of the 2017 expenses is based on the ICT consolidated report 2017 which is based on the administrators of the various entities.

The used emission conversion factors are based on the investigation of UC Berkely on their Carbon Footprint in which emission factors from the USIO database (Comprehensive Environmental Data Archive, CEDA) were used. This is an input-output database of the United States which is extended with environmental data.

The input-output database is representative for the United States, but due to the fact that the database is large we are able to link a process to an expense category of ICT.

**2. Capital goods**

To perform the activities ICT is not dependent or hardly dependent on the purchase of capital goods. ICT does not purchased goods in 2017 which can be marked as capital goods. Therefore the CO<sub>2</sub> emission is 0 ton.

**3. Fuel- and energy-related activities (not included in scope 1 or scope 2)**

ICT Group is using energy: electricity, natural gas and geothermal heat. Normally the direct emissions from energy are taken into account in the scope 1 and 2 analyses. This means that for example only the CO<sub>2</sub> of burning energy is mapped and not the transportation or production. However for the CO<sub>2</sub> performance ladder we are using emission conversion factors which also includes the whole life cycle of an energy sort. Based on this reason the CO<sub>2</sub> emission of this category is 0 ton.

**4. Transport and distribution upstream**

ICT does not have goods or products which are transported or distributed upstream.

**5. Production waste**

Within ICT no data available about the waste in number of kilograms, because we do not measure this number. To estimate the CO<sub>2</sub> emission based on the waste of ICT Group we have used KPI's for waste per FTE.

The KPI for waste per FTE is based on the 'milieubarometer'. The KPI for an average office is used which is an value of 170 kilograms per FTE. This includes a number of 48 kilograms waste of paper. During 2017 the average number of FTE's of ICT is 960 FTE. This results into a waste number of 163 ton. From which 46 ton is paper waste. The CO<sub>2</sub> emission of waste is 0,021 per ton based on the GHG protocol emission factors 2016. The total CO<sub>2</sub> emission is 3,4 ton.

**Table 6**

|             | <i>Number (ton)</i> | <i>Emissiefactor (kg CO<sub>2</sub>/kg)</i> | <i>CO<sub>2</sub>-emissie (ton)</i> |
|-------------|---------------------|---------------------------------------------|-------------------------------------|
| Other waste | <b>117</b>          | <b>0,021</b>                                | <b>2,46</b>                         |
| Paper waste | <b>46</b>           | <b>0,021</b>                                | <b>0,97</b>                         |
| Total       | <b>163</b>          |                                             | <b>3,43</b>                         |

**6. Business travel**

This scope 1 emission based on version 3 of the CO<sub>2</sub> performance ladder.

**7. Home-work traffic**

The total expenses for home-work traffic translated to number of kilometres is 207.446 km. Using the emission factor of 0,22 kg/kilometres, this results in a CO<sub>2</sub> emission of 46 ton.

**8. Leased assets upstream**

ICT does not have leased assets which are not part of scope 1 and scope 2.

**9. Transport and distribution upstream**

ICT does not have products which have to transported or distributed.

**10. Process of sold**

ICT does not produce semi-finished products which needs to be further edited.

**11. Use of sold products**

ICT does not sell products which directly use of energy, however ICT Group develops a lot of software which indirectly use energy on client locations or by the end user. It could also be that software causes CO<sub>2</sub> emissions by steering other equipment. It is difficult to assess precisely the size of these indirect CO<sub>2</sub> emissions. This has different causes:

- 1) ICT does not know how many end user there will be. For example, ICT is writing software for navigation systems and healthcare products by which we do not know how many end users there will be.
- 2) Based on the quantity and diversity of the project it is not feasible to obtain all CO<sub>2</sub> emission data. For example, ICT has executed more than 600 projects on a yearly basis from delivering the hard- and software for the control of waste water pumping stations to developing the software for efficient container handling.

An inventory of all this projects will cost a tremendous lot of time.

The aim of this analysis makes it acceptable to make a rough analysis of the CO<sub>2</sub> emissions for which ICT is indirectly responsible in the execution of their projects.

ICT Group N.V. has number of subsidiaries which are described in the organizational boundary. The subsidiary ICT Automatisering Nederland B.V. is divided in units. For each unit we have selected one typical (large) project and analysed the CO<sub>2</sub> emission of this project. Based on the calculated CO<sub>2</sub> emission we have extrapolated this to the whole unit based on the share of this project in the revenues. This approach will be same for the other subsidiaries of ICT Group which are part of organizational boundary being Strypes Bulgaria, BMA, Raster, ICT Mobile and Improve.

To identify the influence of ICT Group on the CO<sub>2</sub> emission of the subsidiaries and the Units within ICT Automatisering Nederland B.V. it is determinative if the projects are Embedded solutions (software integrated in hardware for example navigation systems and control devices) or Industrial solutions which are solutions being implemented on computer systems.

**12. End-of-life treatment of sold products**

ICT Group NV does not product physical products and therefore has no waste for this reason.

**13. Downstream leased assets**

ICT does not have assets which are leased to others.

**14. Franchises**

ICT does not have franchises.

**15. Investments**

ICT has investments in Greenflux, CIS Solutions, Valuemaat and Intraffic.

## Appendix B Determination chain selection

### Influence

The influence ICT has on achieving the emission reduction is different for the various emission categories. The influence on purchased goods and services is not that large, because this is mainly purchased services.

For the determination of the CO<sub>2</sub> emission on sold products and services a distinction between Embedded and Industrial is made in Appendix. ICT barely has influence on the Embedded products. In contrary ICT does have influence on product which are created by Industrial units and subsidiaries being Energy, Healthcare, Industry, Logistics and Transport and Raster.

### Risk

The GHG-risk is the bundling of risks associated with climate change. This could be the following risk types:

Table 7

| Risk type             | Examples                                                                                 |
|-----------------------|------------------------------------------------------------------------------------------|
| Regulation            | Legislation with respect to mandatory emission reduction                                 |
| Supply chain          | Suppliers which are charging GHG related costs or suppliers which are not exist anymore. |
| Products & technology | Competitors which develop energy efficient or climate friendly technologies.             |
| Legal cases           | The risk that legal cases are initiated caused by negligence                             |
| Reputation            | Reputation damage caused by negative attention from media.                               |
| Physical              | Direct damage caused by drought, flooding's and storms, etc.                             |

From this risk categories only regulation and product & technology risks are relevant for the execution of the ICT activities. The other risk does not have a role within the execution of ICT activities.

### Outsourcing

The outsourcing of activities which other comparable companies are managing on their own is a criteria to further analysis this chain. For ICT this is not applicable because only a very small of the company activities can be outsourced or is outsourced.

### Stakeholders

ICT clients make general demands with respect to the efficiency of our software we deliver, because they are primarily focused on the effectiveness. Effectiveness is less relevant with respect to CO<sub>2</sub> emissions.

The efficiency is recorded in performance requirements which are partly realized by the hardware choice and partly in smart computer programming. In the emission category 'sold products and services' clients rate this high as ICT is almost always responsible for the hardware choice. Within embedded solutions the clients mainly purchases the hardware.