Carbon Footprint Report

UNIVERSITY OF TWENTE.

2019
University of Twente Carbon Footprint 2019

Summary

The University of Twente is the ultimate people-first University of Technology. We empower society through sustainable solutions.

By adapting the mission above, the University of Twente aims to lead by example and consider sustainability to be a precondition in everything she does. The university has been assessing its environmental impact by reporting her carbon footprint since 2014. The carbon footprint reflects not only the impact of the activities of the university itself, but is also used as a tool to encourage its partners to report their greenhouse gas emissions and work together towards a sustainable future. The carbon footprint enables monitoring of progress of the strategic goal to:

“Implement sustainable solutions on our campus in the areas of food, water, waste, travel and energy use, thereby reducing our footprint by 15% in 2023.”

Key figures

-4%  
Total energy consumption

-19%  
Short flights (<700 km)

+585  
Solar panels placed on campus

-37t  
Paper waste

Carbon footprint development

realised
Table of Contents

Introduction                                               2
Scope 1 - Direct GHG emissions                           3
Scope 2 - Indirect GHG emissions                        5
    Mitigation                                           6
Scope 3 - Sphere of influence                           7
    Business Travel                                      8
        CO₂ compensation                                8
    Commuting                                            9
    Procurement                                          9
    Transport & Distribution                             10
    Waste                                                10
    Water                                                10
Appendix                                                  11
    Energy consumption of buildings                      11
    Data acquisition and emission factors                12
Dear reader,

Thank you for reading the University of Twente 2019 carbon footprint report. Every year the university reports their carbon footprint with the goal of providing full transparency of its impact. In 2019, the ambitions of the university have been formulated, resulting in the Shaping 2030 strategy. A key topic in this strategy is sustainability. Reducing the carbon footprint is an important part of that. We encourage everyone to first read the management summary. This will help you to get the key takeaways and get familiar with the basics that will support this detailed report.

This report elaborates on the CO₂ emissions of the university in 2019. The CO₂ calculations are divided into three scopes, each containing their respective sources of CO₂ emissions. This will be elaborated in separate sections. The university has been reporting their footprint since 2014 and aims to become more comprehensive year on year.

The report of 2019 presents you with more of a progress report rather than the usual snapshot. Reducing CO₂ emissions is a goal to be achieved over a longer period of time and understanding progress over time can help to shape new goals and policies. By providing a management summary that is quickly and easily understandable we hope to increase the visibility of this topic, encouraging employees and students to contribute in their own way to a more sustainable university. Feedback and ideas can be sent to sustainability@utwente.nl.

Diederik Bakker, Olaf Haalstra, and Nando Tolboom

Realised
Scope 1 - Direct GHG emissions

The University of Twente has various direct sources of GHG emissions. The majority of the CO₂ emissions in scope 1 come from gas used for air humidification and heating of buildings where district heating is not yet available. The gas consumption of the university is low due as most buildings use district heating. The gas consumption and CO₂ emissions are provided in table 1. Details on the consumption per building are given in appendix 1. Real time information about energy consumption can be found at energydata.utwente.nl.

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas</td>
<td>m³</td>
<td>802.914</td>
<td>815.380</td>
<td>785.064</td>
<td>922.870</td>
<td>946.095</td>
<td>907.402</td>
</tr>
<tr>
<td>Emission factor gas</td>
<td>kg CO₂ / m³</td>
<td>1.88</td>
<td>1.88</td>
<td>1.88</td>
<td>1.89</td>
<td>1.89</td>
<td>1.89</td>
</tr>
<tr>
<td>Total emissions</td>
<td>tonnes CO₂</td>
<td>1.513</td>
<td>1.536</td>
<td>1.479</td>
<td>1.744</td>
<td>1.788</td>
<td>1.715</td>
</tr>
</tbody>
</table>

Table 1: Gas consumption with CO₂ conversion factors and total CO₂ emissions, 2014-2019

Also part of scope 1 are the fuel consumption of the vehicles owned by the university and the refilling of air conditioning systems with refrigerants. In table 2, the total emissions resulting from these two sources have been calculated using the respective emissions factors given in table 2a.

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petrol</td>
<td>litres</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2.760</td>
</tr>
<tr>
<td>Diesel</td>
<td>litres</td>
<td>3.717</td>
<td>4.386</td>
<td>8.159</td>
<td>9.657</td>
</tr>
<tr>
<td>Refrigerant R134a</td>
<td>kg</td>
<td>0</td>
<td>0</td>
<td>43</td>
<td>0</td>
</tr>
<tr>
<td>Refrigerant R407c</td>
<td>kg</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Refrigerant R410a</td>
<td>kg</td>
<td>12</td>
<td>6</td>
<td>32</td>
<td>3</td>
</tr>
<tr>
<td>Total emissions</td>
<td>tonnes CO₂</td>
<td>38</td>
<td>26</td>
<td>169</td>
<td>45</td>
</tr>
</tbody>
</table>

Table 2: Fuels and refrigerants and total CO₂ emissions, 2016-2019

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>Emission factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petrol</td>
<td>kg CO₂/litre</td>
<td>2.74</td>
</tr>
<tr>
<td>Diesel</td>
<td>kg CO₂/litre</td>
<td>3.23</td>
</tr>
<tr>
<td>Refrigerant R134a</td>
<td>kg CO₂/kg</td>
<td>1.430</td>
</tr>
<tr>
<td>Refrigerant R407c</td>
<td>kg CO₂/kg</td>
<td>1.774</td>
</tr>
<tr>
<td>Refrigerant R410a</td>
<td>kg CO₂/kg</td>
<td>2.088</td>
</tr>
</tbody>
</table>

Table 2a: Emission factor for fuels and refrigerants, 2019
The development of the scope 1 emissions is shown in figure 1 and table 3. The refilling of air conditioning systems is incidental and therefore varies year by year. Additionally, it is important to take into consideration that gas and district heating consumption vary based on outside temperature and humidity. Some fluctuation in the graph can be explained by this.

![Figure 1: CO₂ emission development scope 1 2014-2019](image)

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas</td>
<td>tonnes CO₂</td>
<td>1.513</td>
<td>1.536</td>
<td>1.479</td>
<td>1.744</td>
<td>1.788</td>
<td>1.715</td>
</tr>
<tr>
<td>Fuels and refrigerants</td>
<td>tonnes CO₂</td>
<td>137</td>
<td>137</td>
<td>38</td>
<td>26</td>
<td>169</td>
<td>45</td>
</tr>
<tr>
<td>Total emissions scope 1</td>
<td>tonnes CO₂</td>
<td>1.650</td>
<td>1.673</td>
<td>1.517</td>
<td>1.770</td>
<td>1.958</td>
<td>1.760</td>
</tr>
</tbody>
</table>

*Table 3: Scope 1 CO₂ emissions, 2014-2019*
Scope 2 - Indirect GHG emissions

Indirect GHG emissions are caused by the electricity and district heating consumed at the university. These forms of energy are generated elsewhere but are directly consumed by the university. The electricity consumption of the university has dropped significantly since 2014, which can be seen in table 4. The carbon emissions of electricity have increased with respect to 2017 due to a change in the Dutch electricity mix.

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>MWh</td>
<td>26.064</td>
<td>23.866</td>
<td>23.300</td>
<td>22.645</td>
<td>23.023</td>
<td>22.220</td>
</tr>
<tr>
<td>Emission factor electricity</td>
<td>kg CO₂ / MWh</td>
<td>526</td>
<td>526</td>
<td>526</td>
<td>526</td>
<td>649</td>
<td>649</td>
</tr>
<tr>
<td>District heating</td>
<td>GJ</td>
<td>59.158</td>
<td>63.444</td>
<td>62.292</td>
<td>59.783</td>
<td>56.772</td>
<td>54.571</td>
</tr>
<tr>
<td>Emissions district heating</td>
<td>tonnes CO₂</td>
<td>1.567</td>
<td>1.681</td>
<td>1.650</td>
<td>1.584</td>
<td>1.369</td>
<td>1.316</td>
</tr>
<tr>
<td>Total emissions scope 2</td>
<td>tonnes CO₂</td>
<td>15.277</td>
<td>14.234</td>
<td>13.906</td>
<td>13.495</td>
<td>16.311</td>
<td>15.737</td>
</tr>
</tbody>
</table>

Table 4: Electricity and district heating consumption with CO₂ conversion factors and CO₂ emissions, 2014-2019

A correction to the electricity consumption has been applied for the past years as solar panel generation had been accounted for insufficiently. In figure 2 the development of scope 2 emissions is shown.
Mitigation

The electricity generation with solar panels and the subsequent mitigation of carbon emissions are shown in table 5. Currently solar panels can be found on the Horst and Technohal buildings. The newly installed solar panels on the Technohal (585 panels) will be taken into account next year when the energy monitoring systems are up and running.

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar panels Horst</td>
<td>kWh</td>
<td>28.315</td>
<td>25.886</td>
<td>25.000</td>
<td>24.965</td>
<td>30.529</td>
<td>28.382</td>
</tr>
<tr>
<td>Emission factor electricity</td>
<td>kg CO₂ / kWh</td>
<td>0.526</td>
<td>0.526</td>
<td>0.526</td>
<td>0.526</td>
<td>0.649</td>
<td>0.649</td>
</tr>
<tr>
<td>Mitigated emissions</td>
<td>tonnes CO₂</td>
<td>15</td>
<td>14</td>
<td>13</td>
<td>13</td>
<td>20</td>
<td>18</td>
</tr>
</tbody>
</table>

Table 5: Energy generation solar panels and CO₂ mitigation, 2014-2019
University of Twente Carbon Footprint 2019

Scope 3 - Sphere of influence

The third scope of the carbon footprint considers upstream and downstream GHG emissions. Upstream refers to purchased goods and services, waste, rented assets, work-related travel and transport and distribution while downstream includes waste processing, let assets, investments and transport and distribution.

This year the data collection from suppliers was expanded to include as many partners as possible. An overview of the development of scope 3 emissions is given in figure 3, an overview of the data in table 6.

The upstream and downstream categories are further specified and aligned with the university's strategy into: Business Travel, Commuting, Procurement, Waste and Water. In these categories the supply of data from third parties varies yearly. More details per category are provided below.

![Figure 3: CO₂ emission development scope 3 2014-2019](image)

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Travel</td>
<td>tonnes CO₂</td>
<td>4.712</td>
<td>4.498</td>
<td>4.924</td>
<td>4.335</td>
<td>4.045</td>
<td>3.938</td>
</tr>
<tr>
<td>Commuting</td>
<td>tonnes CO₂</td>
<td>5.430</td>
<td>5.347</td>
<td>5.712</td>
<td>4.740</td>
<td>4.972</td>
<td>5.129</td>
</tr>
<tr>
<td>Procurement</td>
<td>tonnes CO₂</td>
<td>88</td>
<td>673</td>
<td>937</td>
<td>742</td>
<td>912</td>
<td>1.090</td>
</tr>
<tr>
<td>Waste</td>
<td>tonnes CO₂</td>
<td>28</td>
<td>113</td>
<td>133</td>
<td>529</td>
<td>607</td>
<td>631</td>
</tr>
<tr>
<td>Water</td>
<td>tonnes CO₂</td>
<td>142</td>
<td>108</td>
<td>107</td>
<td>126</td>
<td>121</td>
<td>150</td>
</tr>
<tr>
<td>Total emissions</td>
<td>tonnes CO₂</td>
<td>10.401</td>
<td>10.739</td>
<td>11.814</td>
<td>10.472</td>
<td>10.658</td>
<td>10.938</td>
</tr>
</tbody>
</table>

Table 6: Scope 3 CO₂ emissions, 2014-2019
Business Travel

All travel by employees, using all forms of transport is accounted for in scope 3. This includes train travel, car rental, flying and private car use for work. The university aims to reduce flying to locations within a 800 kilometer radius from the university. Although a mobility study and carbon footprint rely on the same data, a carbon footprint accounts for the GHG emissions for flights in three distance categories. For example: a flight with a distance of 700 kilometers or less can occur be between locations anywhere in the world, thus making the figures represented here relevant for GHG emissions but not directly for a mobility study. The impact of flying is categorised in three categories: short (<700 km), medium (700-2500 km) and long (>2500 km). The business travel impact by employees for 2019 is given in table 7. A comparison with previous years is shown in table 8.

<table>
<thead>
<tr>
<th>Category</th>
<th>Kilometers</th>
<th>Kg CO₂ / km</th>
<th>tonnes CO₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>Train</td>
<td>4.752.510</td>
<td>0.006</td>
<td>29</td>
</tr>
<tr>
<td>Flying short</td>
<td>638.238</td>
<td>0.297</td>
<td>190</td>
</tr>
<tr>
<td>Flying medium</td>
<td>2.692.438</td>
<td>0.2</td>
<td>538</td>
</tr>
<tr>
<td>Flying long</td>
<td>20.066.236</td>
<td>0.147</td>
<td>2.950</td>
</tr>
<tr>
<td>Car rental</td>
<td>264.100</td>
<td>0.118</td>
<td>31</td>
</tr>
<tr>
<td>Car expense claims</td>
<td>909.835</td>
<td>0.22</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total emissions</strong></td>
<td></td>
<td></td>
<td><strong>3.938</strong></td>
</tr>
</tbody>
</table>

Table 7: Travel and CO₂ impact, 2019

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Train</td>
<td>tonnes CO₂</td>
<td>11</td>
<td>138</td>
<td>252</td>
<td>240</td>
<td>25</td>
<td>29</td>
</tr>
<tr>
<td>Flying short</td>
<td>tonnes CO₂</td>
<td>352</td>
<td>326</td>
<td>343</td>
<td>72</td>
<td>234</td>
<td>190</td>
</tr>
<tr>
<td>Flying medium</td>
<td>tonnes CO₂</td>
<td>843</td>
<td>780</td>
<td>742</td>
<td>587</td>
<td>627</td>
<td>538</td>
</tr>
<tr>
<td>Flying long</td>
<td>tonnes CO₂</td>
<td>3.223</td>
<td>2.971</td>
<td>3.279</td>
<td>3.153</td>
<td>2.883</td>
<td>2.950</td>
</tr>
<tr>
<td>Car rental</td>
<td>tonnes CO₂</td>
<td>0</td>
<td>0</td>
<td>61</td>
<td>62</td>
<td>55</td>
<td>31</td>
</tr>
<tr>
<td>Car expense claims</td>
<td>tonnes CO₂</td>
<td>282</td>
<td>282</td>
<td>247</td>
<td>221</td>
<td>221</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total emissions</strong></td>
<td>tonnes CO₂</td>
<td>4.712</td>
<td>4.498</td>
<td>4.924</td>
<td>4.335</td>
<td>4.045</td>
<td>3.938</td>
</tr>
</tbody>
</table>

Table 8: Business travel CO₂ emissions, 2014-2019

**CO₂ compensation**

In 2019, the ITC faculty has started compensating their GHG emissions from flying. Their affiliated party for compensation is the Climate Neutral Group (CNG). The CNG uses their own accounting standard, which differs with the standard used in this rapport. As it was not possible to filter the flights of ITC from the university data, the amount compensated by ITC will be reported but not subtracted from this report.

ITC has compensated 1997.73 tons of CO₂ for their business travel in 2019.
Most employees and students travel to the university by car, train or bike. In 2010, a mobility survey was conducted. The CO₂ footprint for this section is calculated based on the information from the survey in combination with the adjusted student and employee numbers. In table 9 the impact of commuting for this year is presented.

<table>
<thead>
<tr>
<th>Category</th>
<th>Kilometers</th>
<th>kg CO₂ / km</th>
<th>tonnes CO₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees car</td>
<td>9.235.897</td>
<td>0.22</td>
<td>2.032</td>
</tr>
<tr>
<td>Employees train</td>
<td>8.216.469</td>
<td>0.006</td>
<td>49</td>
</tr>
<tr>
<td>Students car</td>
<td>12.951.092</td>
<td>0.22</td>
<td>2.849</td>
</tr>
<tr>
<td>Students train</td>
<td>33.097.013</td>
<td>0.006</td>
<td>199</td>
</tr>
<tr>
<td><strong>Total emissions</strong></td>
<td><strong>5.129</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9: Commuting and CO₂ impact, 2019

**Procurement**

The suppliers and contractors of the university were invited to submit CO₂ footprint data concerning the services or goods delivered to the university. The various categories in this section and their impact are listed in table 10.

<table>
<thead>
<tr>
<th>Category</th>
<th>Supplier</th>
<th>tonnes CO₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper &amp; cardboard</td>
<td>Based on waste SUEZ</td>
<td>174</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>BAM/Wilmink Oosterveld</td>
<td>39</td>
</tr>
<tr>
<td>Maintenance</td>
<td>ENGIE/Heijmans</td>
<td>421</td>
</tr>
<tr>
<td>Catering</td>
<td>Appèl</td>
<td>341</td>
</tr>
<tr>
<td>Landscaping</td>
<td>Krinkels</td>
<td>62</td>
</tr>
<tr>
<td>Movers</td>
<td>Convoi/Mondial Movers</td>
<td>5</td>
</tr>
<tr>
<td>Mobility hired personnel</td>
<td>Randstad</td>
<td>48</td>
</tr>
<tr>
<td><strong>Total emissions</strong></td>
<td></td>
<td><strong>1.090</strong></td>
</tr>
</tbody>
</table>

Table 10: Procurement and CO₂ impact, 2019

The impact of paper and cardboard consumption is calculated based on the amount of paper waste produced. This data is supplied by the waste management company, SUEZ. Infrastructural works and maintenance are performed by the companies Heijmans, BAM and Wilmink Oosterveld. Their figures are directly represented here. The catering on campus is provided by Appèl.

The landscaping on campus is provided by Krinkels. With landscaping biomass is obtained and transported to be used in an appropriate facility. This is subtracted from the footprint of Krinkels. The kilometers driven by trucks of movers such as Convoi and Mondial Movers is converted to a carbon equivalent. The same holds for the commute of hired personnel from Randstad.
Transport & Distribution

In previous years the GHG emissions of transport and deliveries to the university was estimated. Many companies have now included this aspect in their CO₂ reporting rendering the current estimate unreliable. In the coming years this will be researched further on how to best reflect this impact.

Waste

SUEZ carries out the waste management for the university since 2017 and provides GHG emissions data for the various waste streams of the university. SUEZ works together with consultancy firm CE Delft to provide an accurate estimation of the impact of the waste streams. The supplied CO₂ emission data is given in table 11.

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste</td>
<td>tonnes CO₂</td>
<td>28</td>
<td>113</td>
<td>133</td>
<td>529</td>
<td>607</td>
<td>631</td>
</tr>
</tbody>
</table>

Table 11: Waste and CO₂ impact, 2014-2019

Water

The GHG emissions of water is based on a campus specific study from 2010. This emission figure is higher than in the reporting standard used for this report. As it also has been used in footprint reports in the previous years, this figure will be maintained. The water consumption information of the ITC hotel has been included, as this was not done in previous years, it causes an increase in water consumption. Building specific consumption can be viewed in the appendix and on the energy data platform.

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>m³</td>
<td>94.943</td>
<td>71.892</td>
<td>71.365</td>
<td>84.129</td>
<td>80.979</td>
<td>100.022</td>
</tr>
<tr>
<td>Emission factor water</td>
<td>kg CO₂ / m³</td>
<td>1,5</td>
<td>1,5</td>
<td>1,5</td>
<td>1,5</td>
<td>1,5</td>
<td>1,5</td>
</tr>
<tr>
<td>Total emissions</td>
<td>tonnes CO₂</td>
<td>142</td>
<td>108</td>
<td>107</td>
<td>126</td>
<td>121</td>
<td>150</td>
</tr>
</tbody>
</table>

Table 12: Water CO₂ emissions, 2014-2019
# 1 - Energy consumption of buildings

<table>
<thead>
<tr>
<th>Building</th>
<th>Gas (m³)</th>
<th>Electricity (kWh)</th>
<th>District heating (GJ)</th>
<th>Water (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afvalstoffendepot</td>
<td>1.055</td>
<td>2.931</td>
<td>0</td>
<td>68</td>
</tr>
<tr>
<td>Bastille</td>
<td>0</td>
<td>444.262</td>
<td>2.695</td>
<td>5.305</td>
</tr>
<tr>
<td>BMC</td>
<td>2.259</td>
<td>4.723</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Boerderij Bosch</td>
<td>2.512</td>
<td>9.679</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>Boortoren</td>
<td>1.624</td>
<td>7.900</td>
<td>0</td>
<td>679</td>
</tr>
<tr>
<td>Carillon</td>
<td>0</td>
<td>3.139</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Carré</td>
<td>206.545</td>
<td>2.800.921</td>
<td>12.073</td>
<td>15.029</td>
</tr>
<tr>
<td>Citadel</td>
<td>32.088</td>
<td>162.188</td>
<td>0</td>
<td>583</td>
</tr>
<tr>
<td>Cubicus</td>
<td>0</td>
<td>317.931</td>
<td>3.907</td>
<td>1.358</td>
</tr>
<tr>
<td>Erve Holzik - kantoren</td>
<td>10.088</td>
<td>13.004</td>
<td>0</td>
<td>73</td>
</tr>
<tr>
<td>Erve Holzik - schuren</td>
<td>0</td>
<td>12.285</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Erve Holzik - woonhuis</td>
<td>0</td>
<td>1.141</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Evenementenveld</td>
<td>0</td>
<td>2.502</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Faculty Club &amp; Schuur</td>
<td>11</td>
<td>134.334</td>
<td>716</td>
<td>408</td>
</tr>
<tr>
<td>Garage</td>
<td>11.752</td>
<td>18.777</td>
<td>0</td>
<td>84</td>
</tr>
<tr>
<td>Hogedruklab</td>
<td>3.690</td>
<td>269.020</td>
<td>2.075</td>
<td>2.817</td>
</tr>
<tr>
<td>Hoogspanningsverdeelstation</td>
<td>0</td>
<td>1.377</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Horstcomplex</td>
<td>147.698</td>
<td>5.194.586</td>
<td>13.086</td>
<td>18.783</td>
</tr>
<tr>
<td>ITC</td>
<td>142.003</td>
<td>935.185</td>
<td>0</td>
<td>2.575</td>
</tr>
<tr>
<td>ITC Hotel</td>
<td>256.336</td>
<td>622.146</td>
<td>0</td>
<td>18.546</td>
</tr>
<tr>
<td>Koelcirkel</td>
<td>0</td>
<td>2.114.830</td>
<td>0</td>
<td>5.001</td>
</tr>
<tr>
<td>Kwekhoes</td>
<td>1.824</td>
<td>3.218</td>
<td>0</td>
<td>312</td>
</tr>
<tr>
<td>Nanolab</td>
<td>39.410</td>
<td>4.042.912</td>
<td>3.464</td>
<td>1.971</td>
</tr>
<tr>
<td>Openluchttheater</td>
<td>0</td>
<td>421</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Openbare verlichting</td>
<td>0</td>
<td>127.421</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Paviljoen</td>
<td>10.602</td>
<td>24.881</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>PTT Tussenstation (U-kast)</td>
<td>0</td>
<td>3.935</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ravelijn</td>
<td>0</td>
<td>295.748</td>
<td>2.307</td>
<td>2.599</td>
</tr>
<tr>
<td>Reinwaterkelder RWK</td>
<td>2.209</td>
<td>63.239</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rioolgemaal</td>
<td>0</td>
<td>6.857</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Building</td>
<td>Gas (m³)</td>
<td>Electricity (kWh)</td>
<td>District heating (GJ)</td>
<td>Water (m³)</td>
</tr>
<tr>
<td>---------------</td>
<td>----------</td>
<td>-------------------</td>
<td>-----------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Seinhuis</td>
<td>1.241</td>
<td>761.620</td>
<td>0</td>
<td>79</td>
</tr>
<tr>
<td>Spiegel</td>
<td>0</td>
<td>568.085</td>
<td>3.791</td>
<td>1.791</td>
</tr>
<tr>
<td>Sportcentrum</td>
<td>13.642</td>
<td>510.169</td>
<td>2.819</td>
<td>9.263</td>
</tr>
<tr>
<td>Sportvelden</td>
<td>0</td>
<td>24.432</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Stall</td>
<td>1.020</td>
<td>2.458</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Summerrcampus</td>
<td>0</td>
<td>19.889</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Teehuis</td>
<td>0</td>
<td>889.284</td>
<td>0</td>
<td>51</td>
</tr>
<tr>
<td>Tennispaviljoen</td>
<td>5.351</td>
<td>41.021</td>
<td>0</td>
<td>508</td>
</tr>
<tr>
<td>Vrijhof</td>
<td>0</td>
<td>738.700</td>
<td>3.710</td>
<td>3.988</td>
</tr>
<tr>
<td>Waaijer</td>
<td>0</td>
<td>438.012</td>
<td>919</td>
<td>1.926</td>
</tr>
<tr>
<td>Windpark</td>
<td>1.693</td>
<td>5.482</td>
<td>0</td>
<td>126</td>
</tr>
<tr>
<td>Zilverling</td>
<td>0</td>
<td>579.401</td>
<td>3.009</td>
<td>2.626</td>
</tr>
<tr>
<td>Zwembad</td>
<td>12.749</td>
<td>0</td>
<td>0</td>
<td>3.292</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>907.402</strong></td>
<td><strong>22.220.046</strong></td>
<td><strong>54.571</strong></td>
<td><strong>100.022</strong></td>
</tr>
</tbody>
</table>

### 2 - Data acquisition and emission factors

The data and emissions factors used to compile this report were acquired with the utmost care. The data was supplied by the university unless otherwise indicated. The emissions factors used in this report are taken from [www.co2emissiefactoren.nl](http://www.co2emissiefactoren.nl), which is updated annually and supported by the Dutch Government and several NGOs. For water and district heating, different values have been used. District heating is localised and the supplier Ennatuurlijk provides the emission factor. A campus specific study for water by P. van Sleen was conducted in 2011 and as this value is higher than standard, it is maintained.