Fixed assets

Application guideline

Carbon Added Accounting

Make the CO_2e footprint of products and services demonstrably reliable

Connekt

Topsector Logistiek

Table of Contents

1 Fixed assets

This guideline describes the basics of Carbon Added Accounting with regard to fixed assets. The fixed assets a company are understood to mean the resources of which the necessary use has been recorded for a period longer than one year. Examples include buildings, installations, equipment, machines and means of transport. They are the resources used by a company to run its business and not to trade or consume them in economic conversion processes. Because these resources are deployed over a longer period of time, the CO_2e values of the creation of these resources are depreciated over their economic life. This creates a balanced allocation of the CO_2e values of these resources to the products produced. A possible second life for these resources or the recycling of (parts of) these resources can also be taken into account. This means the method of Carbon Added Accounting differs substantially from that of current assets, such as stocks, which are used for trade, transport, storage and transhipment and/or economic conversion processes.

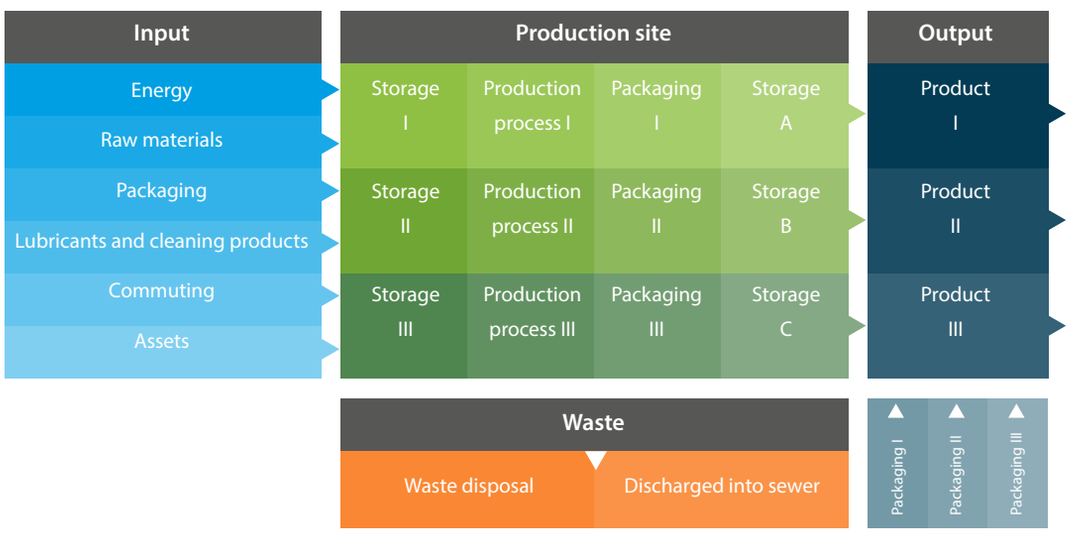
This guideline describes the specific interpretation that can be given to the way in which Carbon Added Accounting can be applied to tangible fixed assets.

2 Principle of Carbon Added Accounting

According to the principle of Carbon Added Accounting, a company obtains CO_2e input by means of, among other things, purchased goods and means of production, to which CO_2e added (gas and electricity consumption) is added during the business activities.

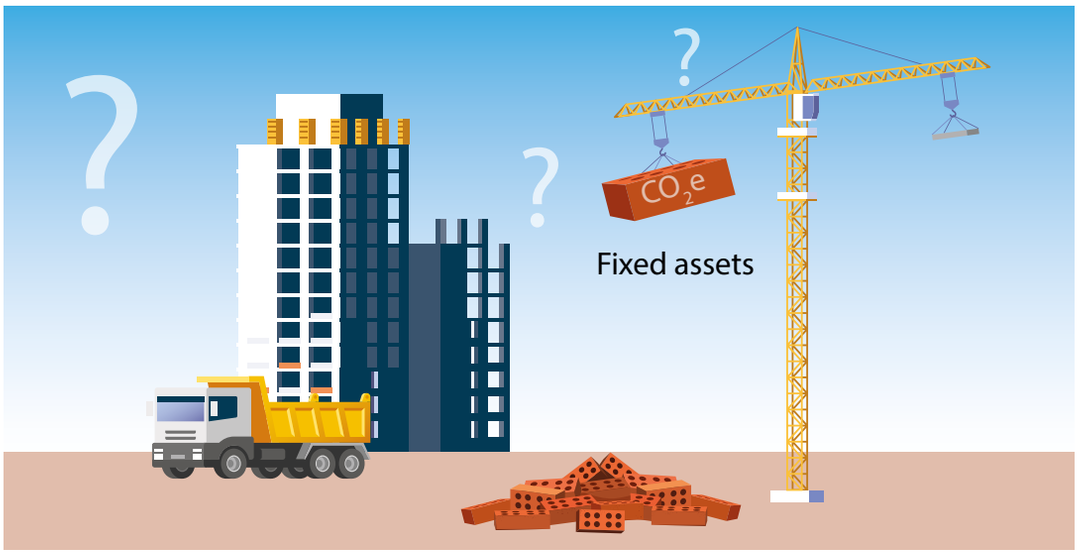
CO_2e input + CO_2e added = CO_2e output

The result is the CO_2e output value which means the footprint of the company (or product) over the reported period. Below is a schematic example of a typical production process.



3 What are fixed assets?

The fixed assets described in this guideline concern the buildings, installations, equipment, machines and means of transport that a company uses over several years to carry out its activities.



Why treat fixed assets differently from current assets?

The GreenHouse Gas protocol (Box 2.1 'Accounting for emissions from capital goods') describes that the total of the cradle-to-gate emissions from capital goods, just as with other purchased goods such as current assets, should be charged in full in the year of purchase. However, this would be a disproportionate burden on the CO_2e emissions of end products in the year of asset acquisition. As a result, start-ups, for example, would have disproportionately high CO_2e emissions in their first years - with production scale-up - and they would (wrongly) end up in an unfavourable position. Therefore, this guideline is based on CO_2e emissions as if it were the cost of assets whose depreciation is charged to the financial statements and the residual value is recorded on the balance sheet (e.g. IFRS IAS 16: Property, Plant and Equipment).

The CO_2e input of fixed assets

The CO_2e input of fixed assets, including the associated data quality, must be specified by the supplier. In the case of fixed assets, this is usually the case through unit production. If no CO_2e value can be obtained, estimates or key figures of comparable assets must be used, which is obviously associated with low data quality (Bronze).

The CO_2e calculation of fixed assets

This guideline is based on the moment of commissioning of the fixed assets. After all, there can be a long time between the time of purchase, the time the GHG protocol is based on, and the actual commissioning. It is important to include the life of the assets in the calculations. The economic life of assets is the length of time the company expects to use the assets. This can be expressed, for example, in units produced (e.g. millions of end products) or in time periods (e.g. years). As shown in the figure below, the CO_2e- of the fixed assets over the economic life are allocated to the finished goods in each intermediate period.

4 Depreciation of the CO_2e footprint

The CO_2e input of fixed assets

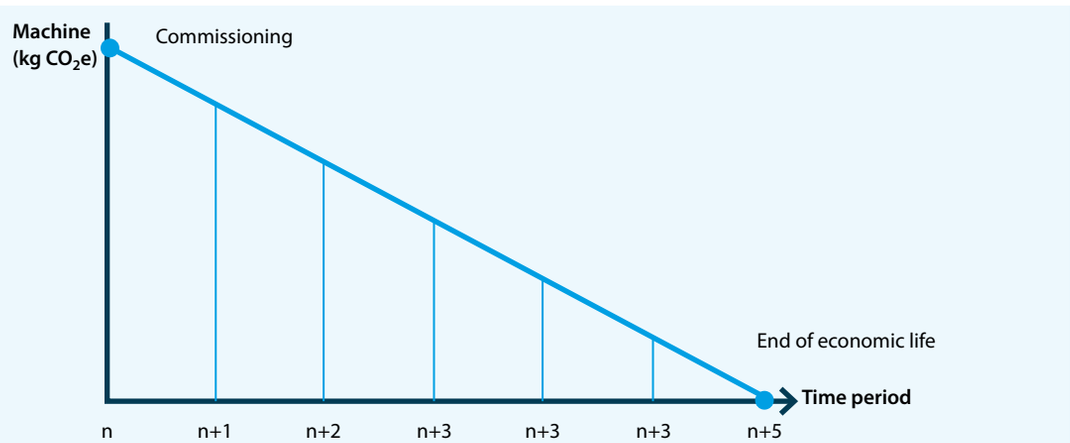
The CO_2e input of fixed assets, including the associated data quality, must be specified by the supplier. In the case of fixed assets, this is usually the case through unit production. If no CO_2e value can be obtained, estimates or key figures of comparable assets must be used, which is obviously associated with low data quality (Bronze).

The CO_2e allocation when using fixed assets

This guideline is based on the moment of commissioning of the fixed assets. After all, there can be a long time between the time of purchase, the time the GHG protocol is based on, and the actual commissioning. It is important to include the life of the assets in the calculations. The economic life of assets is the length of time the company expects to use the assets. This can be expressed, for example, in units produced (e.g. millions of end products) or in time periods (e.g. years). As shown in the figure below, the CO_2e of the fixed assets over the economic life is allocated to the finished goods in each intermediate period.

In the case of the CO_2e value of a production machine would be 100,000 kg and the machine would have an economic life of 5 years, 100,000 kg should be allocated to the CO_2e balance sheet. Subsequently, in year 1, a portion, namely 20,000 kg of CO_2e (or 100,000 kg CO_2e/5 years) can be allocated to the produced end products in year 1 and these 20,000 kg of CO_2e can be depreciated on the CO_2e balance sheet. Each subsequent year, 20,000 of CO_2e can be allocated to the end products produced in that year, which are then depreciated from the CO_2e balance sheet until the end of the economic life has been reached.

The CO_2e depreciation of a machine over its economic life



The CO_2e balance sheet and CO_2e withdrawal per period of a machine over an economic life of five years

Period	CO_2e balance sheet (kg)	Withdrawal CO_2e (kg)
n	100,000	-
n+1	80,000	20,000
n+2	60,000	20,000
n+3	40,000	20,000
n+4	20,000	20,000
n+5	-	20,000
Total		**100,000**

If the economic life of production machines is based on numbers of end products produced, the depreciations may differ per period. Suppose the CO_2e value of a production machine were to be 100,000 kg again and that - regardless of the number of years - a total of 5 million end products could be produced, the calculation below can be made. When commissioning, 100,000 kg must be allocated to the CO_2e balance sheet. In year 1, a portion, namely 18,000 kg of CO_2e (or 100,000 kg CO_2e * 900,000 end products/5,000,000 end products economic life) must be allocated to the produced end products in year 1 and depreciated on the CO_2e balance sheet. Each subsequent year, some of the remaining CO_2e on the balance sheet can be allocated to the end products produced in that year, which are then 'depreciated' from the CO_2e balance sheet until the end of the economic life has been reached.

The CO_2e balance sheet and CO_2e withdrawal per period of a machine over the economic life of five million end products

Period	Production (million)	CO_2e balance sheet (kg)	Withdrawal CO_2e (kg)
n		100,000	
n+	1900,000	82,000	18,000
n+2	1,100.000	60,000	22,000
n+3	1,200.000	36,000	24,000
n+4	800,000	20,000	16,000
n+5	1,000,000	-	20,000
Total	**5,000,000**		**100,000**

These methods can also be used for all other types of capital goods such as buildings, installations, equipment and means of transport. Depending on the design criteria (source: supplier of the fixed assets), the economic life can be based on calendar years or on production numbers, but also on numbers of kilometres (trucks) and/or hours used (e.g. internal transport).

Possible sale of assets before the end of their economic life

If an asset is sold before the end of its economic life, two possible situations arise:

1. The asset is no longer used and (where possible) recycled;
2. The assets is further used by third parties.

In the first case, the remaining CO_2e of the relevant assets - less the CO_2e value in the case of recycling - must be fully allocated to the production of that period and depreciated on the CO_2e balance sheet.

In the second case, the remaining CO_2e must be shared (read: passed on) to the intended third parties so the footprint can be processed by them in their footprint in accordance with this guideline and depreciated on their CO_2e balance sheets. Any balance sheet differences must be fully allocated to the production of that period.

Hired/leased capital goods

If a company uses hired and/or leased capital goods for its business activities, the CO_2e allocation should be treated in the same way as owned capital goods. It is not relevant in this context who is the legal owner of the capital goods, but whether they are used directly or indirectly to manufacture the end products. Therefore, hired and/or leased capital goods also form part of the company's carbon footprint.

Investments in capital goods

If a company owns capital goods intended for sale or investment, the CO_2e footprint of these capital goods must be treated as the CO_2e of stock items on the balance sheet and are not allocated to end products. At the time of delivery, the CO_2e balance sheet value must be fully depreciated and the remaining CO_2e must be shared with (read: passed on to) the buyer.

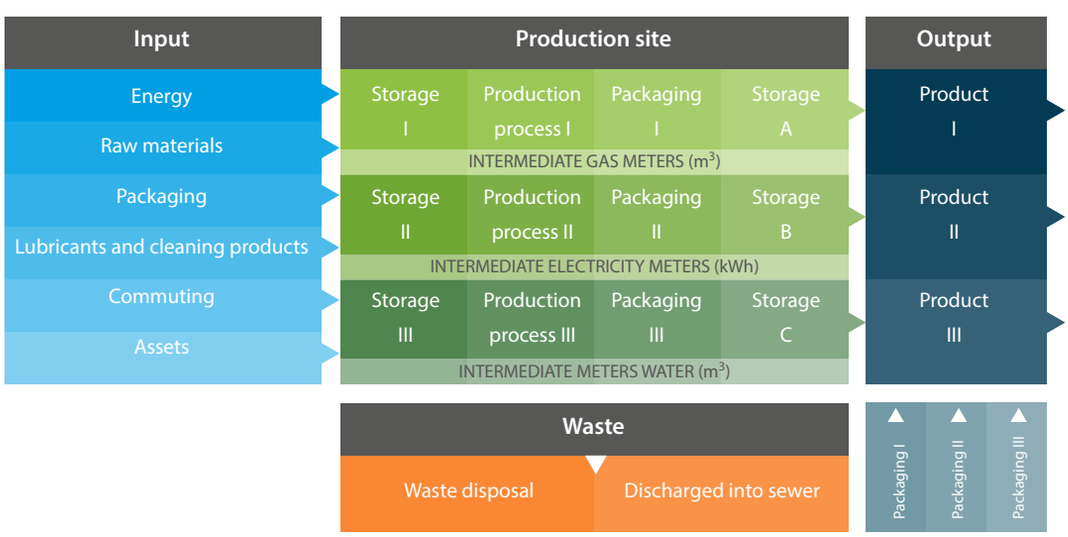
5 Correlation checks

To guarantee the data quality of the CO_2e values, correlation checks must be performed as cross checks on the data used. From a fixed asset perspective, the following correlation checks can often be made with the CO_2e added. Without being exhaustive, a number of possible correlation checks are shown below. Observed differences between the various data must be explained and modelled where necessary. Naturally, this will degrade data quality.

At many companies, gas is mainly used for heating the buildings and to a limited extent (or not at all) for the production process. As such, gas consumption for heating buildings is directly related to the insulation values (K-values) of the buildings and the (average) outside temperature per period and to a limited extent (or not at all) to the production volume of that period. In addition, the gas bills per period can be compared with the values of the gas meter(s). If intermediate meters are installed, it is often possible to measure gas consumption per building and thus allocate it to the production activities in that building.

Many companies mainly use electricity for the production and packaging processes. This allows the measured electricity consumption to be compared with the design specifications of the production machines used in relation to the units produced. In addition, the electricity bills per period can be compared with the meter readings. If intermediate meters are installed, it is often possible to measure the electricity consumption per zone and thus allocate it to specific production activities. For companies that opt for operational excellence, the electricity consumption is often measured per production line and sometimes even per machine. An additional advantage of this is that an increasing electricity consumption per production unit can be an indication of an approaching end of its economic life.

Correlation checks between utility bills and the (intermediate) meters



By treating the footprint of fixed assets in a similar way to financial depreciation and balance sheet items, a method of CO_2e allocation is created that aligns with global standards. Because of this, the allocation of the footprint of fixed assets is more balanced than would be the case with the application of the GHG protocol and solutions are created for all kinds of variants (e.g. hired/rented fixed assets, shortening or extending the economic life).

Fixed assets
Application guideline Carbon Added Accounting.
Make the CO_2e footprint of products and services demonstrably reliable.

Connekt/Top Sector Logistics
Ezelsveldlaan 59
2611 RV Delft
+31 15 251 65 65
info@topsectorlogistiek.nl
www.carbonaddedaccounting.org

Connekt

Topsector Logistiek