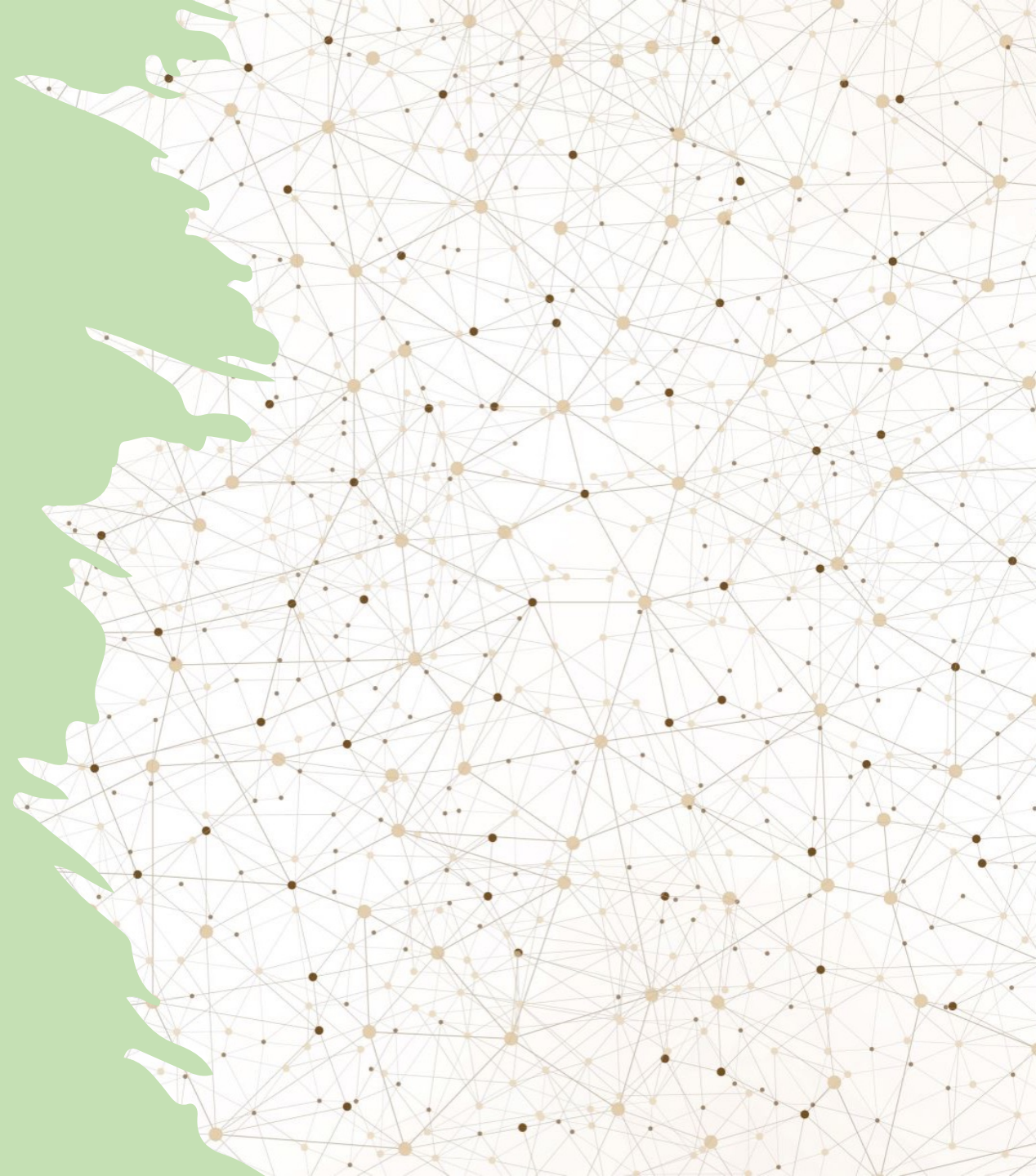


What's a  
green truck  
parking?



# Elements of a green parking

## Definition of a green parking

Parking facilities that meet the EU SSTPA standards and integrate infrastructure, technology and policies specifically designed to advance sustainable and environmentally responsible practices within the road freight transport industry, helping to reduce the environmental footprint of road freight transport operations and supporting the EU commitment of carbon neutrality in 2050.

# Elements

Operations and management

Environment

Impact on local communities and stakeholders

Land use and building

# Operations & management

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Development of actions that allow optimization of the efficiency and use of the facilities, reducing environmental impacts, noise, and the operations related to the management and use of the parking

	Description	KPI
<b>Management efficiency processes</b>	Define and implement measures towards a more efficient facility management and to reduce consumption. Possible measures can include, but are not limited to: Online reservation system through app or web, ticketless procedures, online payments (no cash), digital invoicing) etc.	<ul style="list-style-type: none"><li>• % reduction in paper usage</li><li>• Description of measures implemented</li></ul>
<b>Operation management</b>	Develop measures to have secure and safe facilities: <ul style="list-style-type: none"><li>• Operations manuals</li><li>• (plan truck entrance to reduce impact – such as noise, pollution, hours)</li><li>• Norms of use (for example, have separated areas by cargo type to reduce noise pollution, mandatory plugging-in for refrigerated trucks, live animal transport etc.)</li><li>• Training (facility personnel) and education (facility users)</li></ul>	<ul style="list-style-type: none"><li>• Description of measures implemented</li></ul>

# Environment

Incorporate measures and innovative systems to mitigate emissions and resources consumption related to parking facilities

## Water efficiency

### Description

Implement measures to reduce and re-use the use of water in the facilities prioritizing circularity and re-use. For example: Rainwater collection/storage system, recycle water from truck cleaning etc.

### KPI

- % reduction in water usage
- % water re-use
- Description of measures implemented

## Emissions (Carbon footprint)

1. Provide annual disclosure of GHG emissions based on scope 1 and scope 2 (location and market based) acc. to GHG Protocol Standard using the “operational control” approach and relevant emission factors (up-to-date, regional if possible).
2. Provide annual disclosure of truck parking relevant scope 3 emissions (cf. slide 9).
3. Create a roadmap to reduce scope 1+2 emissions by X% by 2040.

- Annual tCO2e split in Scope 1-3
- Provide emission intensities for customers on invoices, e.g. gCO2e/kWh, gCO2e/L fuel (esp. HVO or Hydrogen)

## Waste management

As a priority in green parking facilities consider waste avoidance and maintaining products, materials and resources for as long as possible to support the EU target of 10% waste to landfill by 2023 ([https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive\\_en](https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en)) All facilities should consider further waste management initiatives and actions from those considered in the Waste Framework Directive and local regulations. Some relevant waste considerations:

- Separation of paper, metal, plastic and glass
- Hazardous waste disposal procedure

- Description of measures implemented
- Follow up and reduction targets
- Waste management policy on site for both own waste management and visitor waste management (drivers, oil

# Environment

Incorporate measures and innovative systems to mitigate emissions and resources consumption related to parking facilities

	Description	KPI
Energy	<p><u>Efficiency</u> Based on the EU Directive. For example: isolation, achievement of a certain level of energy efficiency, LED lights in all facilities, motion lights in common areas etc.</p>	<ul style="list-style-type: none"> <li>• % reduction in energy usage</li> <li>• Description of measures implemented (consider LED &amp; motion lights in % of facility as a minimum)</li> </ul>
	<p><u>Alternative energies</u> As suggestion: Aero-thermic heating, solar panels, self-generation, purchasing renewable energy etc. All systems should include storage systems to increase energy efficiency use and increase the % of alternative energy used in facilities. Consider levels based on energy consumption reduction, taking into account the transition to a low carbon sector.</p>	<ul style="list-style-type: none"> <li>• % energy from alternative sources</li> <li>• Description of measures implemented</li> </ul>
	<p><u>Management system</u> Effective charging without overloading the grid</p>	<ul style="list-style-type: none"> <li>• Description of measures implemented</li> <li>• % xxxxx</li> </ul>
E-truck parking	<p>Enabling low-carbon road transport with electric charging points, electricity grid connection upgrades, hydrogen fuelling stations,...</p> <p>Taking into account AFIR (Alternative Fuel Infrastructure Regulation) requirements when in force.</p> <p>Real time availability of charging stations and advance booking.</p>	<ul style="list-style-type: none"> <li>• Number of charging stations on alternative energy (hydrogen, electric,...)</li> <li>• % alternative energy parking spaces</li> </ul>

# Impact on local communities and stakeholders

Parking facilities are generally large installations that can have an impact on neighboring communities. It is necessary to manage and minimize this impact. Additionally, there is an opportunity to become allies by being a focus of local economic development, ensuring suppliers or employment in nearby communities

	Description	KPI
<b>Community impact - Light regulation</b>	<p>Due to security requirements, most green parking facilities are required to have lighting throughout the night, also parking spaces involve large areas with a subsequent impact on nearby communities considering it to be light pollution.</p> <p>Despite local regulation, all facilities should follow some minimum requirements such as lights directed towards the ground, side screens or a perimeter tree system, ... and take into consideration any other solutions that does not affect the nearby vicinities.</p>	<ul style="list-style-type: none"> <li>Description of measures implemented</li> </ul>
<b>Community impact - Acoustic contamination regulation</b>	<p>Noise pollution has been recognized as one of the major hazards that impact the quality of life all around the world.</p> <p>Heavy traffic vehicles also contribute to noise generation due to their heavy engines and load. Traffic noise represents important environmental risk factors in mechanized areas, and it is one of the fastest growing and most ubiquitous types of environmental pollution.</p> <p>Electric plugs for refrigerated trucks, limited speed in parking facilities, driving directions (in parking rules). Already regulated, define manual</p>	<ul style="list-style-type: none"> <li>Description of measures implemented</li> </ul>



# Impact on local communities and stakeholders

Parking facilities are generally large installations that can have an impact on neighboring communities. It is necessary to manage and minimize these impacts. Additionally, there is an opportunity to become allies by being a focus of local economic development, ensuring suppliers or employment in nearby communities

	Description	KPI
<b>Community engagement - Local suppliers</b>	<p>Parking facilities have impact on nearby communities; however, green parking takes into consideration local communities where they operate.</p> <p>When possible, source supplies from local communities (vending machines, restaurants, cleaning &amp; maintenance,...) as it will also have an impact in reducing facility carbon footprint.</p> <p>Prioritize local community for employment.</p>	<ul style="list-style-type: none"> <li>• Number of local suppliers (% from total suppliers)</li> <li>• Number of local employees (% from total)</li> <li>• Description of measures implemented</li> </ul>
<b>Women driver inclusion</b>	<p>Implement measures to have safe areas for women truck drivers (separated toilet facilities, quiet room, dressing room, vending machines with hygiene articles,...)</p>	<ul style="list-style-type: none"> <li>• Description of measures implemented</li> </ul>
<b>Driver wellbeing</b>	<p>Implement measures good for health and environment to improve the wellbeing of truck drivers while in facilities.</p> <p>Consider: Greenery and natural rest areas, bicycle sharing/rental, gym, running tracks in facilities, wider array of meal options in vending machines/ on-site restaurants (consider vegan, dietary restrictions), pop-up educational/entertainment activities on-site to facilitate socialization and quality time</p>	<ul style="list-style-type: none"> <li>• Description of measures implemented</li> </ul>



# Land use and building

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Set of regulations and recommendations for the development of new facilities and the upgrading of existing ones, considering the impact of these developments and a broader range of measures that can be introduced

	Description
<b>Land use</b>	Optimize land use: Consider parking facility for truck length (including current and future combinations of mega trucks, duo trailers, road trains), plan shadows, cargo distribution,...
<b>Building Design</b>	Further efficiency and sustainable measures can be taken into consideration in the designing phase: building orientation, rainwater recovery systems, alternative energy usage, storage systems for water and/ or energy, waste management systems, higher isolation cladding, solar panels... Consider inclusive facilities: separate women toilets, separate relax rooms,...
<b>Construction</b>	In construction phase consider carbon neutral construction materials, supplies with high percentage of recycled materials, isolation Waste to zero construction developments and ground sealing

# Concepts, tools and measuring

Carbon footprint: goal and scope

Calculating greenhouse emissions

Categorisation of emission sources



# Carbon Footprint: Goal & Scope

- Annual Carbon Footprint of the truck parking (only operational phase, not construction)
- Method:
  - Standard: GHG Protocol Reporting Standard; operational control approach and ISO 14083
  - Scopes: direct emissions from operation and buildings (scope 1), indirect emissions from purchased electricity and district heating (scope 2)
  - Optional: relevant indirect emissions (scope 3)
  - Emission factors (EF): CO<sub>2</sub>e (equivalents) to include relevant GHGs according to Kyoto Protocol or IPCC AR6; relevant, up-to date sources, EF sources need to be disclosed.
- Goal:
  - Assessment of the GHG-potential of the parking and break-down to customers; tracking of emissions over several years

DEKRA will propose an audit scheme that also simplifies data entry for the parking operators.

# Calculating Greenhouse Gas Emissions of a Parking

According to the Greenhouse Gas Protocol

## Activity

- **Scope 1 emissions**

e.g. data on buildings and fleet (natural gas or oil consumption, fuel refrigerants, ...)

- **Scope 2 emissions**

e.g. electricity consumption, district heating, ...

optional

- **Scope 3 emissions**

e.g. waste, water (fresh and waste), use of sold products (e.g. fuels)

X

**specific emission factor**

[kg CO<sub>2</sub>e / unit]

=

**GHG-Assessment**

[kg CO<sub>2</sub>e]

Data on scope 1 and 2 activities is usually available on invoices, sometimes these also contain a specific emission factor. If not, DEKRA can provide a list with sources for suitable emission factors.

# Categorisation of Emission Sources

## Scopes of the Greenhouse Gas Protocol



### Scope 1 Emissions

include all **direct** greenhouse gas emissions resulting from the parking's own operations. This applies to emissions from the consumption of primary energy sources. Leased assets such as cars' fuel consumption fall also into this category.



### Scope 2 Emissions

include **indirect** greenhouse gas emissions resulting from the generation of energy purchased by the parking operator, e.g., emissions from the generation of electricity or district heating. Electricity used for charging trucks falls into this category.



### Scope 3 Emissions

include **all other indirect** greenhouse gas emissions that occur in the upstream and downstream supply chain of the parking; e.g., emissions from purchased goods and services like freshwater supply, waste treatment including waste water, use of sold products (e.g. fuel if the parking also operates a petrol station). The 15 categories are listed on the next slide.

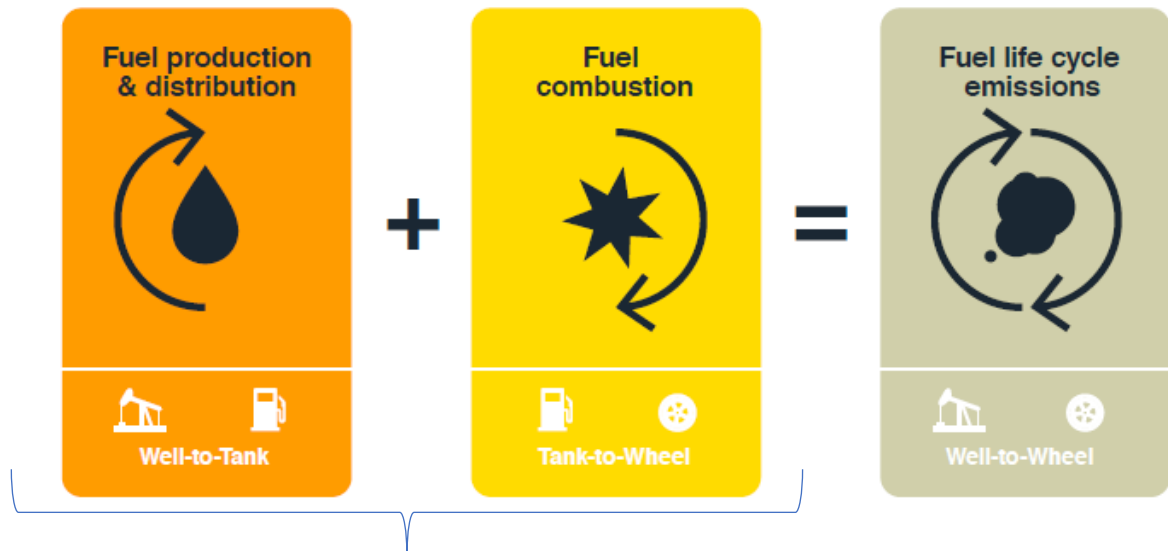
# Scope 3 Emissions and their Categorization

According to the Greenhouse Gas Protocol

	Scope 3 Category	Mandatory for green parking?	Example truck parking	Possible data sources
3.1	<b>Purchased Goods and Services</b>	Higher level	If the parking also operates a petrol station: fuel (that is bought but not yet sold to trucks at the end of the year; cleaning service, fresh water	Invoices, accounting, meter reading
3.2	<b>Capital Goods</b>	Not mandatory	Buying a charging station (emissions of production)	Invoices, accounting
3.3	<b>Fuel- and Energy-Related Activities (not Included in Scope 1 or Scope 2)</b>	Yes (are calculated automatically based on scope 1 and 2, no further data needed)	Well-to-tank factor of fuels used by own vehicles, distribution emissions of electricity	Activity data included in Scope 1 & 2
3.4	Upstream Transportation and Distribution	Not mandatory	Logistics emissions through ordering goods	Invoices, calculations of tkm
3.5	<b>Waste Generated in Operations</b>	Higher level	Waste water, residual waste, sludge	Invoices
3.6	Business Travel	Not mandatory		
3.7	Employee Commuting	Not mandatory		
3.8	Upstream Leased Assets	Not mandatory	e.g. a leased car – BUT as we take operational control approach, a leased car falls into scope 1	
3.9	Downstream Transportation and Distribution	Not mandatory		
3.10	Processing of Sold Products	Not mandatory		
3.11	<b>Use of Sold Products</b>	Higher level	Relevant if parking operations also include a petrol station: Fuel sold to customers (Well-to-Wheel basis; ideally provide Well-To-Tank and Tank-To-Wheel factor; see next slide)	Billing
3.12	End-of-Life Treatment of Sold Products	Not mandatory		
3.13	Downstream Leased Assets	Higher level	If the parking operator (lessor) owns the land and they lease part of it to a restaurant operator (lessee), the emissions of the restaurant can be included here	Carbon footprint of restaurant operator
3.14	<b>Franchise</b>	Higher level	If a parking operator has multiple franchises, the parent company should cumulate their emissions and include them in this category	Carbon footprints of Franchise partners
3.15	Investments	Not mandatory		

# Green Parking areas and the fuel life cycle

- As green truck parking is likely to be associated with alternative fuels/drive, it is important to look at the fuel life cycle and how its emissions are reported correctly:



- Many alternative fuels/drives (e.g. hydrogen, BEV) have no direct emissions, but their production and distribution does.
- Therefore, if they are included in the carbon accounting, always report WTW (well to wheel emissions) to ensure comparability of fuels and alternatives.
- Ideally, the information on WTT emissions of alternative fuels/drives comes from the fuel supplier, as default values cannot reflect the WTT emissions of special fuels due to various origins
- If the data is available, it would offer a real benefit if handed out to customers as they can use this for their own CO2 reporting  
→ **This is a „customer carbon footprint“, stating the sum of fuel/energy charged + respective emissions factor (WTT+TTW)**