



CEE Automotive Logistics Budapest 2019

**Sustainable Supply Chains:
Green processes for the complete
supply chain**

Sustainable Supply Chains | Climate action summary

Agenda

01

Bosch climate action | Summary

02

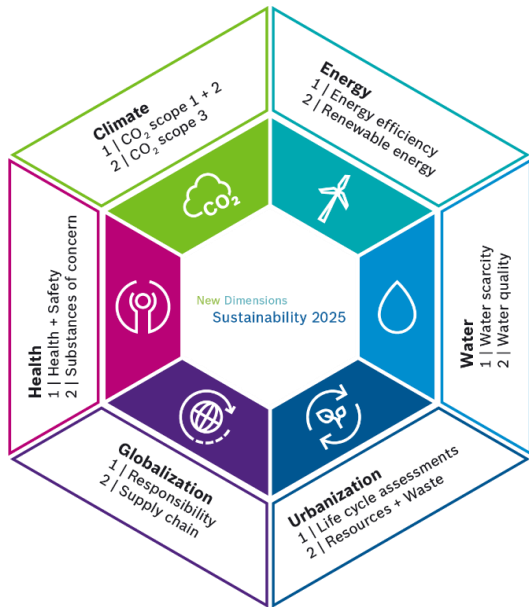
Bosch climate action | Scope 1 and 2 "CO2 neutral"

03

Bosch climate action | Scope 3 - Focus supply chain

Sustainable Supply Chains | Climate action summary

New Dimensions – Sustainability 2025 | Climate



Bosch is committed to climate action and to achieving the Paris Agreement's two-degree target.

Aspect 1: CO₂ scope 1 + 2

Bosch will be **carbon neutral by 2020**, both in terms of direct (Scope 1) and indirect emissions related to purchased energy (Scope 2).

To achieve this, Bosch is focusing particularly on **energy efficiency** measures at its own locations, as well as on **New Clean Power (NCP)**.

Bosch also sources **green energy** with guarantees of origin from existing facilities using renewables. In addition, the company purchases high-quality **CO₂ certificates**, such as "Gold Standard" certificates.

Aspect 2: CO₂ scope 3

In 2019, Bosch intends to analyze other indirect emissions (Scope 3) and aims to join the **Science Based Targets Initiative (SBTi)**.

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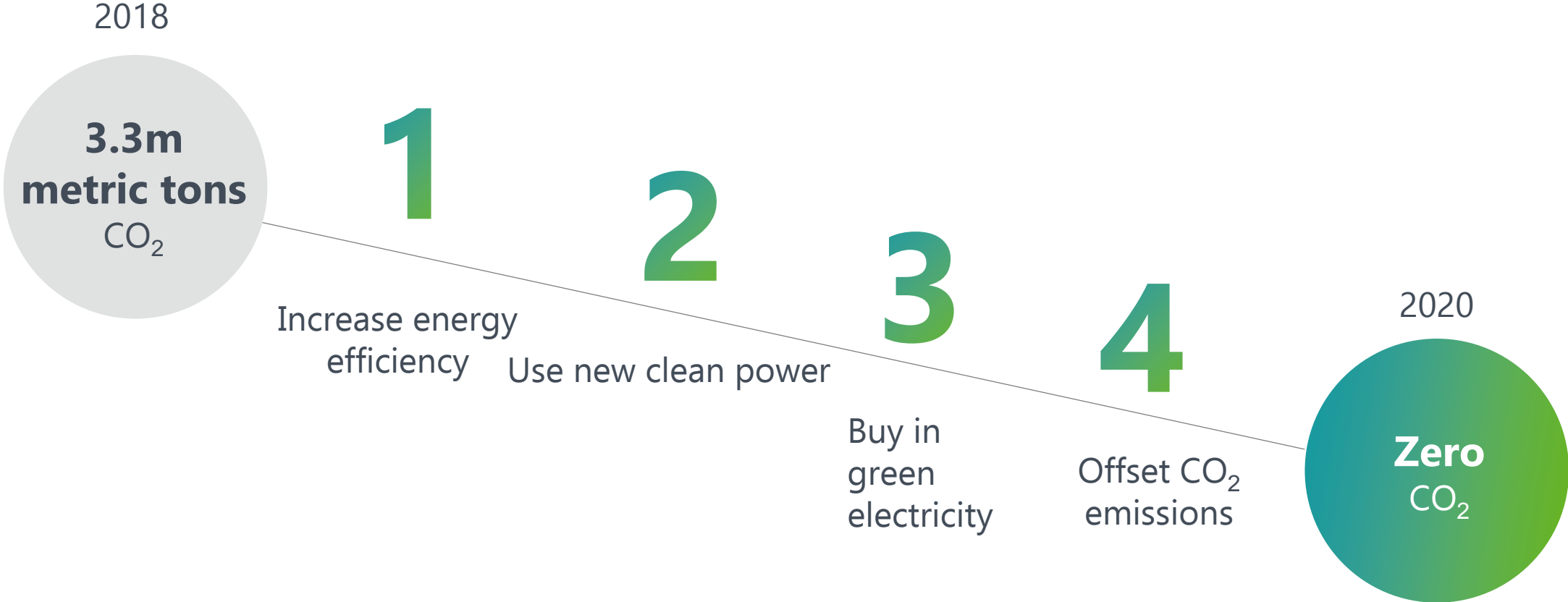
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Sustainable Supply Chains | Climate action scope 1 and 2

How will we become carbon neutral?





Sustainable Supply Chains | Climate action scope 1 and 2

All projects combined will drive progress



Bosch Mexico regional organization

80% of electricity consumption of all sites covered by power procured exclusively from wind farm

Stuttgart-Feuerbach site, Germany

Energy efficiency management and training programs have cut energy consumption by 55% since 2007

Nashik plant, India

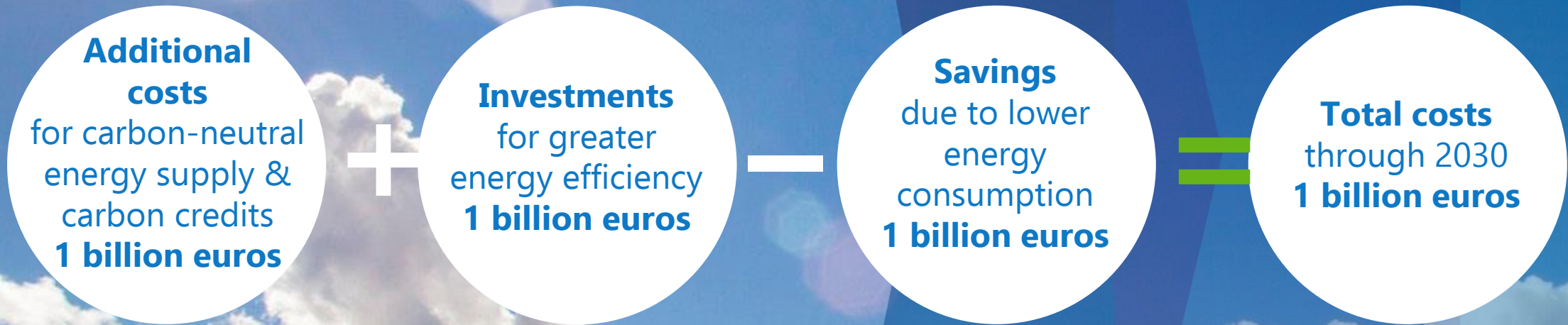
20% of energy consumption self-generated using solar panels

Renningen site, Germany

Planted roof and cistern save up to 30% of energy needed to keep the building cool

Sustainable Supply Chains | Climate action scope 1 and 2

Investment pays off



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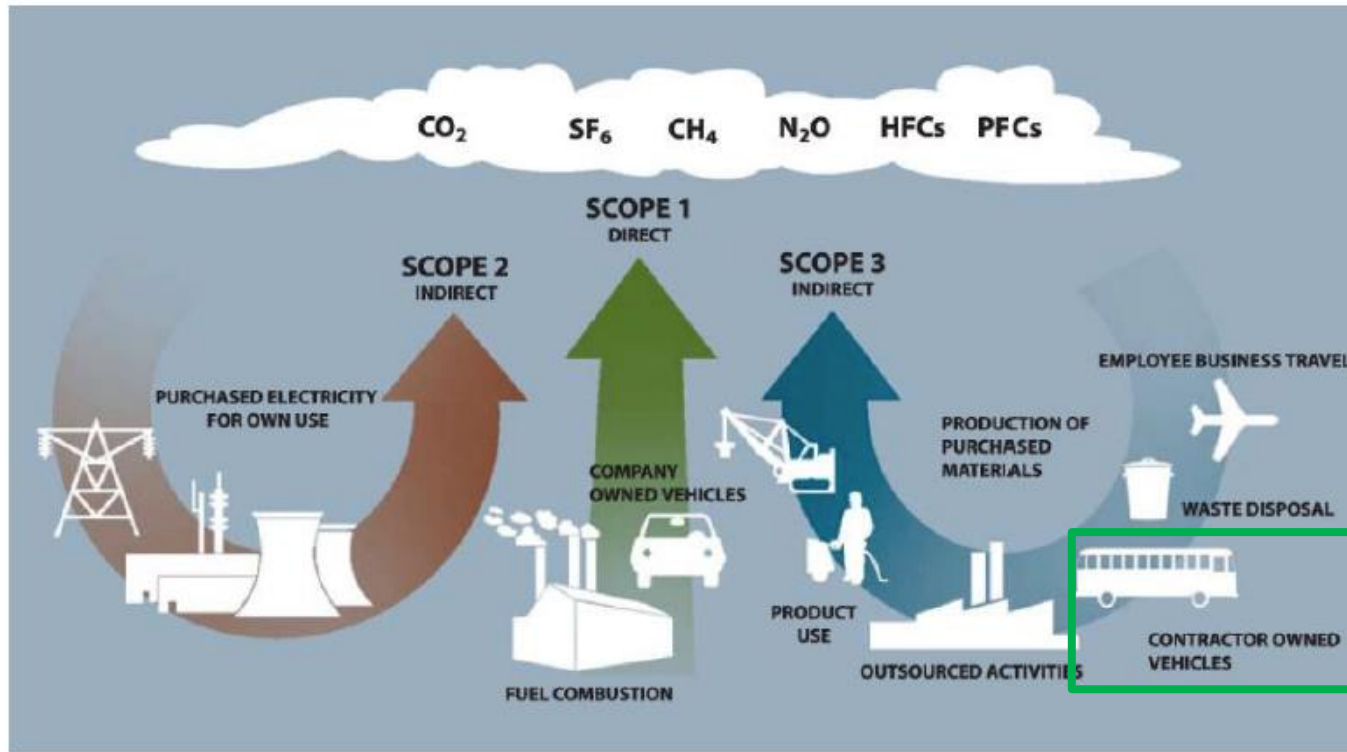
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Bosch climate action | Scope 1 and 2 "CO2 neutral"

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Bosch climate action | Scope 3 - Focus supply chain

CO₂: 'Scope 3' is our next focus point



Announced Bosch activities cover scope 1 + 2.

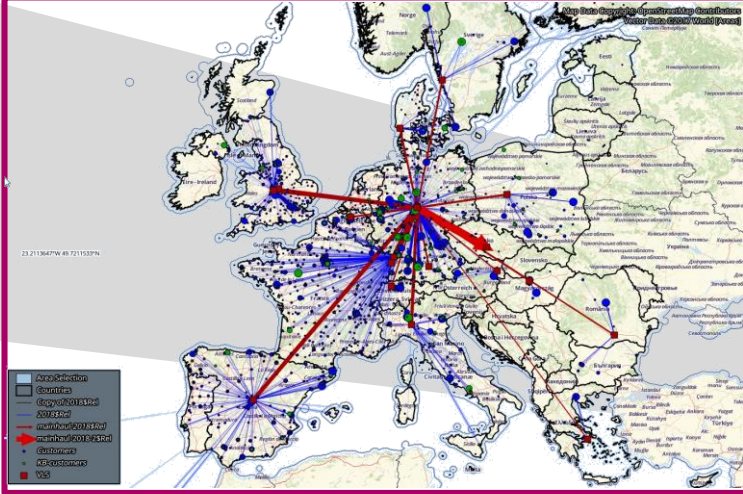
Quantification of 'scope 3' (production of purchased materials) ongoing.

We encourage our suppliers to start own CO₂ reduction activities

Sustainable Supply Chains | Climate action scope 3 supply chain

Strategic approach on CO₂ reduction in Bosch supply chains

1. Supply Chain Network Design (SCND)



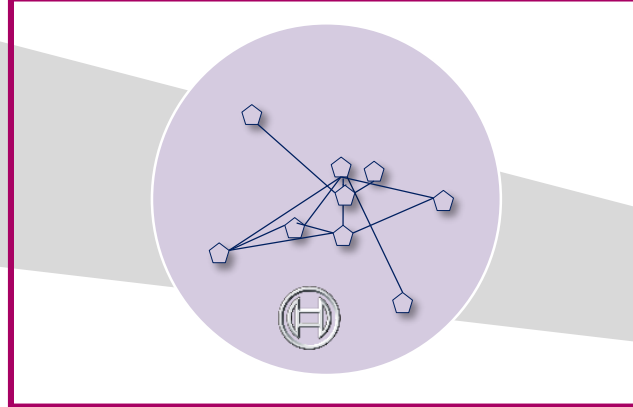
Optimization of international **production networks**

Applicable during **PEP¹** or on **existing IPNs²**

TCO³-based approach; Input for CIP⁴ activities

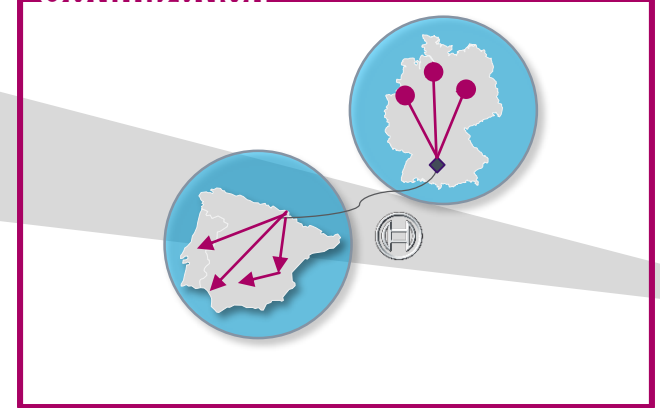
Main cost drivers: transport, warehousing (handling), inventory, customs and personnel costs

2. Warehouse Footprint



Optimize current worldwide **warehouse network** of BOSCH

3. Transport Network Optimization

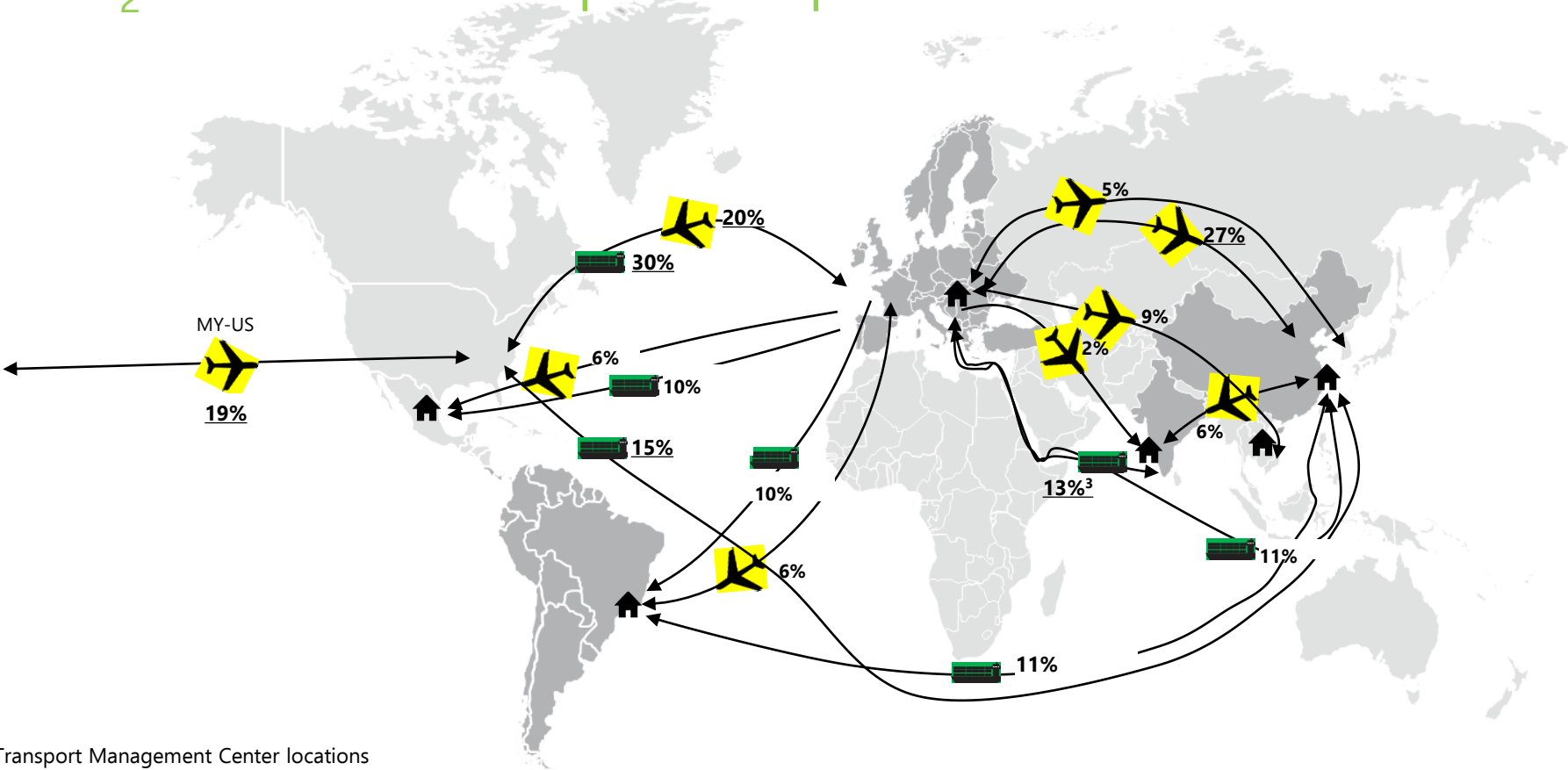


Optimize common **integrated transport network** for all BOSCH related transports

¹ Product creation process ² International production network ³ Total cost of ownership ⁴ Continuous improvement

Sustainable Supply Chains | Climate action scope 3 supply chain

Bosch global transport flows | 2018 CO₂ emissions share per transport mode



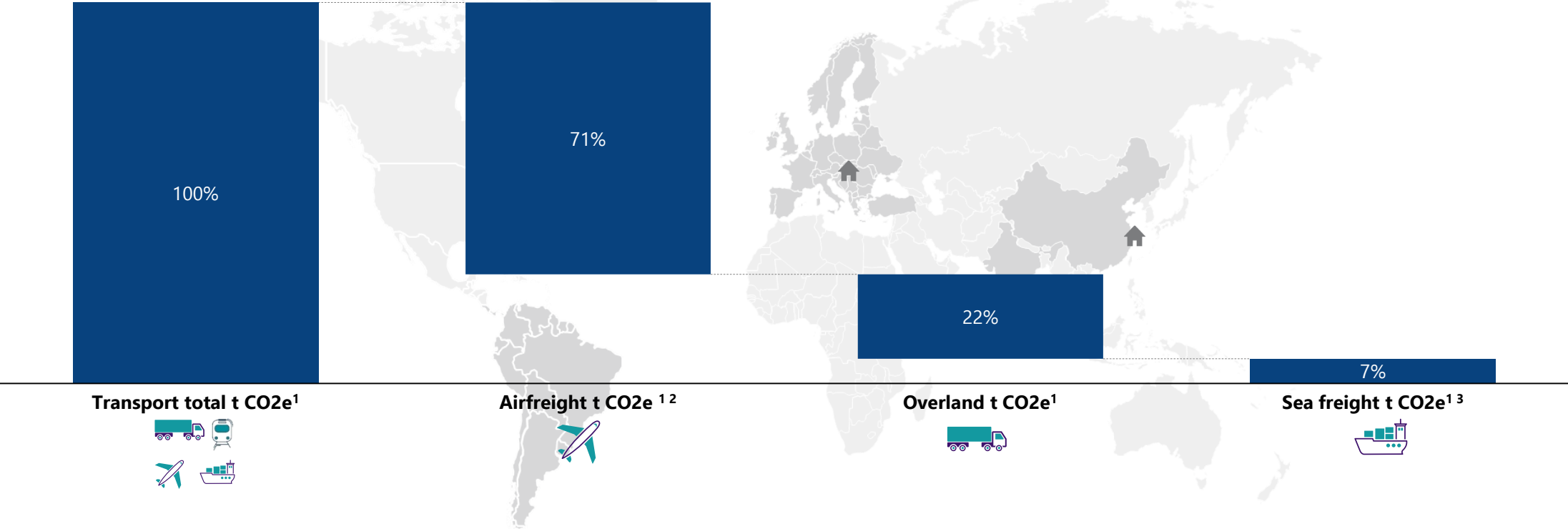
🏠 Transport Management Center locations

GS/LOT-Christine Mezger-Behan | 09.10.2019
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Sustainable Supply Chains | Climate action scope 3 supply chain

2018 estimated Bosch transport CO₂ emissions breakdown

1st January 2018 to 31st December 2018 (t CO₂equivalent % share)



Transport total t CO₂e¹



Airfreight t CO₂e^{1 2}



Overland t CO₂e¹



Sea freight t CO₂e^{1 3}



¹Tank-to-Wheel ² incl. pre- and on carriage per land freight to/from airports ³ incl. pre- and on carriage per Land- and rail freight to/from sea ports.

In 2018, at least 2/3 of transport CO₂ emissions comes from air freight transports.

Sustainable Supply Chains | Climate action scope 3 supply chain

Measures to reduce transport CO₂ emissions

Existing TMC CO₂ reduction measures

- 1 **Cargo instead of passenger aircraft:** Specific energy consumption 1.73 times lower. In 2019 cargo aircraft will be increasingly used. TMC air CO₂ emissions will decrease by about 4% t CO₂e
- 2.1 **Reduce delivery frequencies, consolidate goods and optimize truck sizes:** CO₂ factor 3 times lower when selecting the largest truck type
- 2.2 **Volume-optimized, stackable packaging,** adapted to trucks

Additional air freight CO₂ reduction measures influenced by supply chain network design

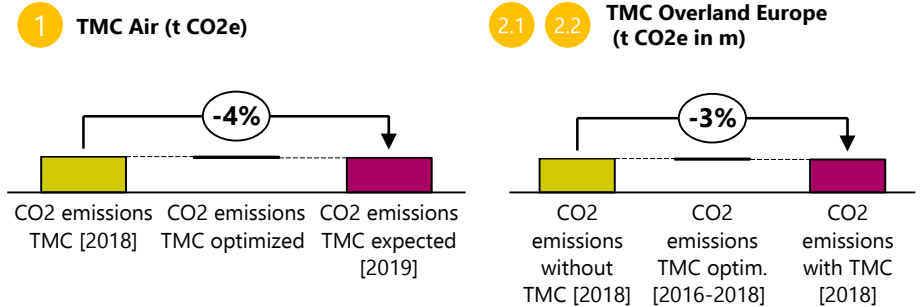
Step 1

Avoid air freight: Restricted approval process. Use of alternative transport modes. Transfer from air to sea freight.

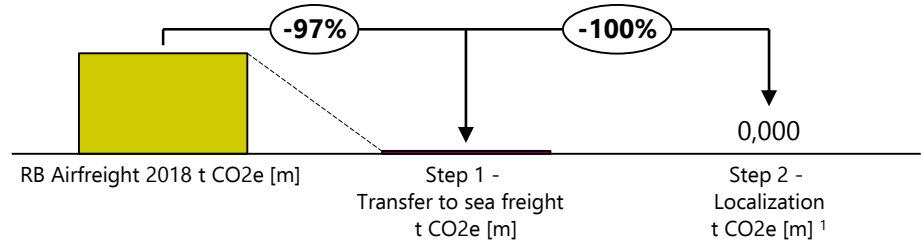
Step 2

Local procurement and production instead of globally distributed

TMC CO₂ emission savings



Potential CO₂ emission savings can be implemented in two steps



¹ Depending on the procurement, production and customer locations

Localization can almost neutralize air freight CO₂ emissions.

Thank you for your attention!



CO₂ neutral

Bosch IoT Shuttle a world of opp



Bosch CO₂ neutral

