Danfoss

GREEN ASK

SUPPLIER FACT PACK

GREEN ASK
Supplier Fact Pack

is an onboarding material for Danfoss suppliers on the "**Danfoss GREEN ASK**" approach, providing guidance to the following

1. **Danfoss Expectations:** CO_2 Data + CO_2 reduction journey *(slide 4 to 8)*
2. **Green Levers YOU can use:** decarbonization methodology + action cards *(slide 9 to 24)*
3. **Knowledge Sharing for YOUR inspiration:** Case studies *(slide 25 to 35)*
4. **Appendices** *(slide 36 to 44)*

Danfoss at a glance

Worldwide sales in more than

100

countries

Three strong business segments with leading positions

Power Solutions

Climate Solutions

Power Electronics and Drives

Leading technology partner for our customers who want to decarbonize through energy efficiency, machine productivity, low emissions, and electrification

+42,000

Employees worldwide. People are the foundation of our business

Well on the way towards carbon-neutral global operations by 2030

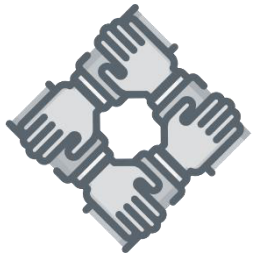
100

Factories in more than 20 countries

1933

Long track record within innovation and engineering

GREEN ASK Objectives



Improved CO_2 data quality

Supplier Segmentation Rating

Willingness to cooperate with Danfoss

Suppliers CO_2 reduction plans & commitments

Danfoss GREEN ASK – Get Started!

Maturity

Decarbonization as **„nice-to-have"**

Monitor and stimulate our supply-base decarbonization journey.

Already on Danfoss.com

Decarbonization to **„push the needle"**

Our supply base **decarbonization journey starts influencing** Danfoss **business decisions**, tipping the needle in favor of suppliers with better CO_2 standings.

Decarbonization as **„true differentiator"**

Danfoss **starts considering CO_2 as a relevant decision-making parameter,** signaling to supplier that is a **„true differentiator"** and is ready to eveluate potential cost increase for greener business.

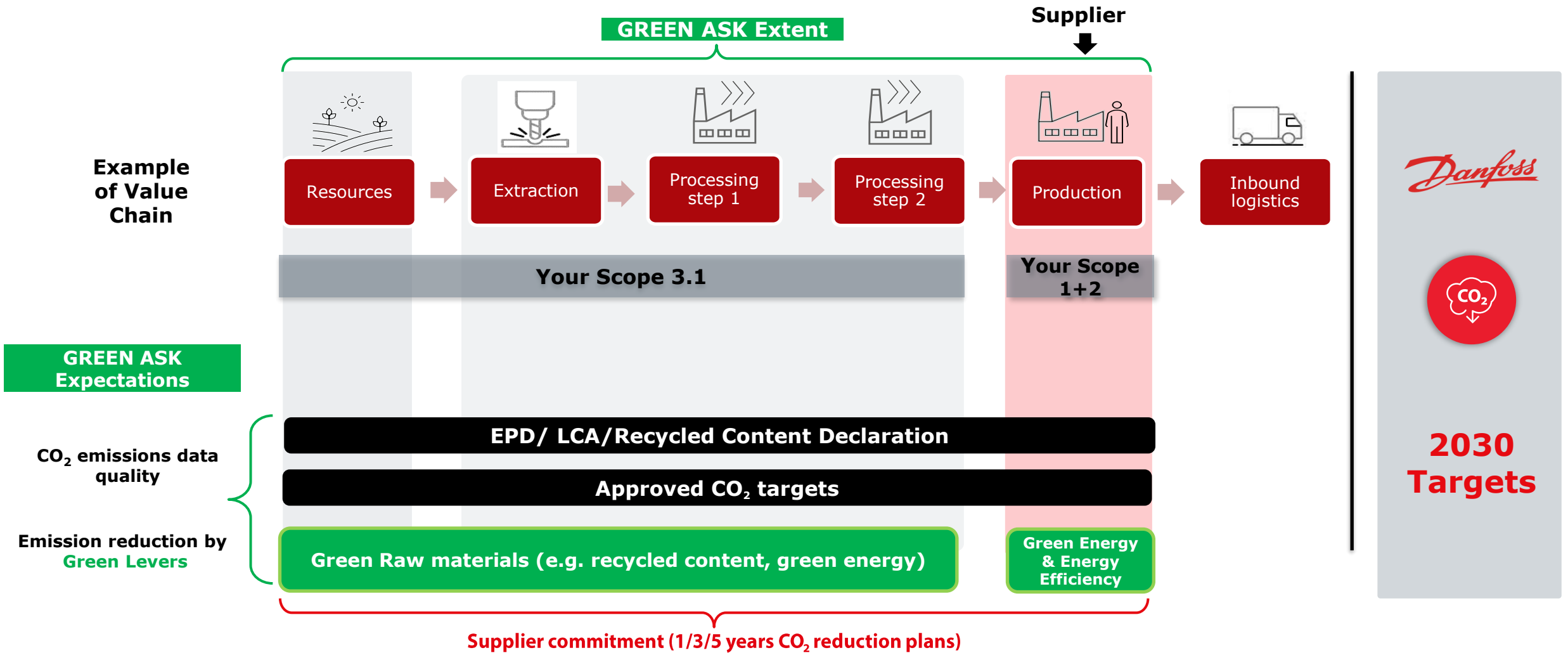
Decarbonization as **„hygiene criteria"**

Danfoss considers CO_2 standings as a **pivotal element** in decision making and evaluates only business with **suppliers** that **can comply with minimum decarbonization** criteria.

Timeline depending on regulatory and Customers requirements

Danfoss GREEN ASK explained

The GREEN ASK entails expectations that are based on **high quality CO_2 data** as well as **CO_2 emmision reduction plans,** encompassing the **full supply chain**.



Call for action- **Next steps**

Learn & Act

- Get familiar with materials in this **Supplier Fact Pack**
- Start working with **Green Levers**
- Use **Action Cards** for guidance

Share your data with Danfoss local Procurement Team

Be proactive

- **Share Data** EPDs/LCAs, SBTi certification, RECs, Recycle content, etc.
- If not there yet, **start working on Emission Reduction Activities**
- **Cooperate** – when Danfoss will reach out, but don't wait for us.
- **Take the first step**

What can YOU do now?

	Approved CO_2 reduction targets	EPD / LCA / Carbon Footprint
Data Journey	1. If already signed up to SBTi → **please send your verification sheet** 2. Initiate process to join SBTi ✓ SMEs track (link) ✓ Normal track (link) 3. Use **Green Levers** and related **Action Cards**: see Renewable Energy and Green Recycled Materials	**1. Share EPD/LCA** that are third-party verified for **products sold to Danfoss** 2. Alternatively share Carbon footprint (cradle to gate) calculation for **products sold to Danfoss.** Background methodology needs to be shared too.

	Energy Efficiency	Renewable Energy	Green Raw Materials
CO_2 Reduction Journey	**Target** Come up with your own plan (***see Danfoss Suppliers Fact Pack- Energy Efficiency part)***	**Target** Time-bounded renewable energy target (***see Danfoss Suppliers Fact Pack- Renewable Energy part)***	**Target** ✓ Specific post-consumer recycled content targets for each product sold to Danfoss ✓ Specific pre-consumer recycled content targets for each product sold to Danfoss
	Evidence ✓ Closest third-party verified standard to **ISO 50001** ✓ **For pipeline**: current electrical base load.	**Evidence** ✓ Invoices of energy consumption and/or certificates approved by regulatory body ✓ Renewable energy certificate (REC) (Energy data should match in the REC) ✓ Green Power Purchase agreements (PPA) ✓ **For pipeline**: Supplier specific energy mix carbon intensity ($kgCO_2/KWh$).	**Evidence** Third-party verified **recycled content** (e.g. acc. to ISO 14021) of **products sold to Danfoss**

Carbon Data Journey

Supplier Carbon Footprint

Danfoss environmental targets

Danfoss needs to significatly reduce the **carbon emissions** associated with the products and materials purchased.

Danfoss has committed to a CO_2 emissions reduction target aligned with

the **Science Based Targets initiative (SBTi)**[1]

Encompassing both Danfoss‘ operations and our **wider value chain.**

SBTi reduction targets	Scope 1+2	Scope 3
GHG Reduction Target (%)	100%	15%
Scope	Danfoss	Up+Down stream value chain
Base Year	2019	
Target Year	2030	

[1]. Refer to appendix 1 for more information on the SBTi.

Danfoss Scope 3.1 calculation methodology

Danfoss is continuously trying to improve the precision of the Scope 3.1 emissions calculations

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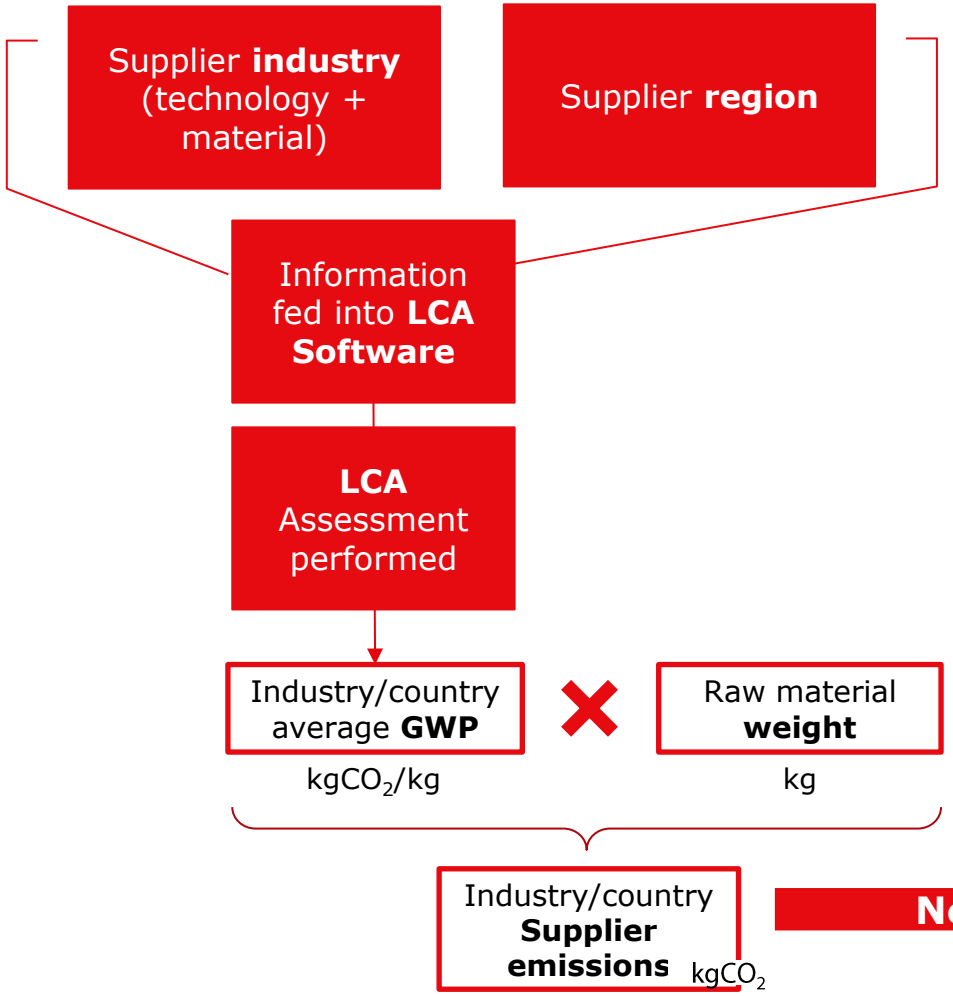
The improvement depends on your

Willingness to Share

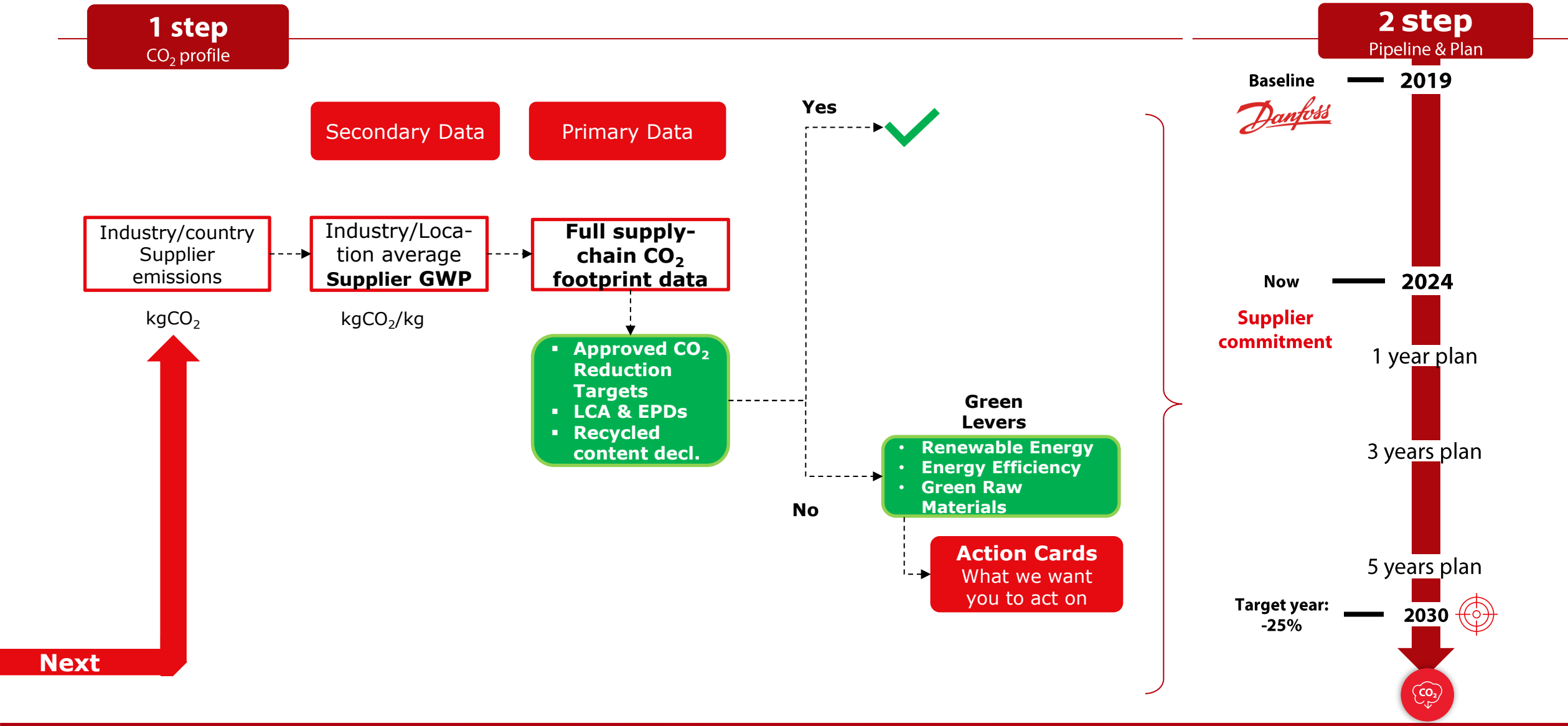
&

Quality of Your Data!

Current spend-based methodology → moving to weight-based



Supplier Carbon Data Journey – From Secondary to Primary Data



Supplier environmental targets

Danfoss encourages you to join **SBTi** for transparent and standard aligned **GHG target reporting**.

1

Understand the Scopes

- **Scope 1**: These are direct emissions from sources owned or controlled by the organization. Examples include fuel combustion on-site (e.g., burning natural gas) and fugitive emissions (e.g., accidental leaks).
- **Scope 2**: These are indirect emissions from purchased electricity, steam, heating, or cooling. It includes emissions generated off-site but related to the organization's energy consumption.
- **Scope 3**: These are all other indirect emissions associated with the organization's value chain, such as supply chain activities, business travel, and waste disposal.

2

Data collection

- Gather data on fuel consumption (Scope 1), purchased energy (Scope 2), and other relevant activities (Scope 3). Involve facilities, purchasing, and procurement departments.
- For Scope 2, consider using either a location-based method (average emissions intensity of grids where energy is consumed) or a market-based method (reflecting emissions from chosen electricity sources).

3

Calculate Emission

- Use established emission factors, industry benchmarks, or supplier data to calculate emissions.
- Express emissions in metric tons of carbon dioxide equivalents (CO_2e), which accounts for the warming potential of different greenhouse gases.

4

Set targets

- Align with the Science-Based Targets (SBT) initiative. SBTs ensure emissions reduction goals are consistent with limiting global warming to well below 2°C above pre-industrial levels.
- Set ambitious targets for each scope.

5

Monitor and Report

- Regularly track emissions data to assess progress toward targets.
- Report emissions transparently in sustainability reports, following recognized standards like the Greenhouse Gas Protocol.
- Adjust strategies as needed to stay on track and contribute to a low-carbon future.

Supplier Carbon Data Journey - Approved CO_2 Reduction targets

If, GHG (greenhouse gas) **reduction targets** reported through **SBTi**.

Data validation request

- **SBTI SMEs** track (link)
- **SBTI** (link)

If, targets are NOT YET in place

Preferred track

1. **Understand Baseline Emissions**: Begin by calculating your current carbon footprint to understand your starting point.
2. **Create a Cross-Functional Sustainability Team**: Increase awareness in your organization (education trainings).
3. **Develop an Action Plan:** Identify the strategies and technologies that will be used to achieve the reduction targets.

Data validation request

- **SBTI SMEs** track (link)
- **SBTI** (link)

Alternative track

Energy Efficiency, Green energy, Green Recycled Materials (*see next slides*)

- *See next slides*

Supplier Carbon Data

Suppliers need to provide Danfoss with carbon footprint data. Data validation options listed below. [1]

Danfoss Product-specific Carbon footprint data

1 **Environmental Product Declaration** (EPD) **Life Cycle Assessment** (cradle-to-gate)

Most preferable option
Standardised document that details a product's environmental impact across lifecycle stages

Measurement of the total greenhouse gas emissions generated by a product over its life cycle stages

2 **Product Carbon Footprint**

Alternative option
Measure of the total greenhouse gas emissions generated by a product over its life cycle stages.

3 **Organizational Scope 1,2 and 3 allocated to Danfoss**

Alternative option
Estimated proportion of supplier Scope 1, 2 and 3 emissions allocated to Danfoss (externally verified).

With as much supporting detail as possible

(Methodology, input data, assumptions, and calculations)

1. See Action cards & Appendix 4 for more information on the different options.

Supplier Data Journey - High quality, primary Carbon Data

If, Calculated Specific Emissions for Danfoss products

Data validation request

- **EPD** or **LCA** (third-party verified) → refer to **European standard 15804** and **14025** for EPDs and **14040/44** for LCAs.
- At least **cradle to gate (A1-A3)** calculation
- **Excl. carbon offsets/ credits, carbon removals incl. biogenic, or avoided emissions**.
- If **mass balance** is used, **explanation is required.**

If, No EPDs or LCAs.

Alternative Preferred track

Provide Carbon footprint for products/components sold to Danfoss: measurement of total carbon footprint for Danfoss sold products over their life-cycle (cradle-to-gate).

- Report with **phases** (at least cradle to gate) included and adherence to **standards**, **methodology** and **key assumptions**.

Alternative track

Organizational Scope 1, Scope 2 and Scope 3 for Danfoss products: estimated allocation of Scope 1, Scope 2 and Scope 3 emissions on products sold to Danfoss.

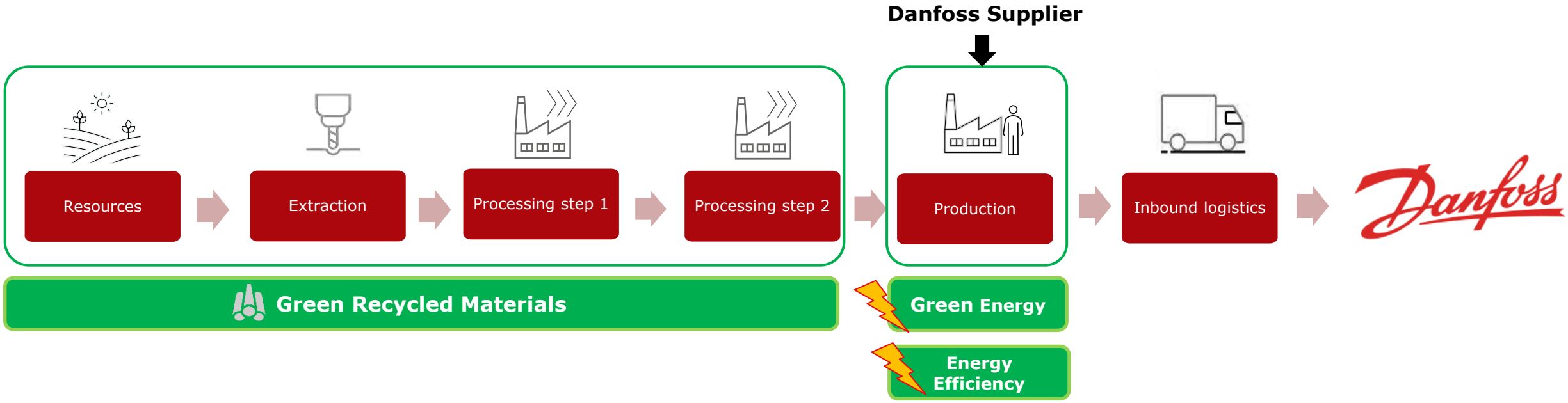
- **Allocation factor for products sold to Danfoss**
- **Scope 1,2,3 adherence to GHG Protocol**, excl. carbon offsets/credits, biogenic carbon removals or avoided emissions
- **External verification of Scope calculation**

CO_2 Reduction Journey

Green Levers

Green Levers - How to Decarbonize?

Three ways to decarbonization:
Energy Efficiency, Green Energy, and Green Recycled Materials



Green Lever 1 - Energy Efficiency

Fostering Energy and Process Efficiency is beneficial for all:
Less energy cost and taxes + avoidance of CO_2 emissions

Suggested ”to-do’s” for energy and process efficiency

- Implement **energy management system** to continuously reduce energy consumption and CO_2
- Improve energy efficiency at **cross sectional technologies**
- Identify relevant energy consumers for **efficiency potentials**
- Investigate your electrical **consumption load profile**
- Evaluate **ventilation systems** for energy efficiency potentials
- Optimize **heating** and process heat demand and generation
- Optimize **illumination** in offices and production facilities
- Investigate **compressed air generation and distribution** for efficiency
- Implement efficient processes for purchasing of **equipment and indirect material** to reduce energy costs and CO_2
- Energy consumption as relevant criteria for purchasing of equipment and indirect material
- Integrate energy efficiency as criteria for purchasing of **machines and indirect materials**

Action Card

Supplier Reduction Journey - Energy Efficiency

*„We have virtually no chance of meeting our future energy needs, and certainly no chance of achieving net zero by 2050 if we don't radically **rethink energy efficiency** as a **key tool to decarbonize society.**"*
*- **Kim Fausing, Danfoss CEO***

Data point: Current Electrical Base Load

Target: Come up with your own efficiency plan

Data validation request:

- Closest third-party verified standard to **ISO 50001**

Further evaluation:

- Danfoss will reach out to collect highest energy consuming process data to support in finding tailored solutions.

No data on Electrical Base Load

No plan on incrementing energy efficiency.

Data point	Target
• Conduct an energy consumption analysis of production processes, buildings and supply facilities.	▪ Come up with your own efficiency plan

Data validation request:

- Final document of the energy consumption analysis.
- Set a target in at least one of the areas of intervention listed in Danfoss Supplier Fact Pack (*see Energy efficiency slide)*

For more information go to WhyEE website

Green Lever 2 - Green Energy

Many ways to source Green Energy – **Power Purchase Agreement (PPA)** being highest impact

Energy Attribute Certificate (EACs)

What:
- Official documentation used to **prove** usage of **renewable power**.
- Compliant with the Greenhouse gas protocol and **Science-based Target initiative**.

How:
- When renewable power is generated –an EAC is issued.
- Companies can buy the certificate to claim ownership of the environmental benefits of renewable electricity.

Positive impact of environment: Medium

On-site Generation

What:
- Renewable power is **produced where the electricity is consumed**.

How:
- Most common are **solar panels on rooftops** or in open spaces.
- Requires a significant **investment** or entering a long-term lease.

Positive impact of environment: Very High

Offsite Generation (PPA[1])

What:
- Production of electricity from renewable energy sources at a location separate from where the electricity is consumed.

How:
- Requires entering a long-term **Power Purchase Agreement**(PPA) with a developer of a renewable power plant.

Positive impact of environment: Very High Most Effective

[1]. See Appendix 3 for more information on the Power Purchase Agreement (PPA)

Supplier Reduction Journey - Renewable energy

Supplier specific energy mix carbon intensity ($kgCO_2/KWh$).

Time-bounded renewable energy target.

Data validation request

- **Invoices** of **energy consumption** and/or certificates approved by **regulatory body**
- **Renewable energy certificate** (REC) (**Energy data** should **match** in the REC)
- **Green Power Purchase agreements** (PPA)

Target setting

- 25% renewable energy in 1 year, 50% in 3 years, 100% in 5 years.
- Or come up with your own target

No information on supplier specific energy mix carbon intensity.

No renewable energy targets.

Data point

Supplier specific energy mix split.

Target

1. Set targets 25% renewable energy in 1 year, 50% in 3 years, 100% in 5 years.
2. Or come up with your proposal

Data validation request

Report showing **energy source** for the **energy mix**.

Commitment for **target on renewable energy**.

Green Lever 3 - Green Recycled Material

Recyling is the way to reduce CO_2 associated with raw materials:
Then, what can be considered recycled material?

Type of Scrap	Definition	GHG Protocol	Guidance
Production	Scrap generated during production and recycled on-site	"Scrap generated during production stage starts when the product components enter the production site of the studied product and ends when the finished studied product leaves the production gate"	**Should not be** considered recycled content (It is part of production stage)
Pre-consumer	Scrap generated during the value chain between the supplier & end consumer	"Recycling occurs when a product or material exits the life cycle of the studied product to be reused or recycled, as a material input into another product's life cycle"	**Could be** considered recycled content ONLY IF: 1. It has passed from supplier to the final product assembler 2. It is not a return, repair or equivalent
Post-consumer	Scrap generated by consumers (end of life)	"The end-of-life stage begins when the used product is discarded by the consumer and ends when the product is returned to nature (e.g., incinerated) or allocated to another product's life cycle (e.g., recycled)	**Should be** considered recycled content (has completed full life cycle)

Product footprints can be certified against internationally recognised standards, such as PAS2050, GHG Protocol Product Standard or ISO14067.

Danfoss suggests following the GHGP standards as also aligned with SBTi

Supplier Reduction Journey - Green Recycled Materials

Data point: Post and pre– Consumer Recycled content for each product sold to Danfoss.

Target: specific post and pre-consumer recycled content targets

Data validation request

- Third party verified for **recycled content** acc. to **ISO 14021 or** other relevant standards.
- Recycled content shall not include production scrap

Target setting

- Improve **recycled content** based on **country averegaes**.

No data on recycled content

No targets on recycled content.

Data point

- Work to quantify pre and post consumer recycled content (*check out Appendix 5*)

Target

- Improve recycled content based on country averages (*check out Appendix 5*)

Data validation request

- **Plan** for **recycled content quantification** and **third-party verification**.
- Plan for **target setting**, based on data on **recycled content**.

Knowledge Sharing

Case Studies


ENGINEERING
TOMORROW
Danfoss
Energy Efficiency & Decarbonization
ESG
Environment / Social / Governance

CO_2-neutral in our operations by 2030

Scope 1

Combustion of fuels

Company cars

Leakage of cooling agents in factories

0.1%

Scope 2

Purchased electricity

Purchased heating

0.2%

Our 3 step approach will get us to CO_2 neutrality in scope 1 and 2 by 2030

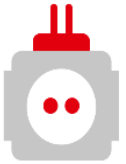
Step 1

Energy efficiency **reduce**

Step 2

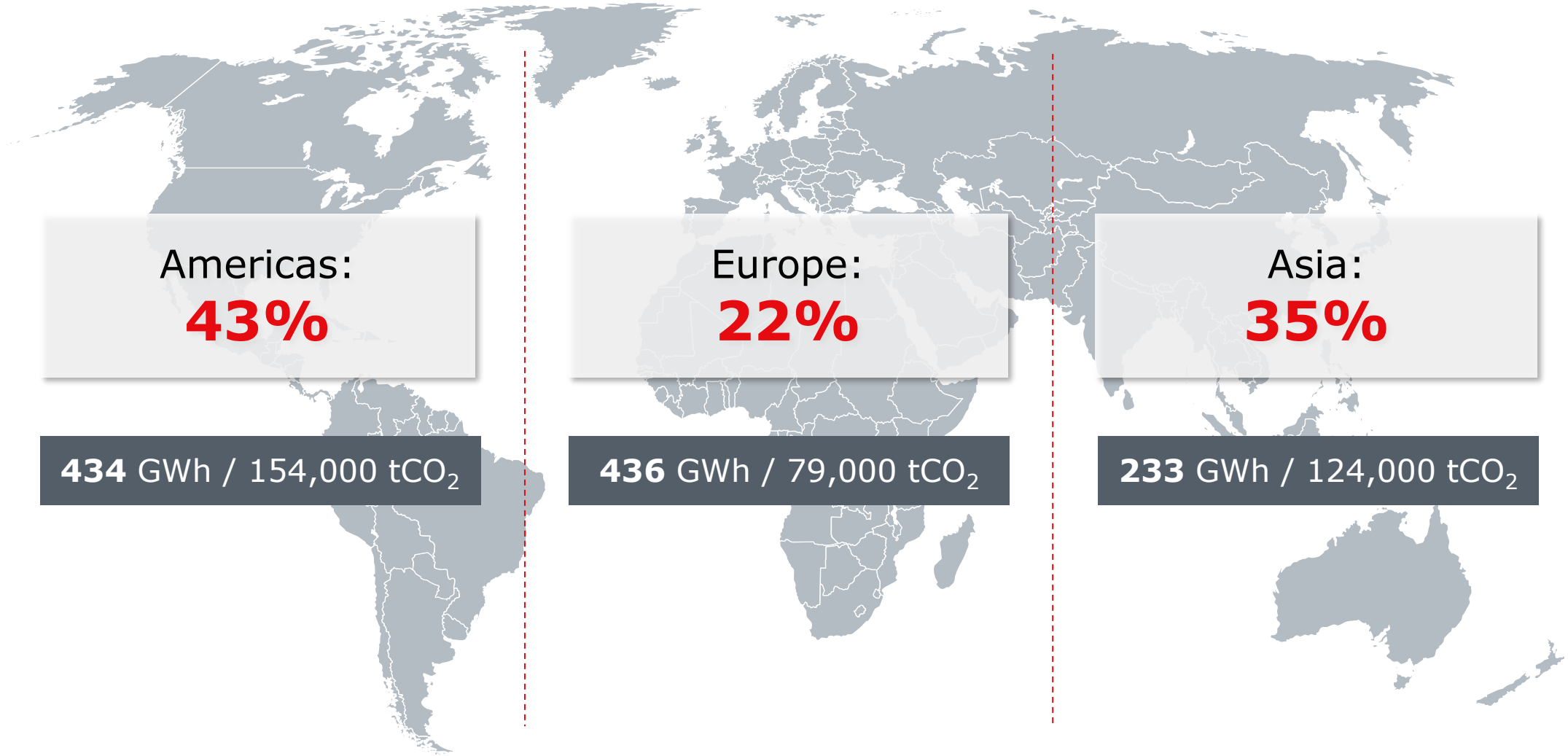
Energy recovery **re-use**

Step 3



Source renewable energy **re-source**

We have a **clear baseline and monthly tracking** of our scope 1 and 2 emissions from all Danfoss sites



Americas:
43%

434 GWh / 154,000 tCO_2

Europe:
22%

436 GWh / 79,000 tCO_2

Asia:
35%

233 GWh / 124,000 tCO_2

Nordborg campus reached **CO_2 neutrality in 2022**

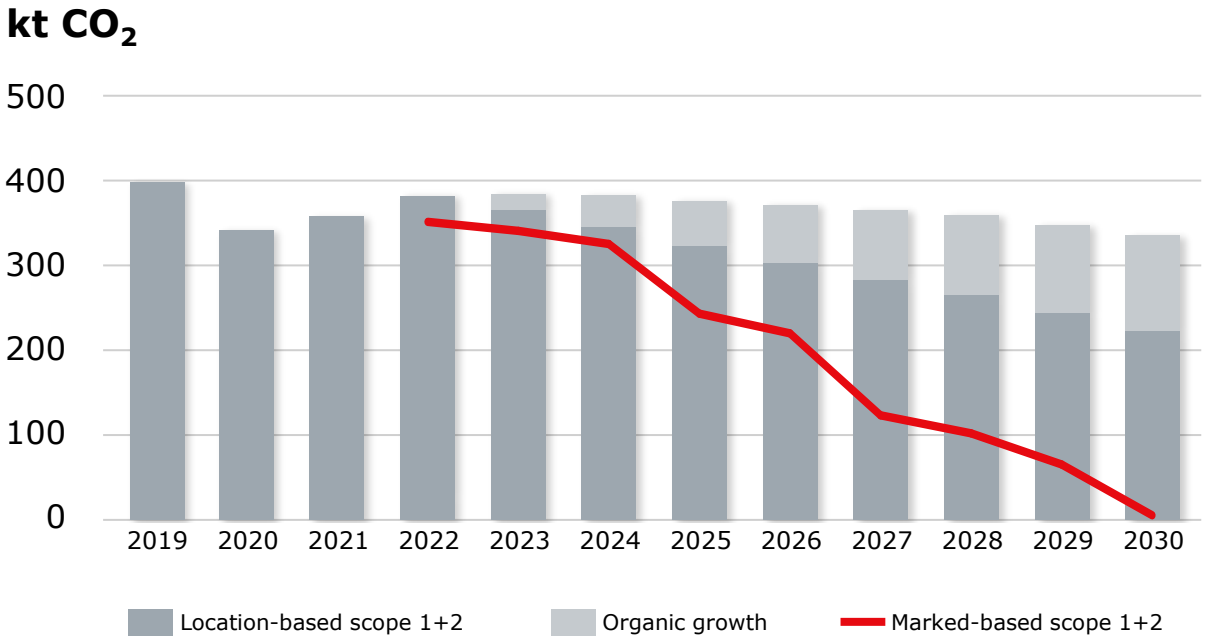
Heating savings: 2007-2022

1. Reduce	2. Re-use	3. Re-source
78%	**7%**	**15%**

Power savings: 2007-2022

1. Reduce		3. Re-source
50%		**50%**

We have a **clear plan to decarbonize scope 1 and 2 emissions** in all our operations **by 2030**



Effect of levers:

25% from energy efficiency

65% from PPA impact

10% from carbon offsets

Next steps:

- Regional and segment 2030 roadmaps completed. Alignment expected during first half of 2023
- Global Services takes the lead on engaging the organization on solidifying roadmaps, levers, and prioritization

Circularity

Also referred to as circular economy:
"A system that uses a systemic approach to maintain a circular flow of resources by regenerating, retaining, or adding to their value, while contributing to sustainable development."

Circularity

Targets:

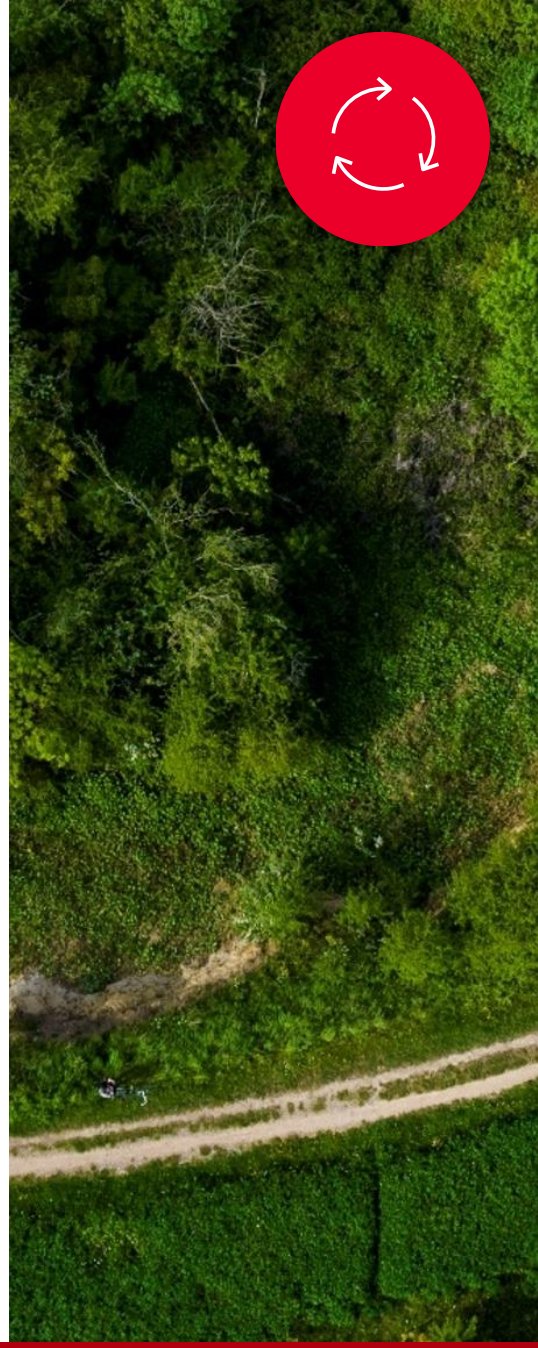
- Develop and implement circularity framework in all segments
- More than 80% of newly developed products sold covered by circularity approach in 2030

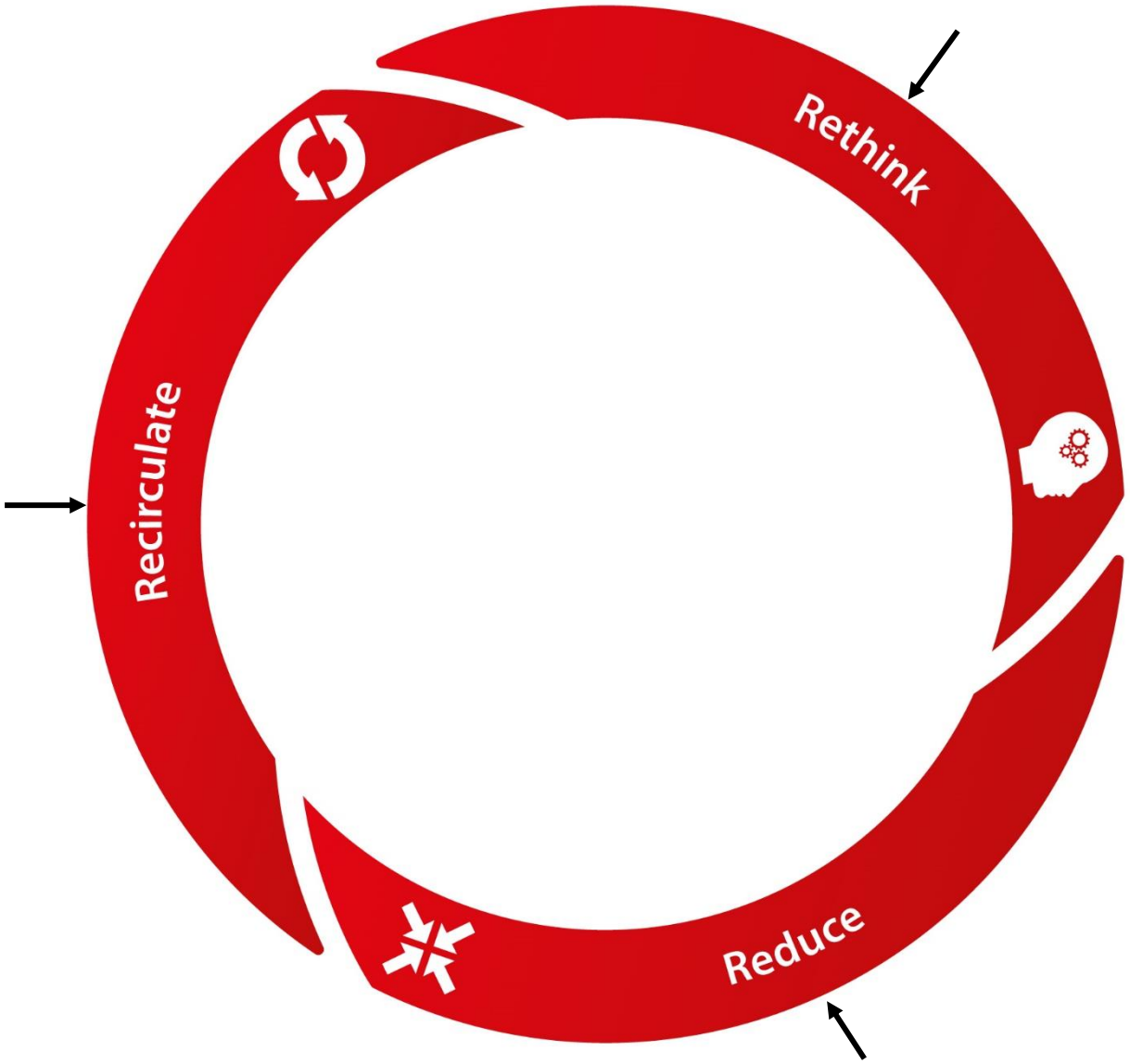
Key activities:

- Establish partnerships with strategic customers and suppliers on circularity, towards achieving our targets
- Develop design for recyclability and end-of–life
- Develop product development toolbox for circularity assessment
- Part of Ellen MacArthur Foundation & Circular Design Forum to enable partnerships and collaborations

How we work with **circular products and processes**

- Design towards **easy disassembly** in the end of life
- Optimize the use of **materials and select greener alternatives**
- Consider **recycled content and recyclability** of materials
- Invest in **new technologies**





Our approach to circularity is based on **three principles:**

Rethink:

is fundamental to changing the business model and intervening with the way the product is offered to the market. This can include changes to the design of the product e.g., a service is offered instead of a product. It is related to business models change and rethinking of the operating systems.

Reduce:

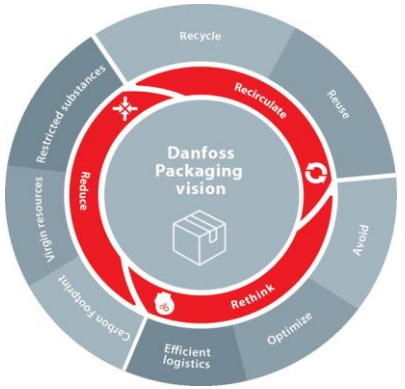
Includes strategies in the manufacturing stage of the product, the sourcing of raw materials, the energy efficiency of the product as well as the logistic and packaging operations, with the aim to reduce material and energy consumption or switch to greener alternatives.

Recirculate:

is divided into the recirculation of products (via e.g. reuse, upgrade or remanufacture) and parts (via e.g. recycling) recirculation; Recirculation ensures that products and materials are used as much as possible before reaching their final end-of-life.

Danfoss **packaging decarbonization** and circularity

Practical Examples of Rethink-Reduce-Recirculate Approach



Rethink

Avoid Single-use plastic

Reduce

Crush paper good replacement for honeycomb

Recirculate

Many opprotunities for reusable packaging in Danfoss factories

Appendices

Appendix 1: Science Based Target initiative (SBTi)

CDP DISCLOSURE INSIGHT ACTION

WWF

UN GLOBAL COMPACT

WORLD RESOURCES INSTITUTE

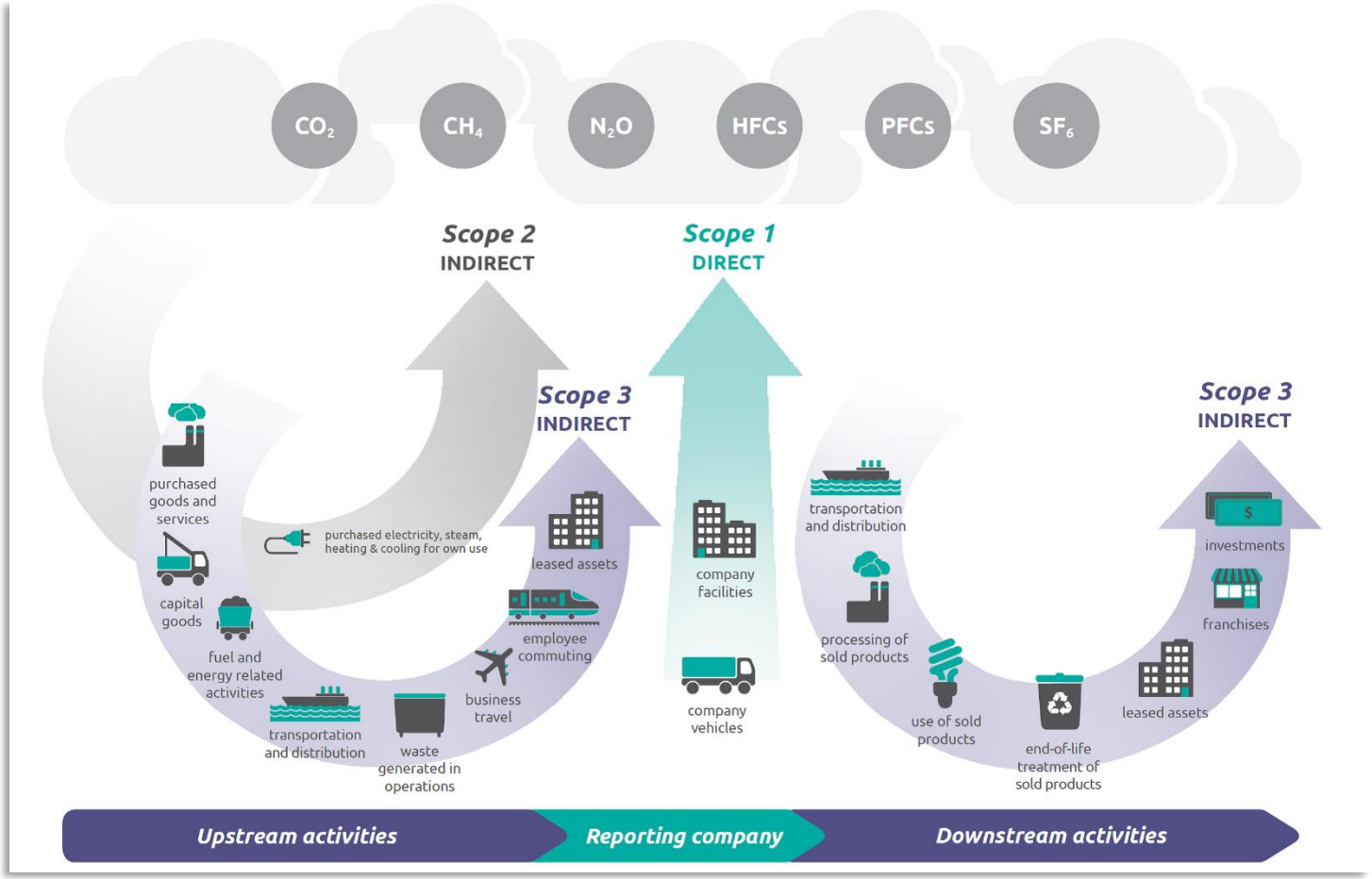
The SBTi is a joint initiave between the CDP, the UN Global Compact (UNGC), the World Resources Institute (WRI), and the WWF. The initiative does the following:

- Defines and promotes best practice in emissions reductions and net-zero targets in line with climate science.
- Develops sector guidance for setting science-based emissions reduction targets.
- Brings together a team of experts to provide companies with independent assessment and validation of targets
- Validates and tracks progress for science-based targets set by organisations

Visit SBTi website for more information

Appendix 2: Scope 3 Emissions

Scope 3 emissions are indirect emissions that occur in the value chain of the reporting organization, including both upstream and downstream activities. The GHG Protocol provides guidance on how to categorize and account for Scope 3 emissions. Here's how the GHG Protocol defines Scope 3 emissions:



3.1. Purchased goods and services

3.2. Capital goods

3.3. Fuel- and energy-related activities

3.4. Transportation and distribution

3.5. Waste generated in operations

3.6. Business travel

3.7. Employee commuting

3.8. Leased assets

3.9. Processing of sold products

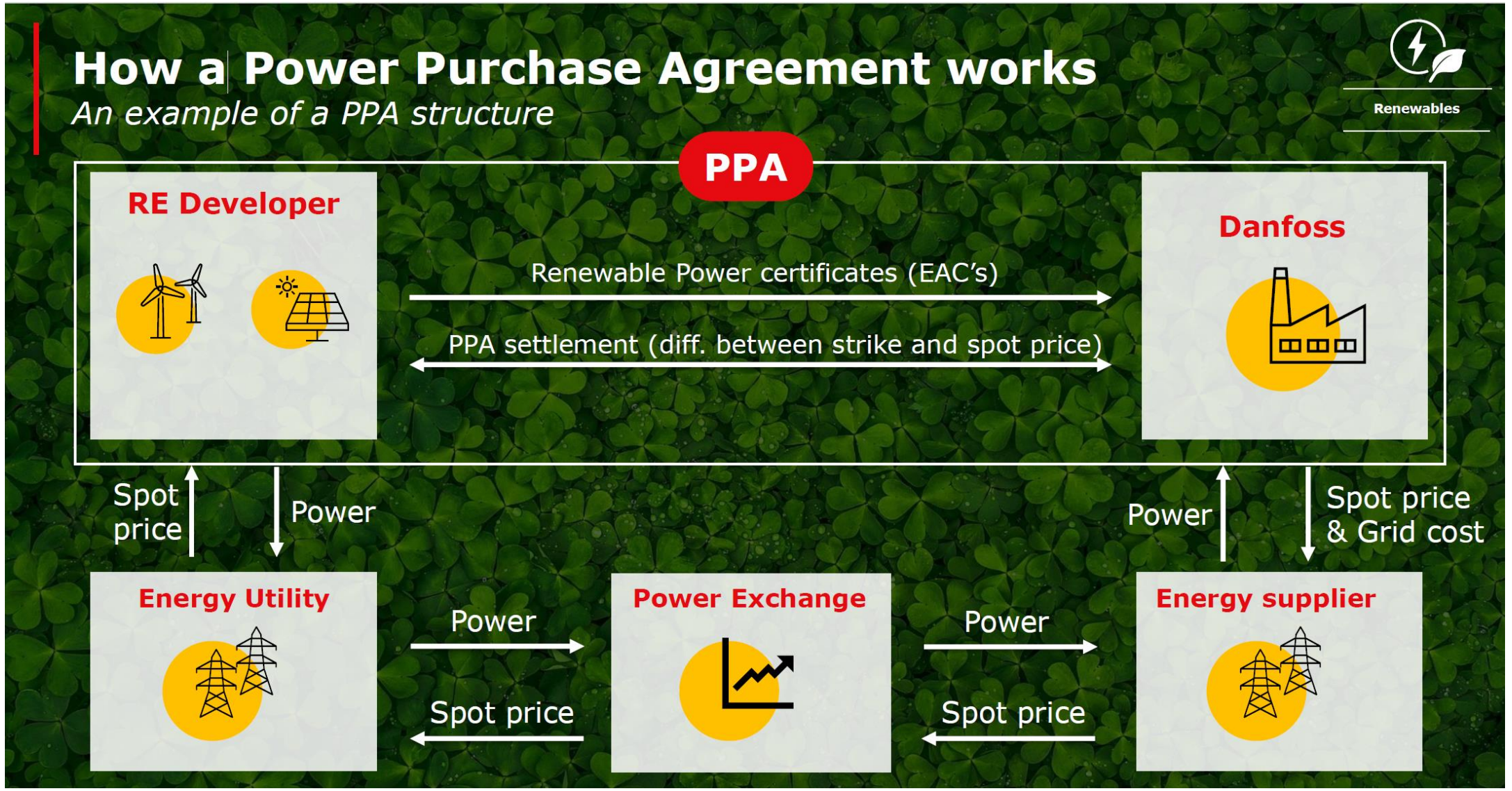
3.10. Use of sold products

3.11. End of life treatment of sold products

3.12. Franchises

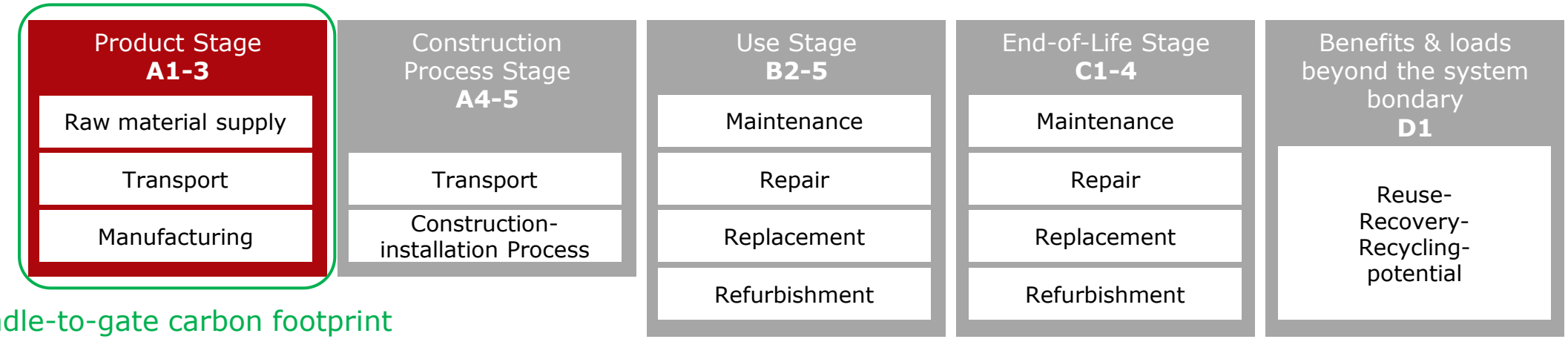
3.13. Investments

Appendix 3: What is a PPA



Appendix 4: Option 1 - Environmental Product Declaration (EPD)

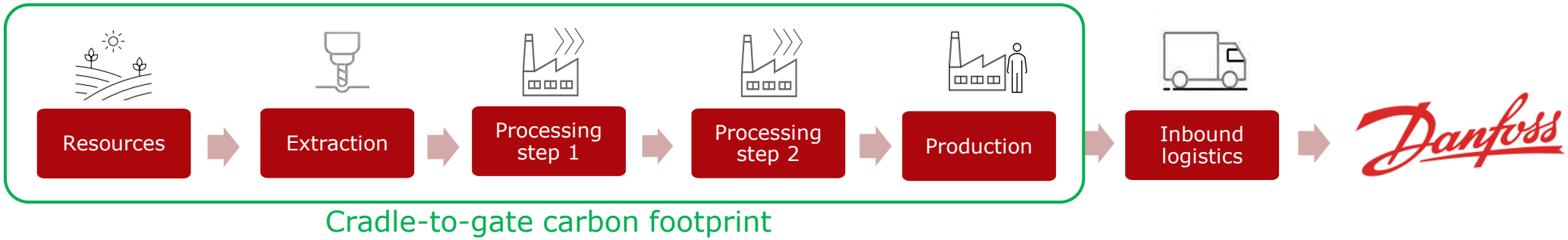
Definition	• A standardised document that details a product's environmental impact (see diagram below). • Produced on the basis of a LCA report but contains less information (i.e. results instead of calculations). • Must be verified by an independent expert and normally has a validity of 5 years.
Minimum useful information	• Exclude any emission reductions achieved through carbon offsets/credits; greenhouse gas removals (including biogenic removals); or accounting of avoided emissions
Further supporting information	• Breakdown of product stage emissions, providing separate calculation of A1, A2 and A3. • Cradle-to-gate product carbon footprint (see slide above) that the EPD is based on. • Emission factors used for the calcualtion of each stage, as well as methodology, calculations, and key assumptions



Cradle-to-gate carbon footprint

Appendix 4: Option 2 - Product Carbon Footprint

Definition	• Measure of the total greenhouse gas emissions generated by a product over its life cycle stages. (see diagram below)
Minimum useful information	• Specifically report cradle-to-gate emissions, stating what phases have been included or excluded within the cradle-to-gate footprint boundary. • Adhere to relevant standards, requirements and methodologies[1]. • Exclude any emission reductions achieved through carbon offsets/credits; greenhouse. gas removals (including biogenic removals); or accounting of avoided emissions.
Further supporting information	• Provide a breakdown of each phase of cradle-to-gate emissions. (see diagram below) • Emission factors used for the calculation of each stage, methodology, calculations, and key assumptions. • Ideally the product carbon footprint should be independently verified.



[1]. Product carbon footprint standards include: GHG Protocol Product Standard; PAS 2050; ISO 14067:2018. If your product carbon footprint has been done as part of an LCA, it should adhere to the following standards including: ISO 14040:2006 or ISO14044:2006

Appendix 4: Option 3 - Organizational Scope 1,2 and 3 allocated to Danfoss

Definition	• Estimated proportion of supplier Scope 1, 2 and 3 emissions allocated to Danfoss (see diagram below).
Minimum useful information	• Calculated output based on an allocation methodology (to be provided to Danfoss); OR Scope 1, 2 and 3 data with allocation factor (%) to be applied. • Scope 1, 2 and 3 footprint calculations must adhere to GHG Protocol standards[1]. • Identification of what Scope 3 emission categories are included within the footprint[2]. • Exclude any emission reductions achieved through carbon offsets/credits; greenhouse gas removals (including biogenic removals); or accounting of avoided emissions.
Further supporting information	• Organisational Scope 1, 2 and 3 footprints should be externally verified. • The organisational footprints used for the basis of allocation should relate as closely as possible to the areas of the supplier‘s business that manufacture and sell to Danfoss – e.g. Specific business unit or, ideally, factory site-level.

Organisational footprint may be at the toal company level, or site level. The more specific/relevant to products sold to Danfoss the better

Supplier emissions related to products sold to Danfoss (equivalent to cradle-to-gate). Calculation based on proportion of sales to Danfoss vs. Total sales within the period.

[1]. GHG Protocol Corporate Standard for Scope 1&2 and GHG Protocol Scope 3 Standard
[2]. Refer to appendix 2 for full list of Scope3 categories.

Appendix 5: Recycled content country averages

	GLO	EU	US	ASIA	Sources
Aluminium	32%	36%	57%	-	1 International aluminium 2 European Aluminium 3 International aluminium
Brass	35%	-	-	-	1 calculated from brass composition and then copper and zinc values RC
Copper	32.5%	44%	34%		1 ICSG 2 Circular economy eu 3 Copper org
Cast iron	35.5%	58%	70%	22%	
Stainless steel	48%	85%	83%	31%	1 world stainless steel 2 world stainless steel 3 world stainless steel 4 world stainless steel
Steel (low alloys)	35.5%	58%	70%	22%	1 bdsv 2 bir 3 bir 4 bir
Zinc	39%	-	-	-	1 zinc org
Magnesium	-	-	-	-	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