A close-up, black and white photograph of a roller chain is positioned on the left side of the slide. The chain is curved, showing several rollers and the connecting links. The lighting creates strong highlights and shadows, emphasizing the metallic texture and the circular shape of the rollers.

# Together, we re-imagine rotation for a better tomorrow

@WISE Dialogue

Annika Ölme, SKF Group

CTO & Senior Vice President Technology Development

*2024-03-15*



## About SKF & Sustainability

SKF in short  
Sustainability @ SKF  
Why sustainable materials



## Sustainable materials

Green Steel  
Green Lubrication

AKTIEBOLAGET SVENSKA  
KULLÄGERFABRIKEN



SKF Gothenburg, Sweden, 1916

42,641

employees

40

customer industries

77

manufacturing units

129

countries

15

technology centres

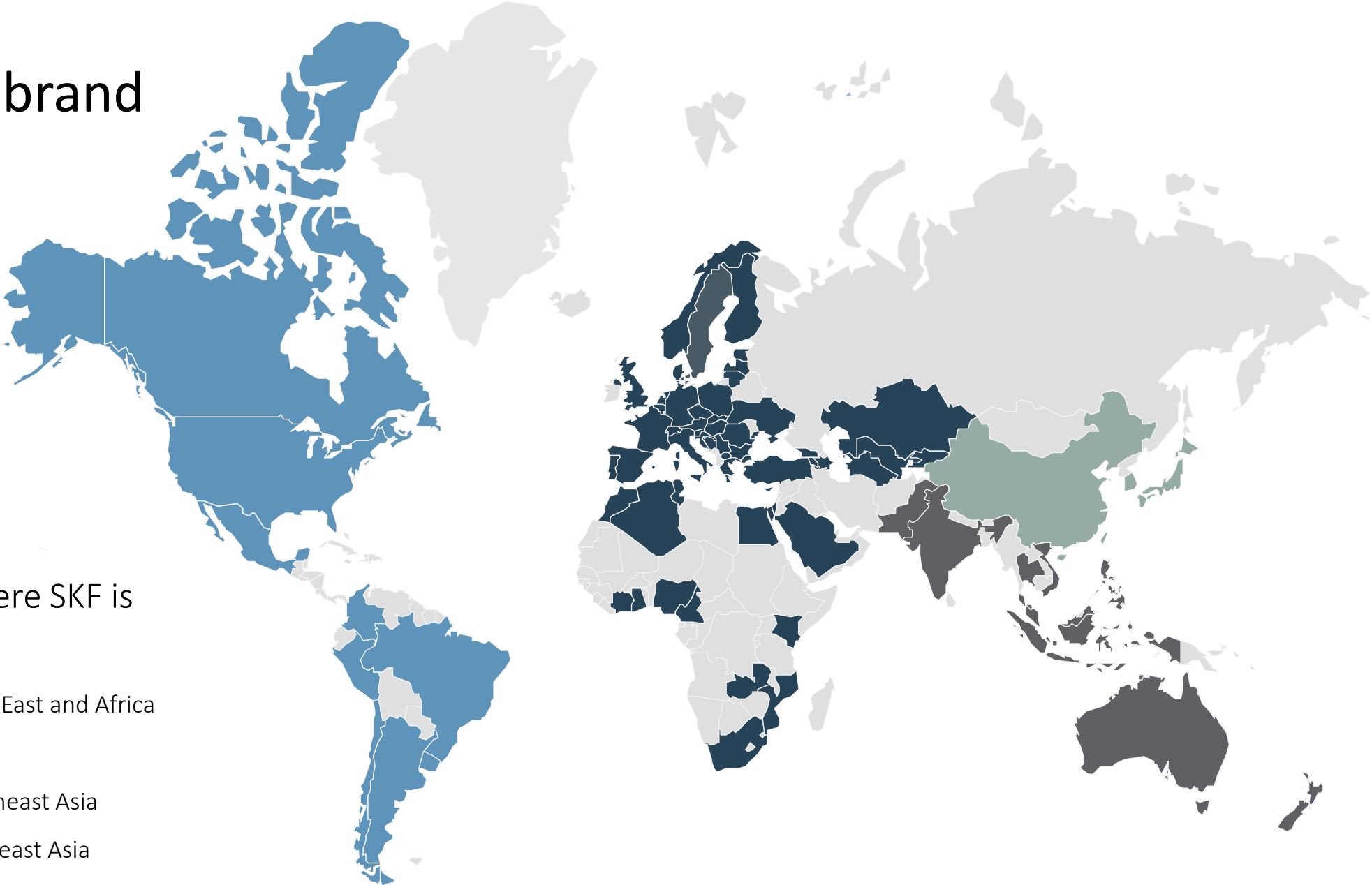
>17,000

distributors

# A global brand

Countries where SKF is present

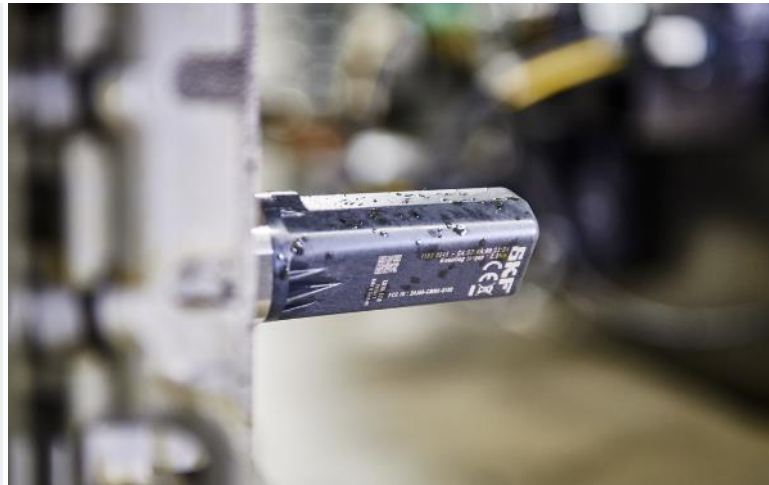
- Europe, Middle East and Africa
- The Americas
- China and Northeast Asia
- India and Southeast Asia



# Our combined offering



- Bearings and units
- Seals
- Lubrication
- Condition monitoring
- Services



# SKF's science-based emissions reduction targets

- Reduce absolute scope 1 and 2 Green House Gas emissions 95%, and absolute scope 3 emissions 31%, **by 2030** from a 2019 base year
- Reach net-zero Green House Gas emissions across the value chain **by 2050**



DRIVING AMBITIOUS CORPORATE CLIMATE ACTION



The SBTi has verified SKF's net-zero target by 2050, validating both SKF's near and long-term science-based emissions reduction targets. SKF's targets comply with SBTi criteria and are in line with both climate science and the goals of the Paris Agreement





NyTeknik - First with news about technology and IT.

15,655 followers

2mo •

Ny artikel i vår serie CTO-intervjun! [Annika Ölme](#) är CTO på [SKF Group](#), och driver på för att företaget ska bli koldioxidneutralt. Men även arbetet för fler kvinnor i teknikbranschen. "Jag är ett undantag som k ...see more

[See translation](#)



SKF:s teknikchef: "Mycket teknikutveckling krävs för att nå till Net Zero"

CLIMATE WEEK NYC

[About](#)

CLIMATE GROUP  
Speakers Climate Week  
NYC 2023



Annika Ölme, Chief Technology Officer and Senior Vice President, Technology Development, SKF





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# Technology Strategy | Green materials are a key part of our future success and our research & development efforts

Material

**(near Green) Steel**, Polymers, Coatings

Product design

How to best design our products

Manufacturing

Manufacturing technologies, additive manufacturing, remanufacturing

Modelling &  
Predictability

Modelling and predicting performance, Tribology,  
**(near Green) Lubrication**

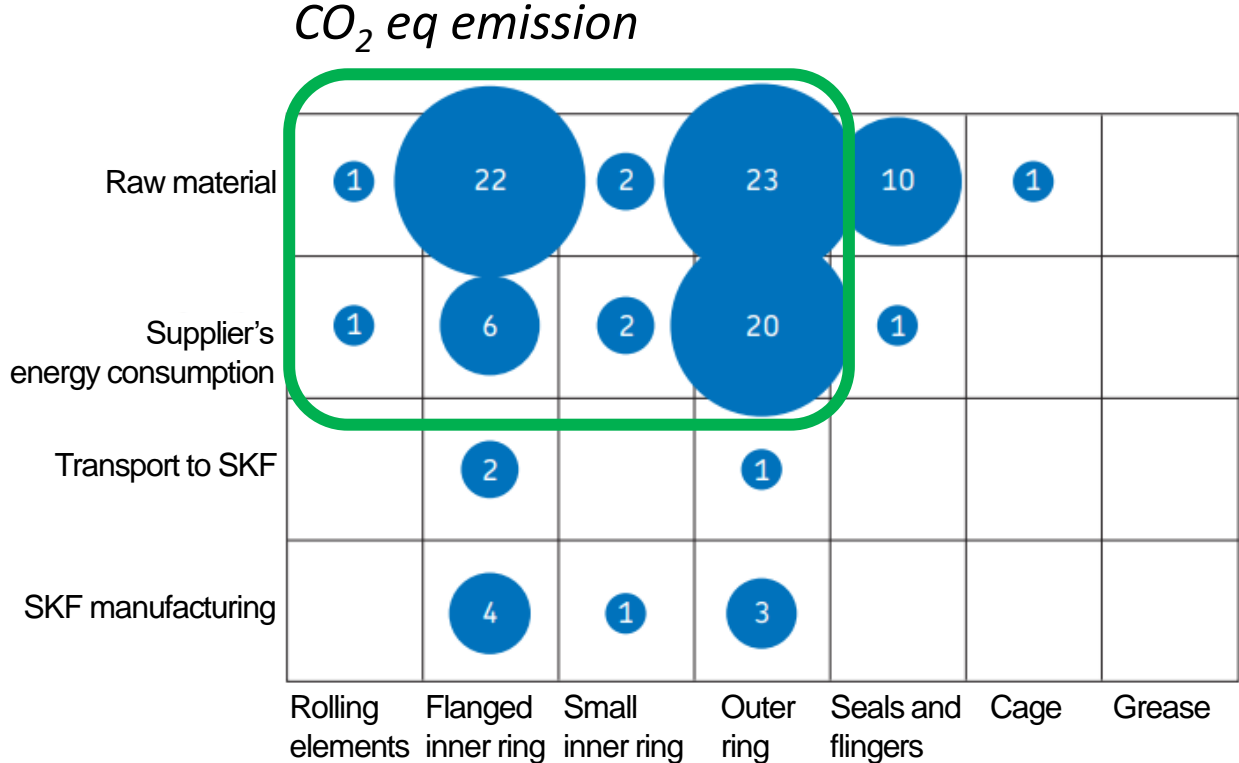
Software &  
digital insights

AI, Digital twin, Cybersecurity, Software, IoT

## Green steel



# Why focus on low carbon Steel? | >60% of total CO<sub>2</sub> emission from a bearing comes from the steel supply upstream scope 3



Example of wheel bearing

The carbon footprint of an SKF wheel bearing (cradle to customer gate) for different bearing components.  
 The numbers in the bubbles is the relatively CO<sub>2</sub> equivalent emission in percentage.  
 Source SKF

# Why focus on low carbon Steel? | Steel production responsible for 8% of yearly world CO<sub>2</sub> emission

- Increasing demands from policy makers and **customers**
- Carbon Border Adjustment Mechanism (CBAM) and Free allocation of EU ETS and historical surplus or deficit of ETS will heavily influence price on steel
  - Reporting started.
  - CBAM costs will be phased in simultaneously with free ETC is phased out.

=> **Economically beneficial** to buy low CO<sub>2</sub> emission steel in near future

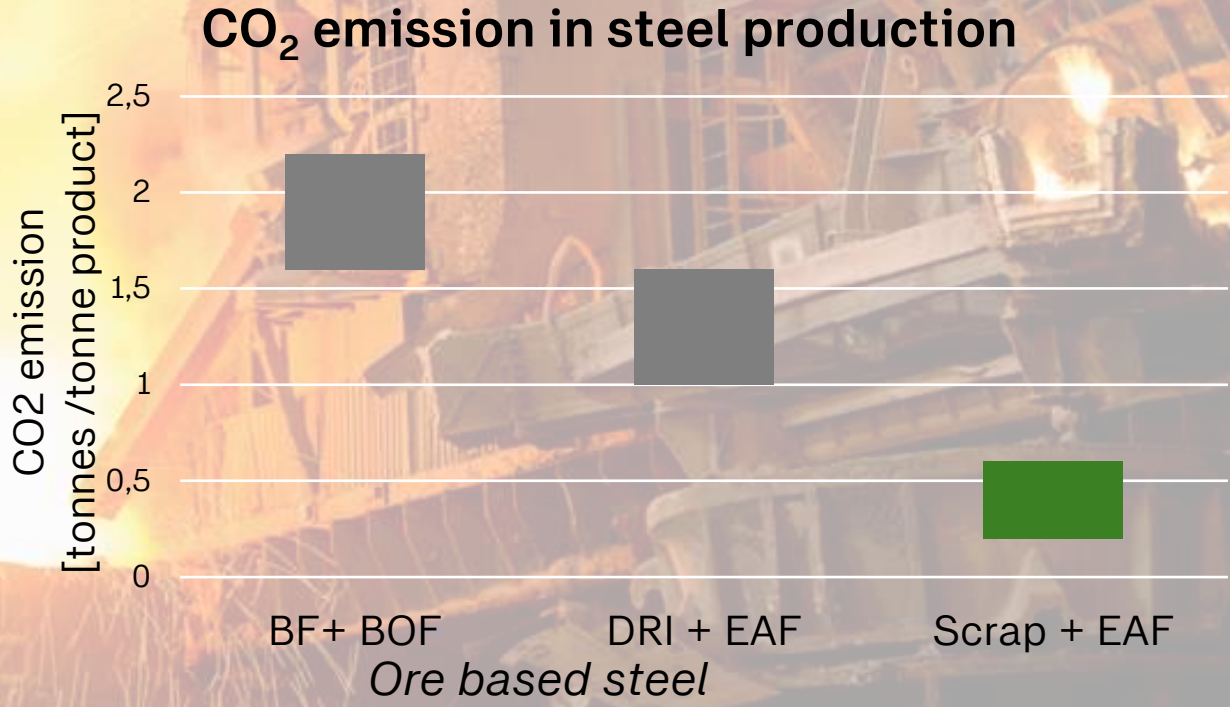


Ref: <https://tradingeconomics.com/commodity/carbon>

Nov 28, 2023

# CO<sub>2</sub> emission in steel making

- Raw material and detailed process determine the CO<sub>2</sub> emission in the steel making process.
- Scrap availability not enough and only sourcing scrap-based steel would affect price and thereby our competitiveness.
- Decarbonizing global steel production will require the investment of trillions of euros and take several decades



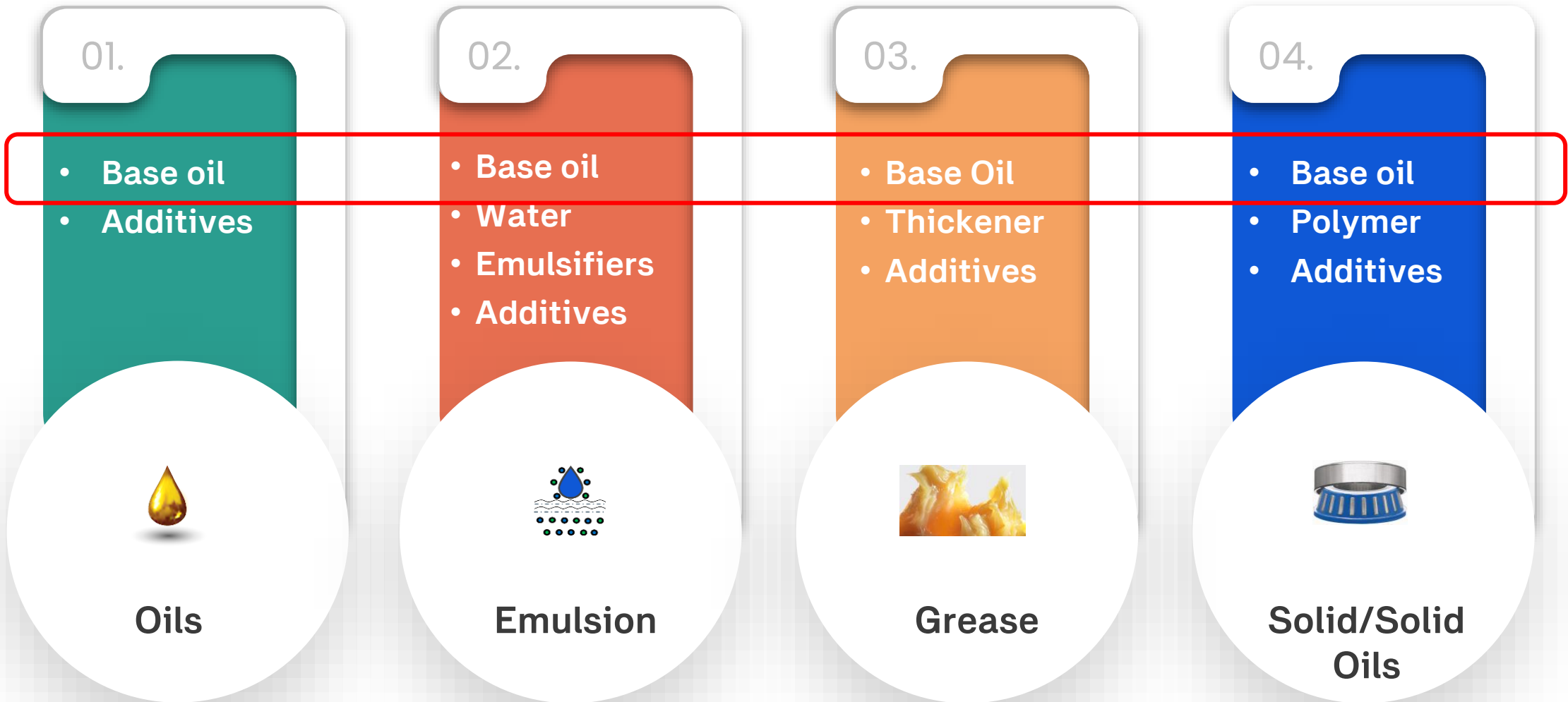


# Green lubrication





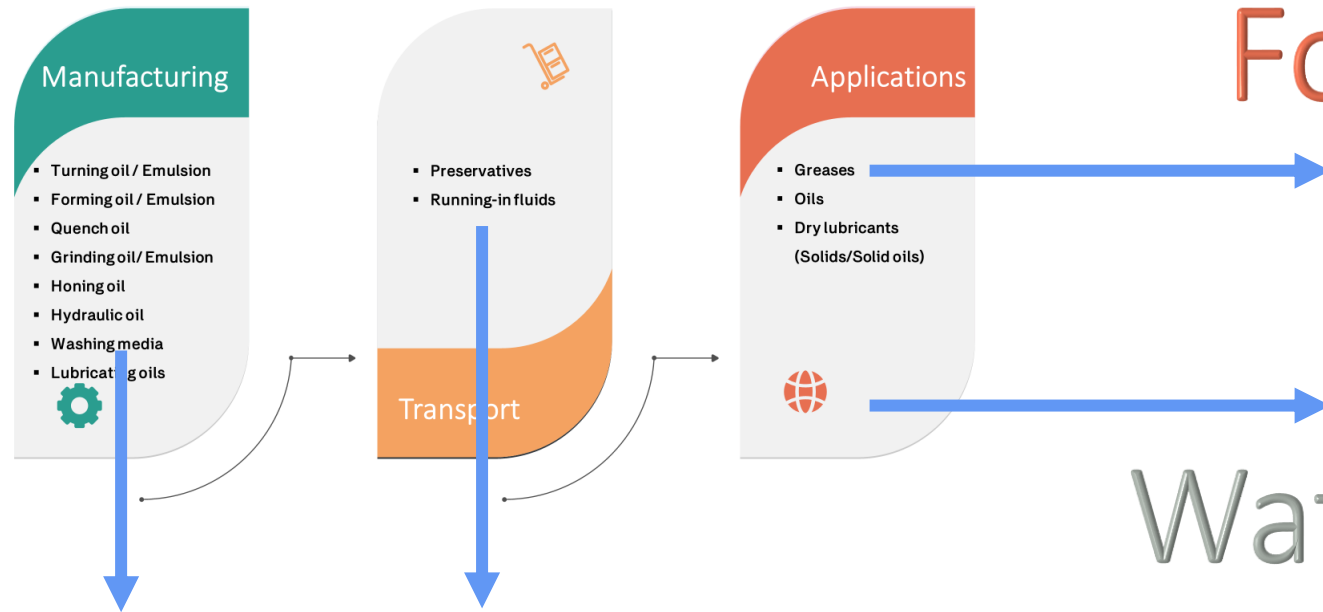
# Green lubrication | Components of Lubricants – base oil dominates on impact



Base oil constitutes 80-95% of the total lubricant composition

# Green lubrication | Fossil free grease is one of our R&D initiatives

## Lubricants for Bearings\*



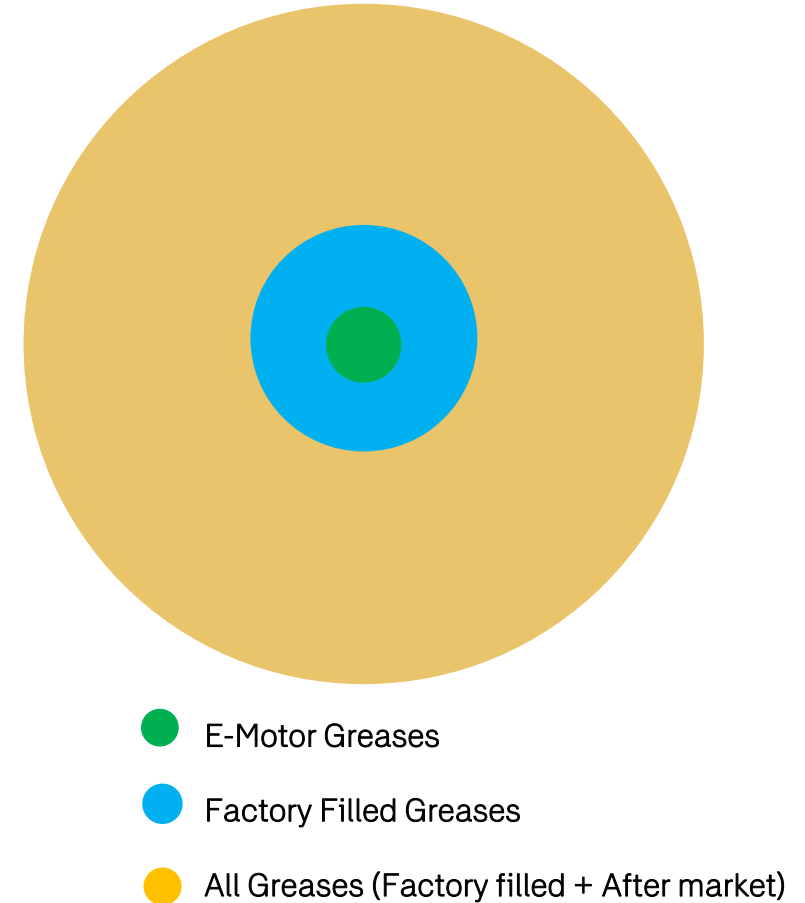
Fossil Free Grease

Water Like Lubricants


Green Preservative & Washing Media

# Green lubrication | e-motor bearing grease is 25% of our volume and a perfect place to start for impact

- Many e-Motors manufacturers requests bearing manufacturers to achieve the CO<sub>2</sub> target
- It is important to achieve the decarbonization for lubricants to reach our decarbonization goals for 2030
- The two current greases for e-Motor application constitute ~25% (400 tons) of SKF factory-filled greases.



# Green lubrication | Fossil-free e-motor bearing grease program drives for 90% fossil-free bearing grease

**Problem Statement** 

- E-Motor manufacturers to improve **efficiency and sustainability**
- **Lower friction** for better energy consumption
- **No fossil free solutions** available today
- **Cost** to manage **carbon footprint** growing

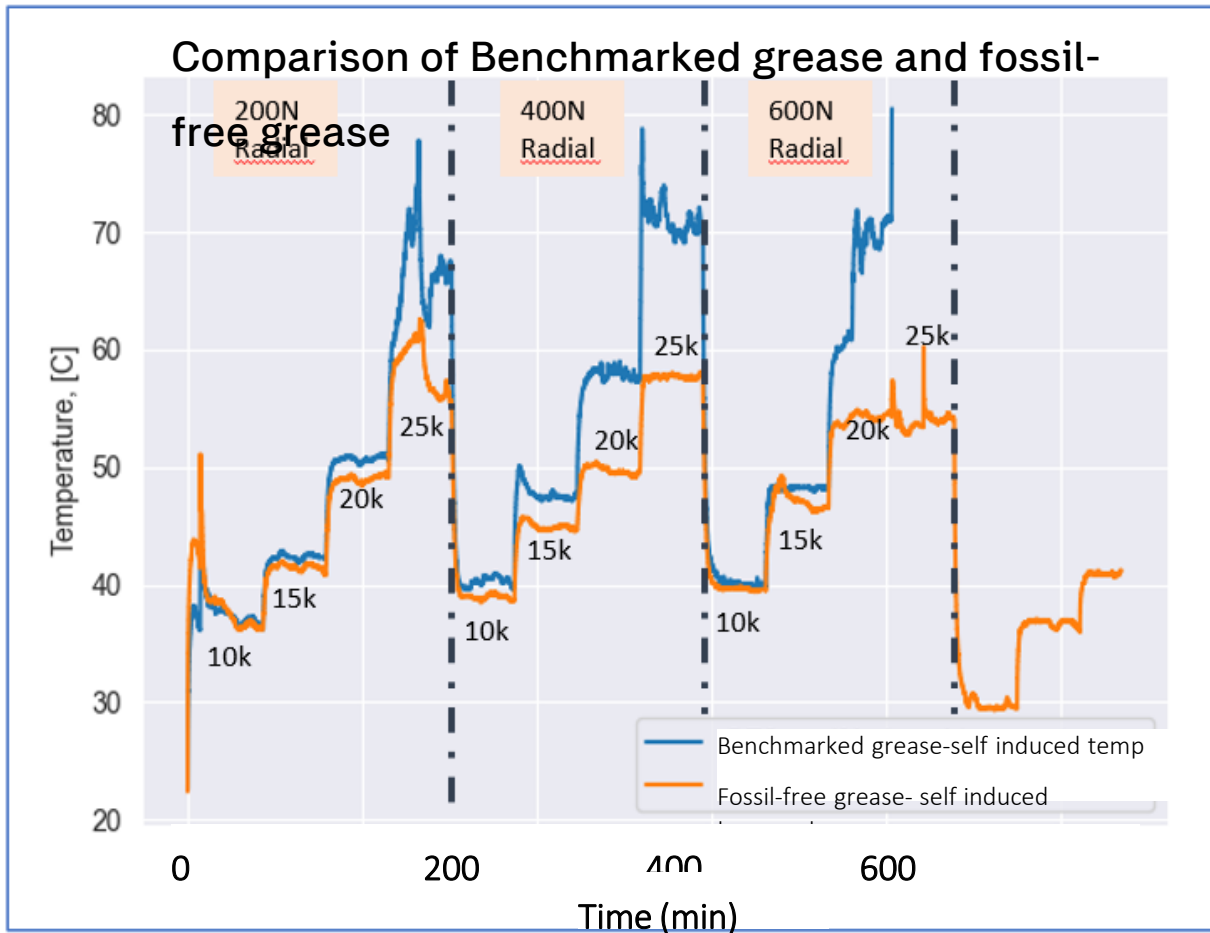
**Objectives** 

- **Decarbonization** of e-motor bearing lubricants
- **Fossil-free** solution
- Improved **recyclability**
- **Friction** reduction

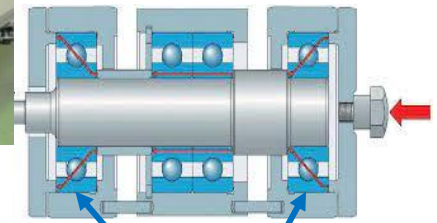
**Deliverables** 

- **Fossil free (>90%)** e-motor bearing grease
- Technology for **grease recycling**
- **Low friction** to current grease in e-motor bearings
- **1M fossil free greased bearings** by 2030

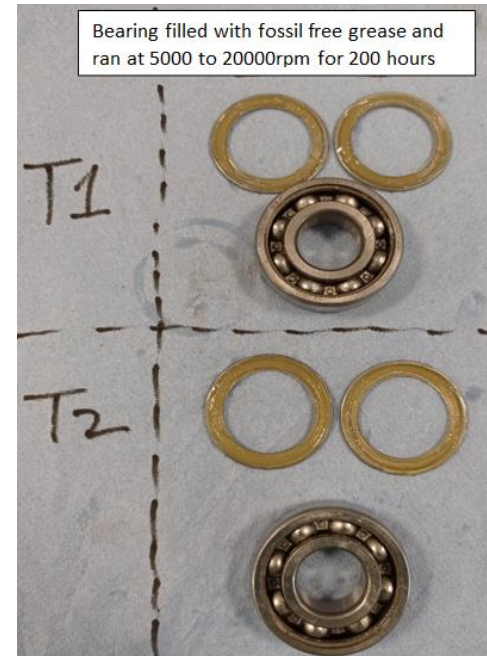
# Green lubrication | Fossil-free grease in bearing tests shows evidence of a as good or better performance



Bearing Test Rig



Test Bearings



Fossil-free greased bearings after rig tests

# Green lubrication | Fossil-free grease shows great promise but needs to scale from R&D to industrial scale

- Nearly 90% of the formulation is fossil-free
- Demonstrated the synthesis of the Thickener
- Demonstrated the formation of grease
- Demonstrated ability to lubricate a bearing
- Preliminary experiments demonstrate an improved bearing performance to the bench-marked commercial grease





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