

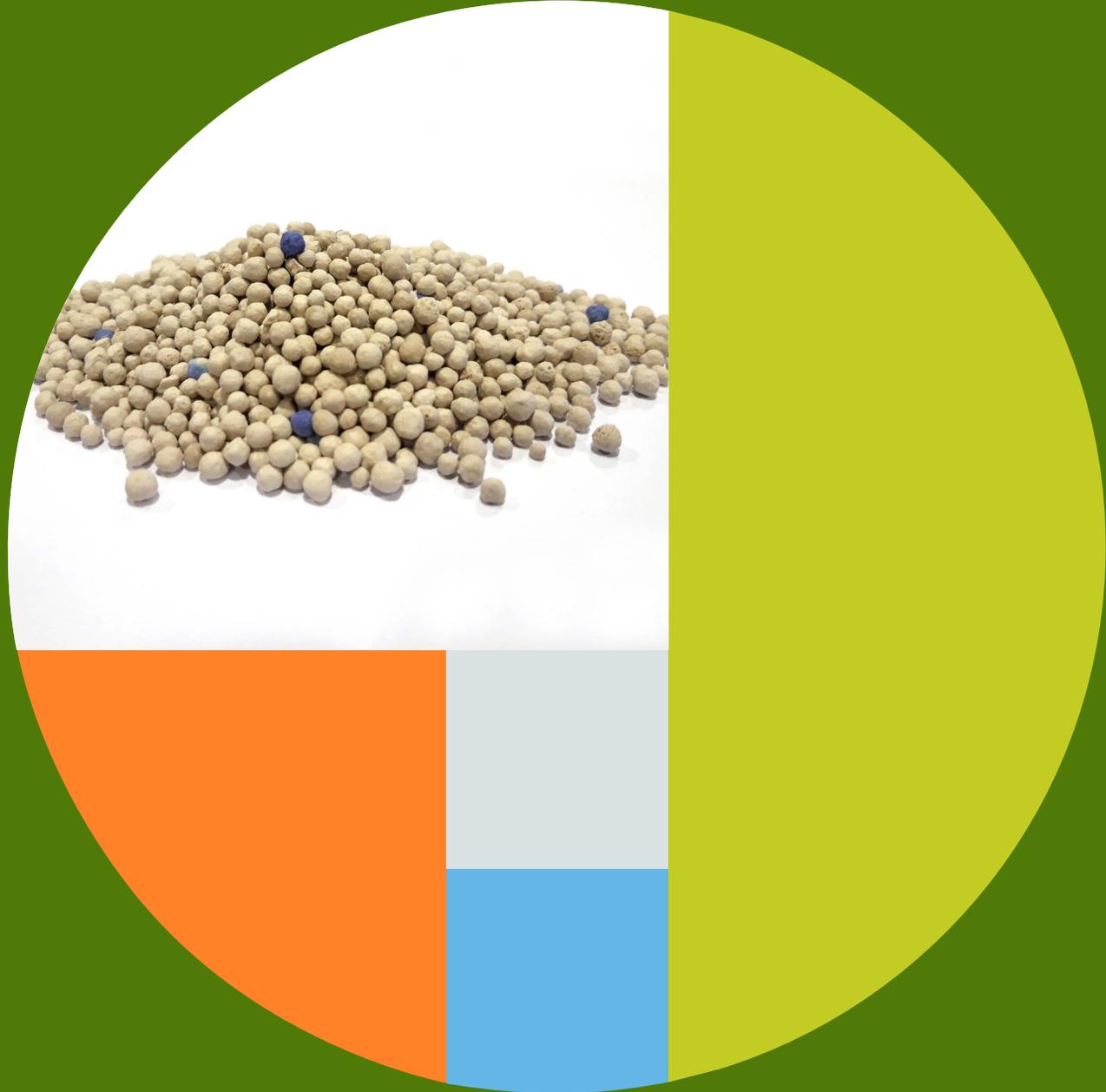


Knowledge grows

# Yara Climate Choice sänker klimatavtrycket i livsmedelsindustrin

Kvävestyrningskonferensen 2026

Anders Anderson





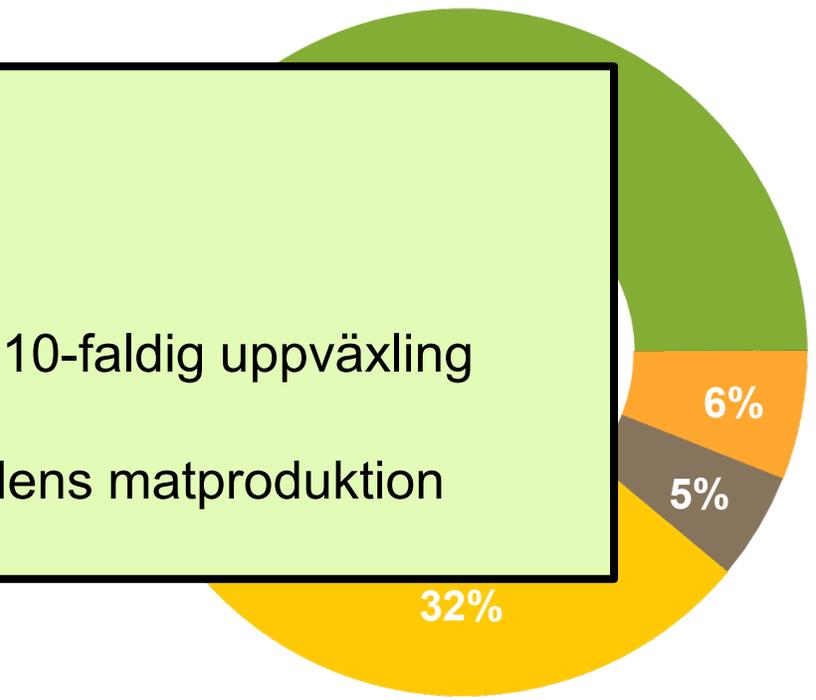
# Jordbruk står för 20% av världens antropogena växthusgasutsläpp.

11% av de 20% hänger ihop med mineralgödsel

**VIKTIGT!!**

- Jordbruk = nettobindning av kol
- 1 enhet insatt energi eller CO<sub>2</sub> ger en 10-faldig uppväxling
- Mineralgödsel svarar för 50% av världens matproduktion

Other

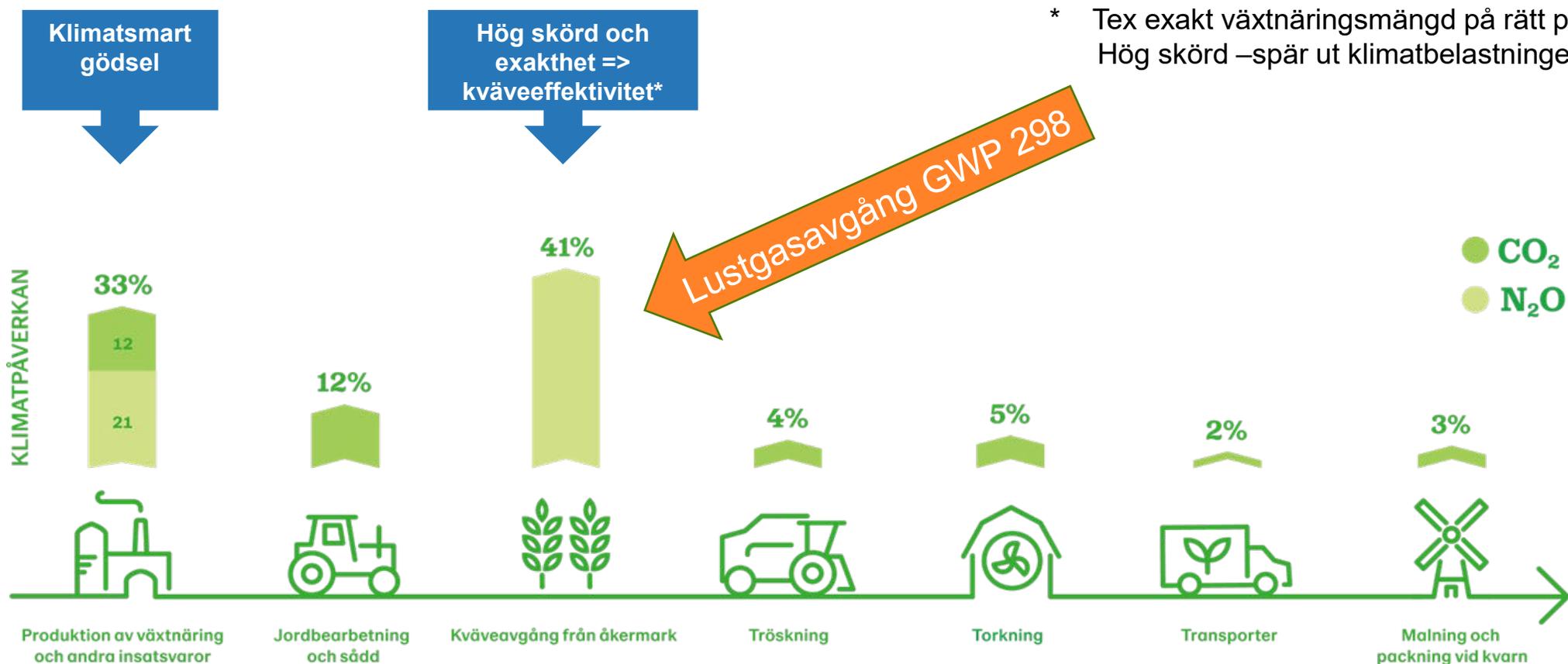


**Totalt: 53.6 Miljarder ton CO2-eq**

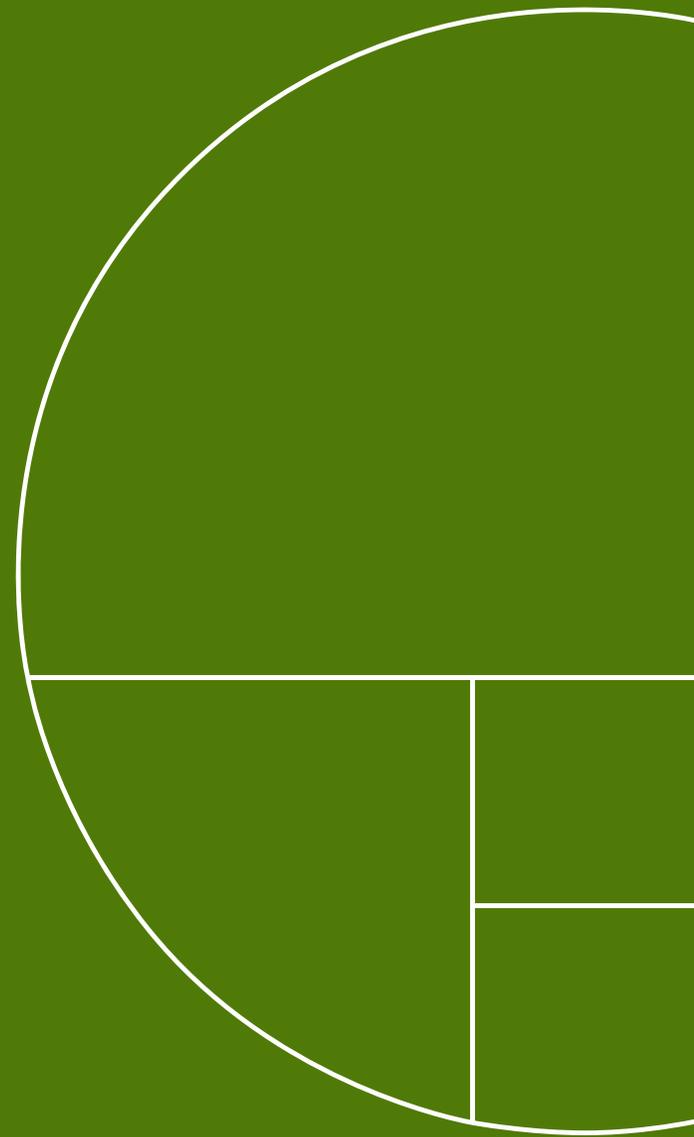
- Mineral fertilizer production
- Mineral fertilizer use
- Livestock & manure
- Paddy rice
- Residues & org. soils
- Land use



# Klimatsmart gödsel, kunskap och verktyg kan reducera CO<sub>2</sub>-avtrycket på livsmedlen (scope 3)



**En kraftfull och enkel lösning:**





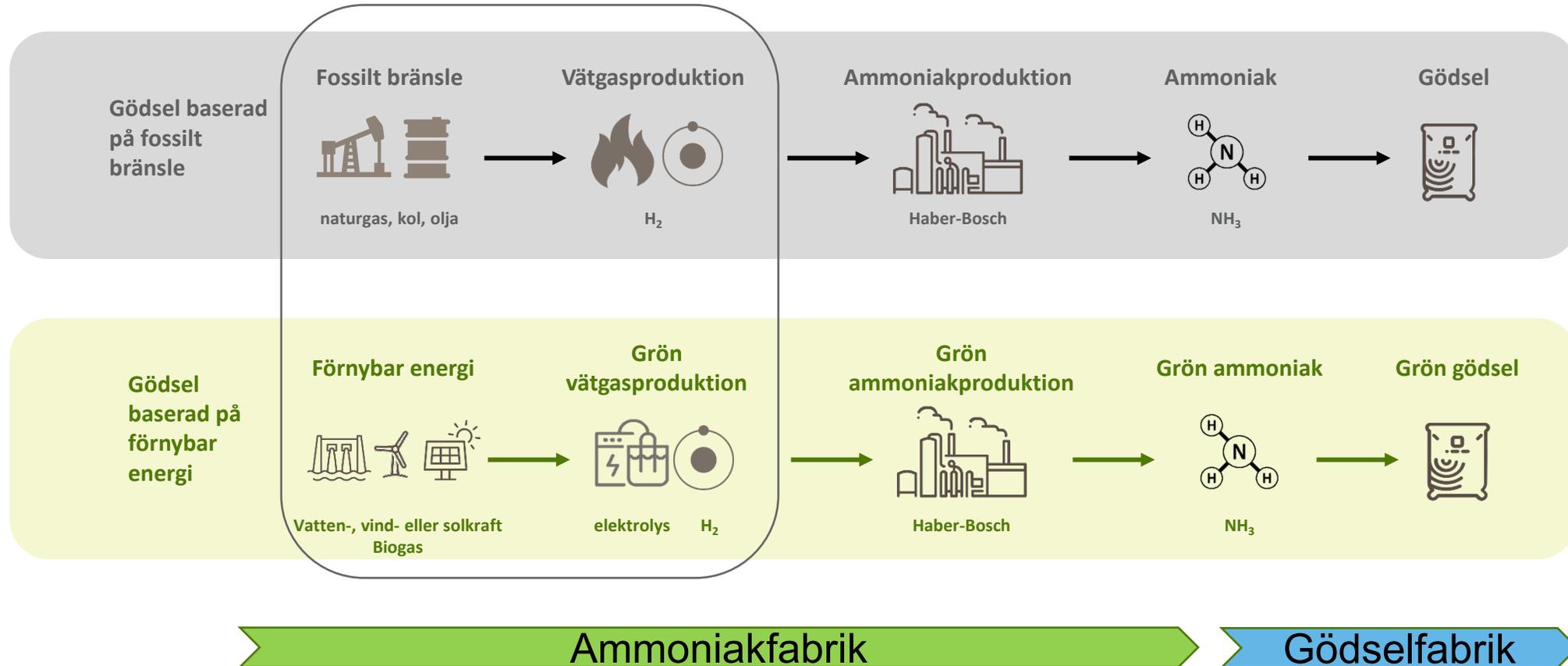
Yara gödsel har redan  
**50-60% lägre** klimatavtryck  
jämfört med icke-Europeisk



Produktion med förnyelsebar energi **sänker** klimatavtrycket med ytterligare **75-90%**.

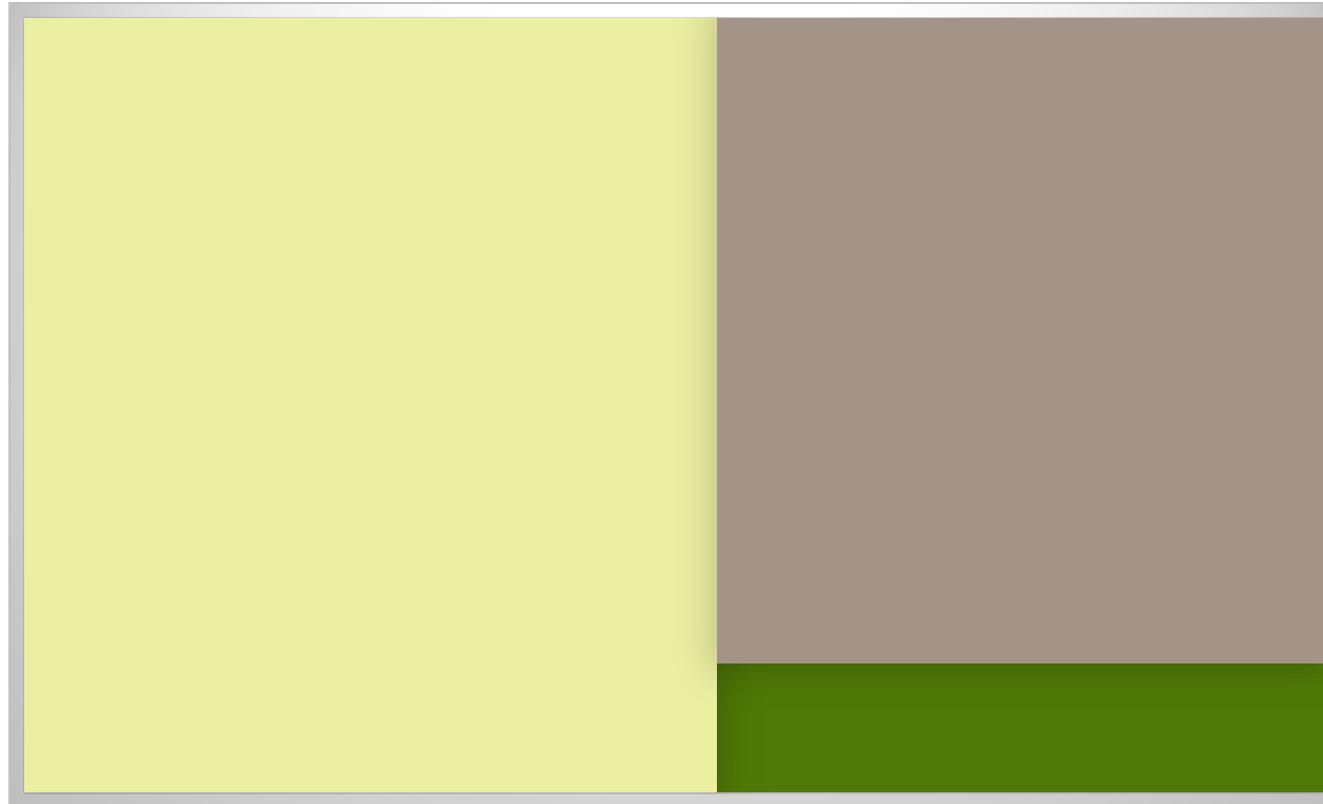
# ”Fossilfri” gödsel i praktiken - , Yara Climate Choice™

75-90% CO<sub>2</sub><sub>eq</sub>-reduktion från nuvarande spetsteknik ”BAT”



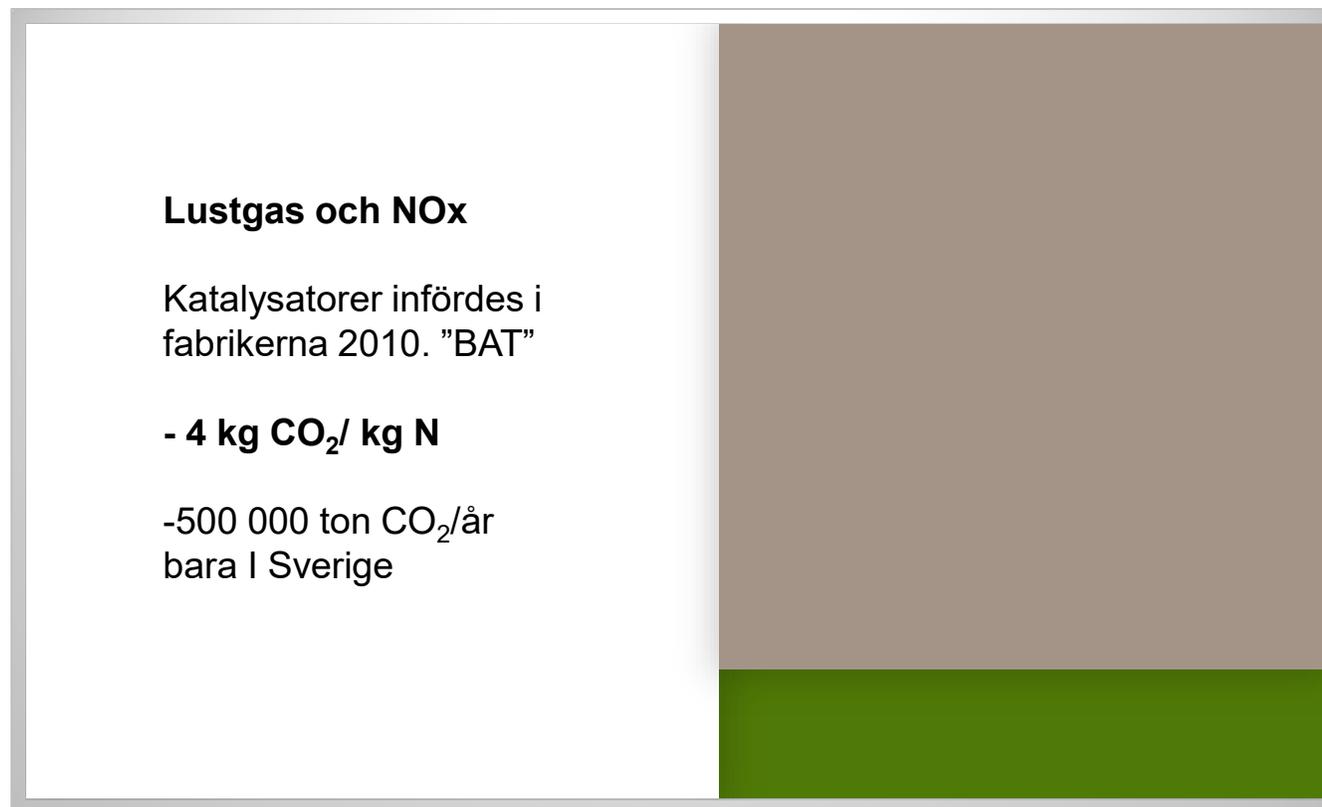
# Mineralgödseisns klimatpåverkan har minskat

Innan 2010: 7,7 kg CO<sub>2</sub>/ kg N



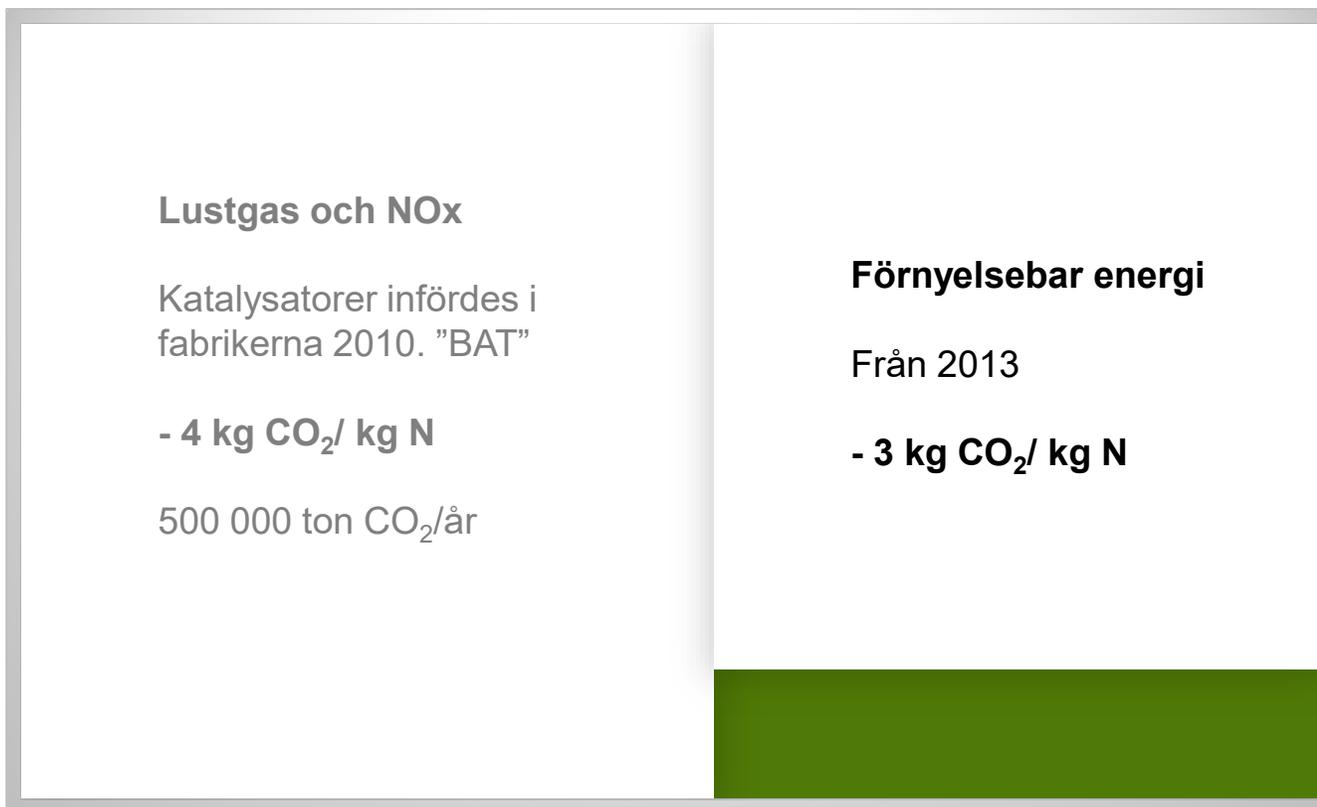
# Mineralgödseles klimatpåverkan har minskat

Innan 2010: 7,7 kg CO<sub>2</sub>/ kg N



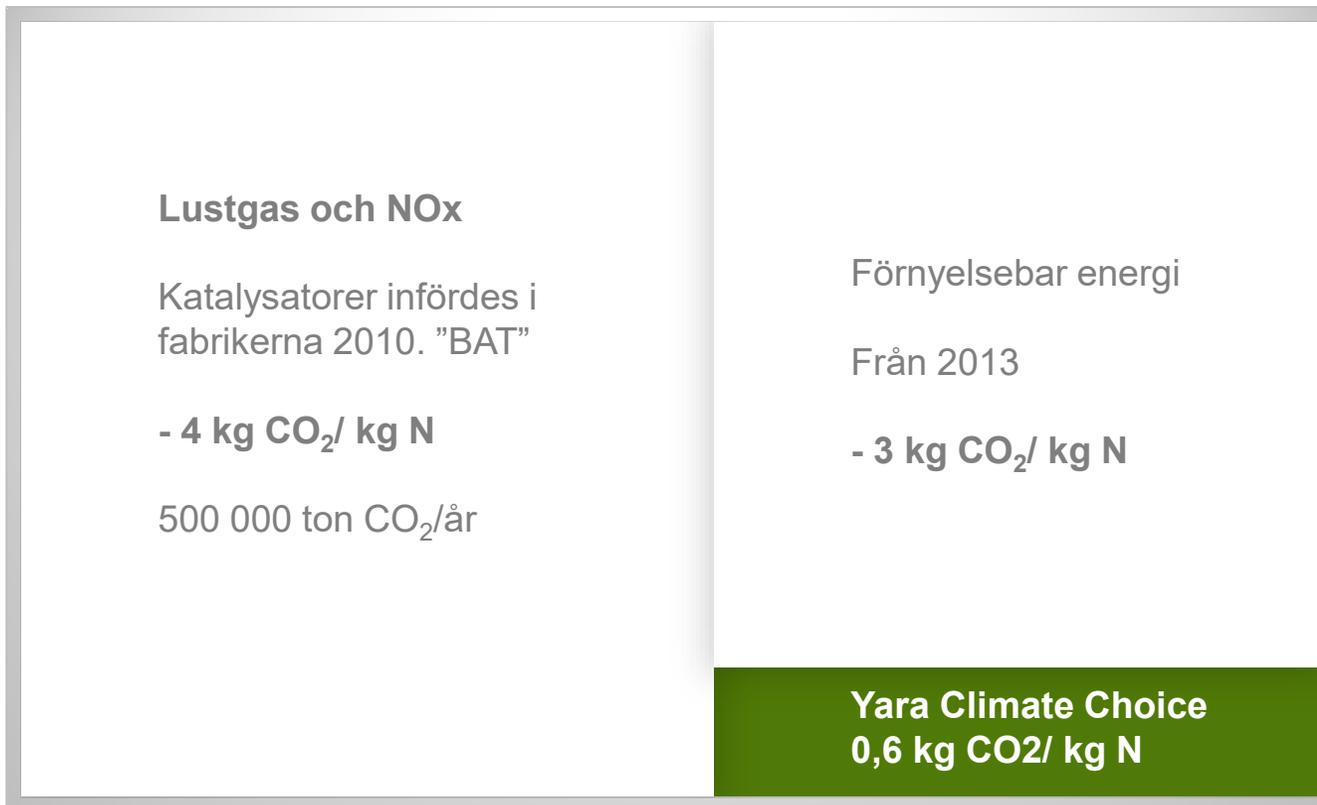
# Mineralgödselets klimatpåverkan har minskat

Innan 2010: 7,7 kg CO<sub>2</sub>/ kg N

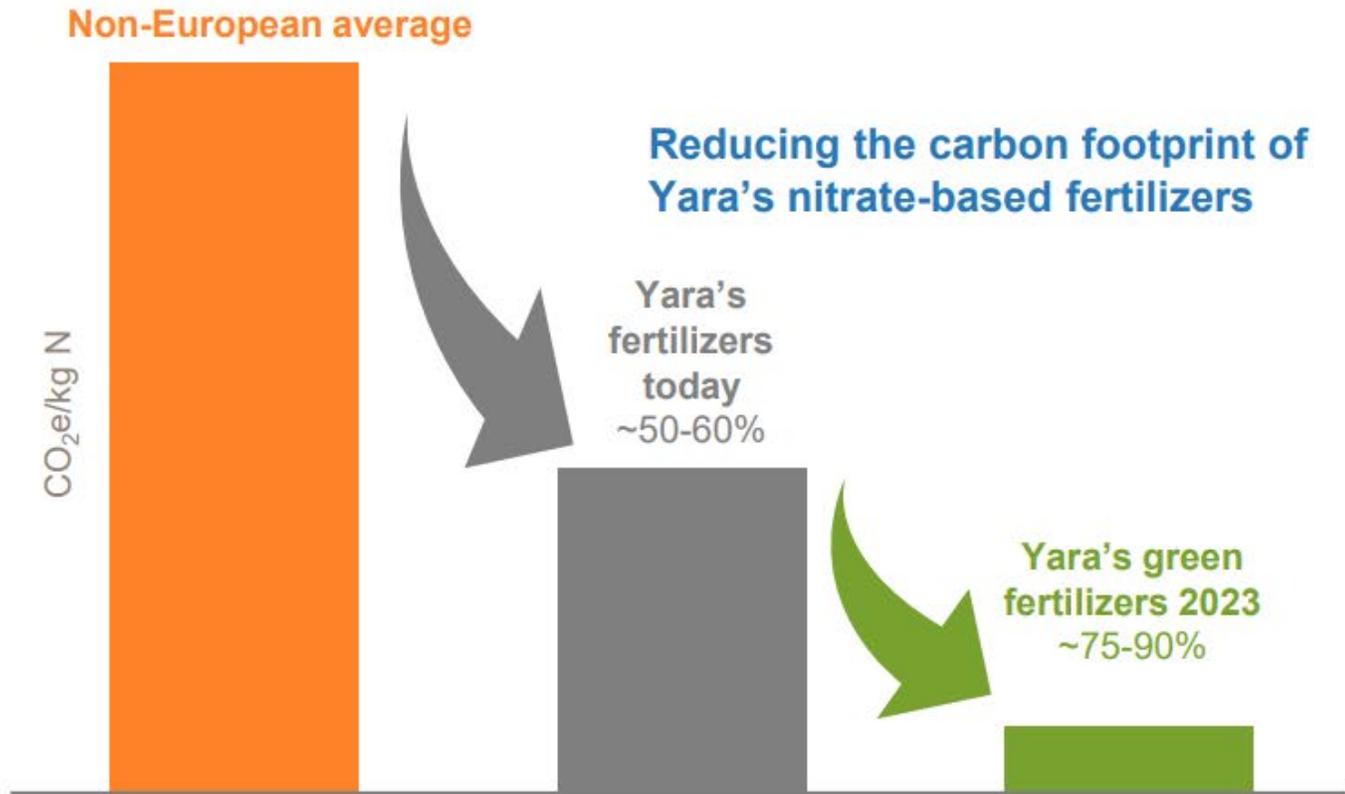


# Mineralgödselns klimatpåverkan har minskat

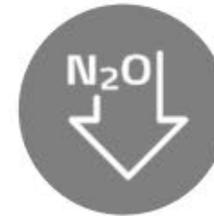
Innan 2010: 7,7 kg CO<sub>2</sub>/ kg N



# Yara Green Fertilizers are low carbon and fossil free



Nitrate-based fertilizers



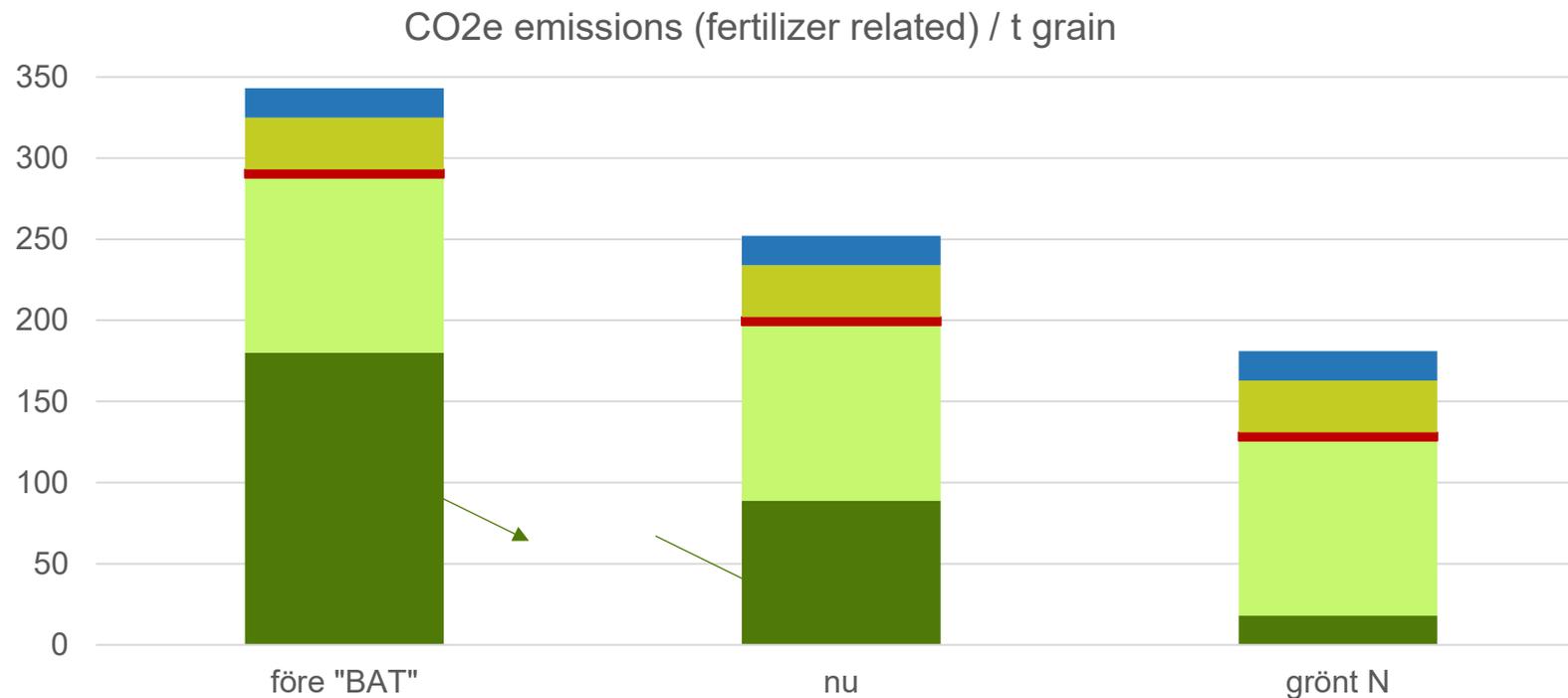
Produced with **N<sub>2</sub>O abatement** catalyst technology



Made with **green ammonia**, produced from **water** and **air** with **renewable energy**, OR with **RNG**

# Exempel på potential för CO<sub>2</sub>e-reduktion i korn

## Gödselproduktion, "in field emission" och skördenivå



CO<sub>2</sub> från naturgas  
N<sub>2</sub>O från markemissioner  
Metan från mark

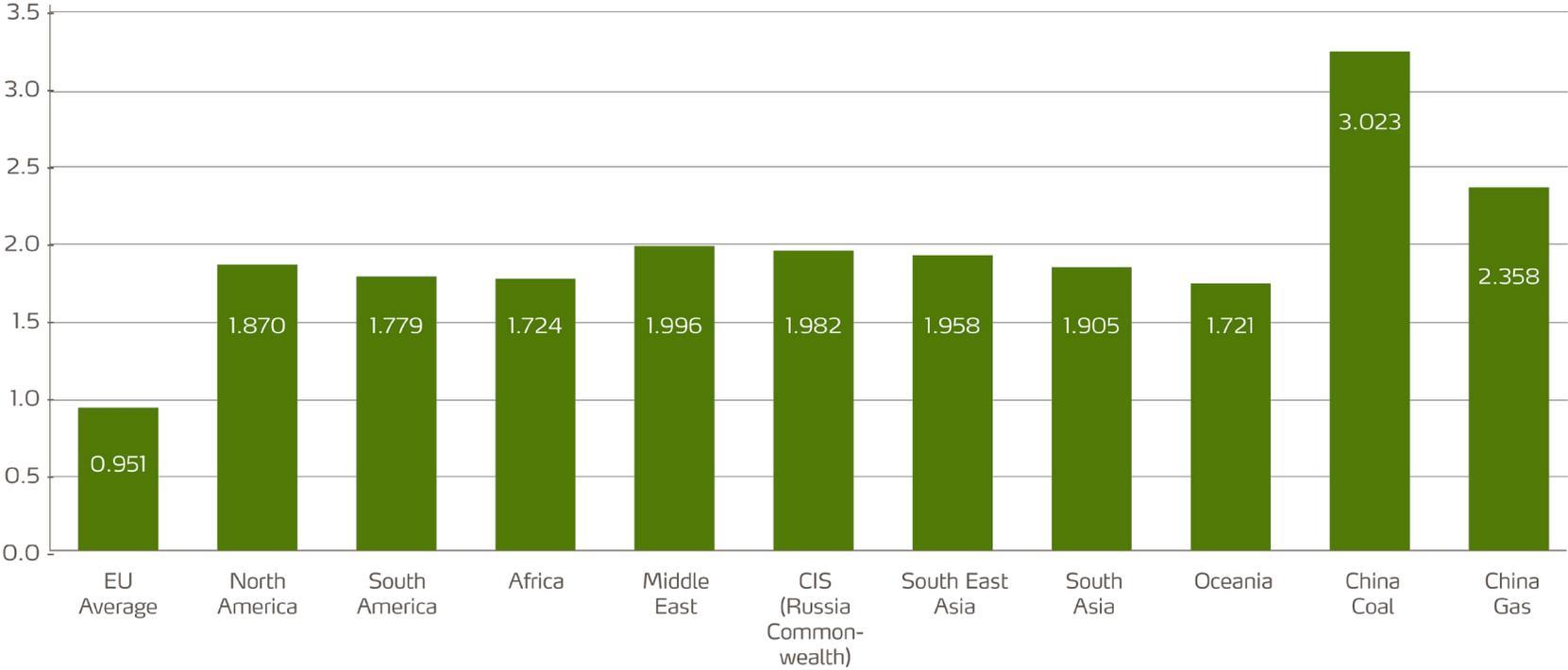
CO<sub>2</sub>e source:

■ fertilizer production   ■ in-field emissions (direct)   ■ NH<sub>3</sub> volatilization (indirect)   ■ NO<sub>3</sub> leaching (indirect)   ■ liming



# Olika Klimatavtryck från CAN/Axan-production i världen

**Total carbon footprint**  
kg CO<sub>2</sub>eq/kg product

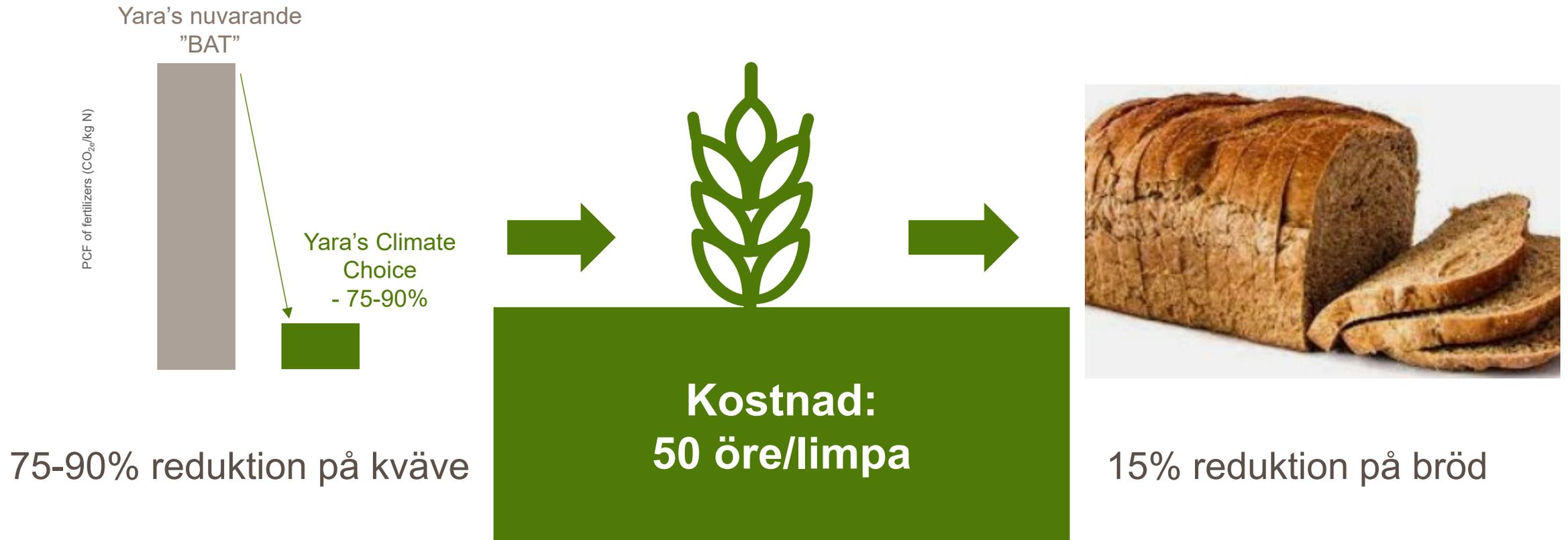


Emissions from fertilizer production varies large around the world, depending on raw material used (natural gas, coal, oil), and emission abatement technology used.

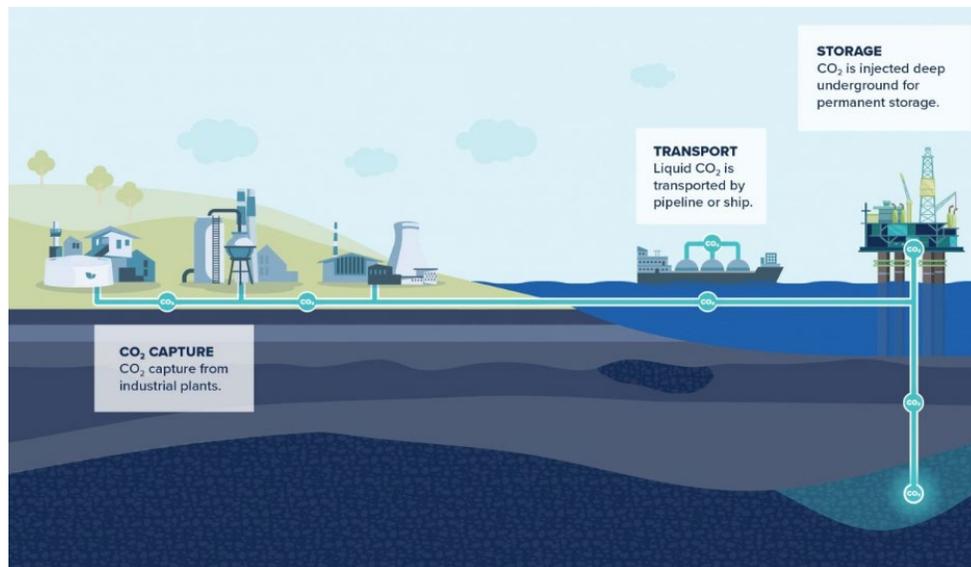
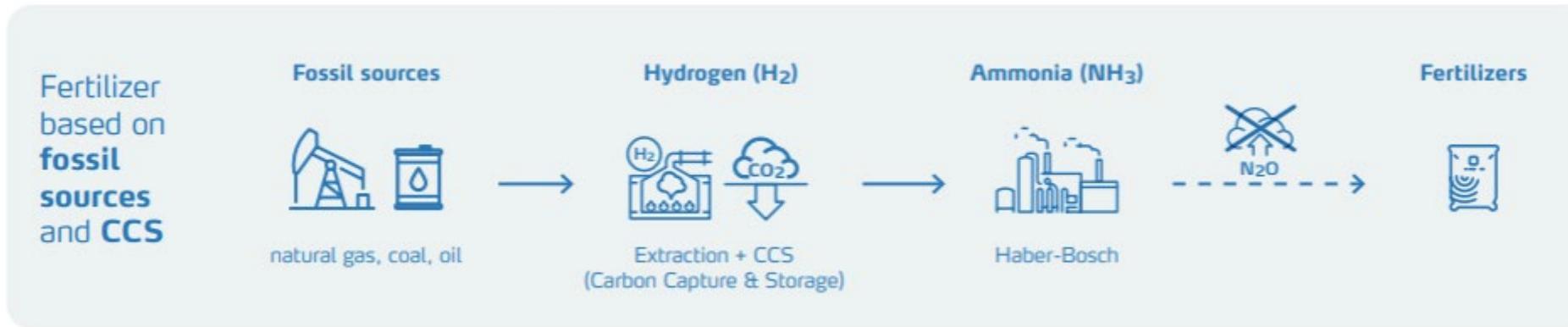
Fertilizer produced in Europe have the lowest emission, where natural gas and N<sub>2</sub>O abatement technology are standard.



# Gödselns klimatavtryck och påverkan på slutprodukten



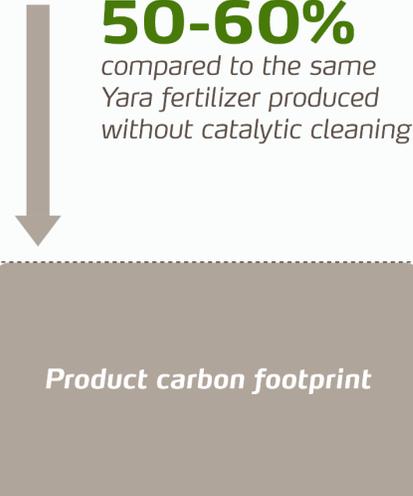
# Ammoniak producerad med CCS (Carbon Capture and Storage)



- **Naturgasen är energikällan för vätgasproduktionen**
- **Koldioxiden fångas in**
- **CCS – CO<sub>2</sub> lagras > 100 år 2600 meter under havsbotten**
- **Klimatavtrycket halveras nästan**

# Stora klimatsmarta volymer snabbt med CCS baserad ammoniak

Non-Yara fertilizers not using Yara's catalytic cleaning



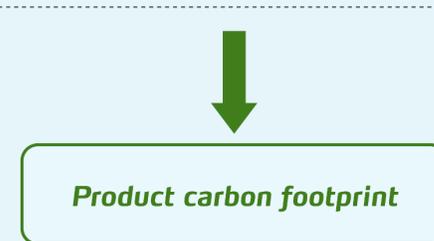
Product carbon footprint reduced by between **50-60%** compared to the same Yara fertilizer produced without catalytic cleaning

## Yara Climate Choice Fertilizers



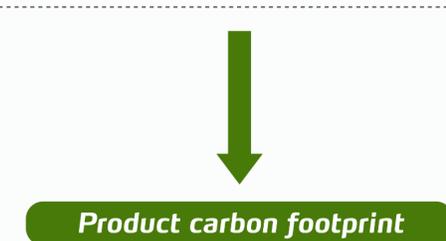
Lower Carbon Footprint

Further reducing the fertilizer product carbon footprint by **35-75%** compared to the same Yara fertilizer produced without CCS, the actual percentage reduction being dependent on the product's nitrogen content and extent of CCS used.



Lower Carbon Footprint - Renewable

Further reducing the fertilizer product carbon footprint by **up to 95%** compared to same Yara fertilizer produced from natural gas. The actual percentage reduction being dependent on the product's nitrogen content.



# CCS-projektet i Sluiskil -Europas största klimatprojekt byggs just nu och levererar från hösten -26

Ship Loading

Pipe Rack

CO2 Storage 15 kt

Existing CO2 Liquefaction Plants

CCS Plant

# Nya koldioxidtankar



# Sluiskils CCS-anläggning

- 800 000 ton CO<sub>2</sub>/ år fångas (50%)
- Världens största CO<sub>2</sub>-förvätskningsanläggning
- Byggs sedan våren -24
- Testning och igångkörning 1H -26
- Gödselleveranser från Q3



# Northern Lights skeppning av flytande koldioxid

- Skeppning från Sluiskil till Øygarden (Bergen)
- 4 båtar
- 2 skeppningar /vecka



# Øygarden, –en del av **Northern Lights** som är transport- och lagringsdelen av fullskaleprosjektet för CO<sub>2</sub>-hantering, **Langskip**

- Invigd september -24
- CO2 transporteras 110 km i rör till borrhål i Nordsjön
- Lagring 2600 meter under havsbotten
- I full drift 2025 för Heidelberg cement
- Yara 2026
- Stockholm Exergi 2027-2028?
- Planeras vara i drift i 25 år



## Overview of Geological Storage Options

- 1 Depleted oil and gas reservoirs
- 2 Use of CO<sub>2</sub> in enhanced oil and gas recovery
- 3 Deep saline formations — (a) offshore (b) onshore
- 4 Use of CO<sub>2</sub> in enhanced coal bed methane recovery

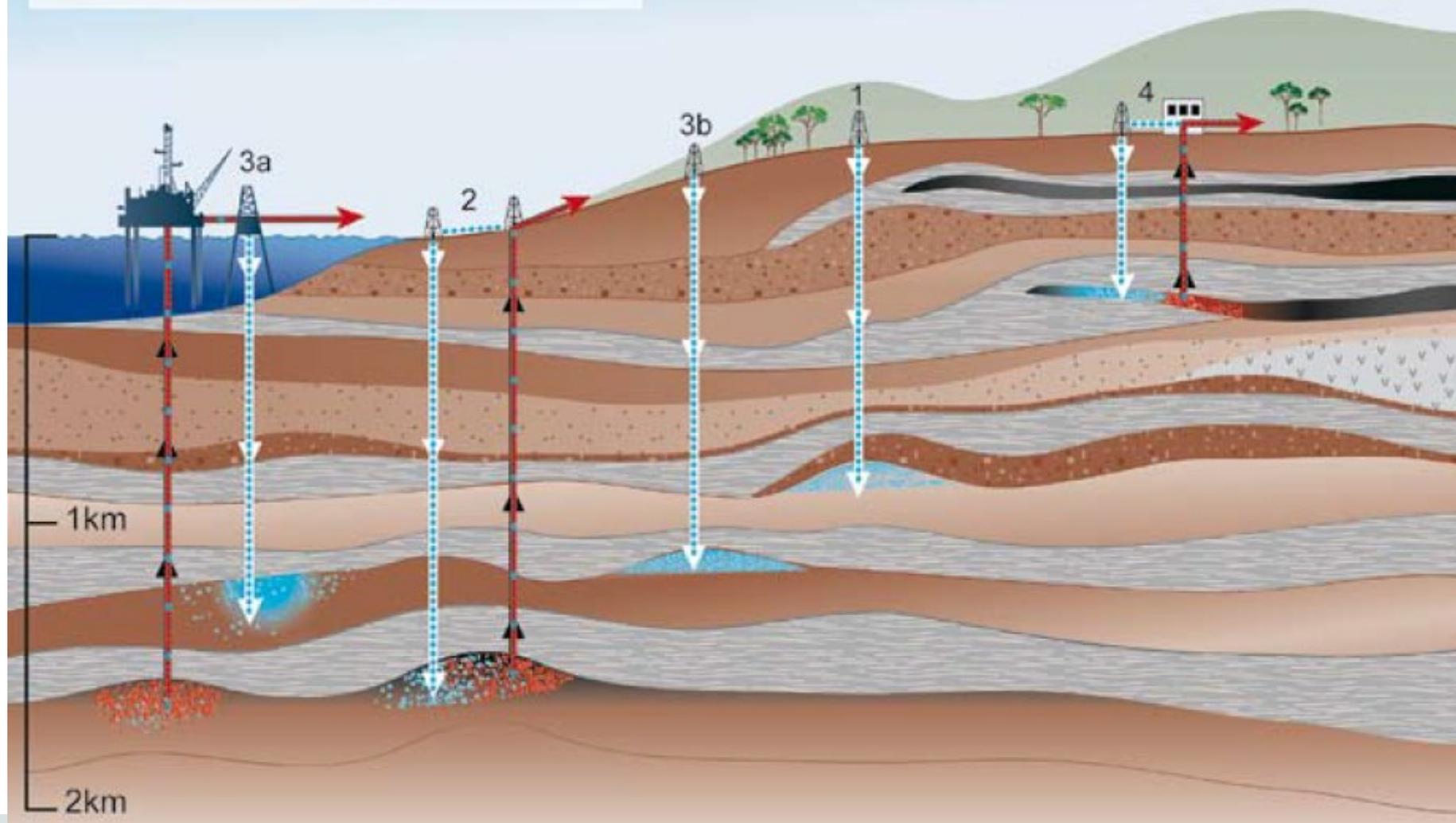
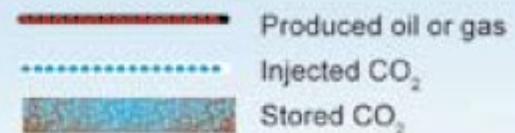
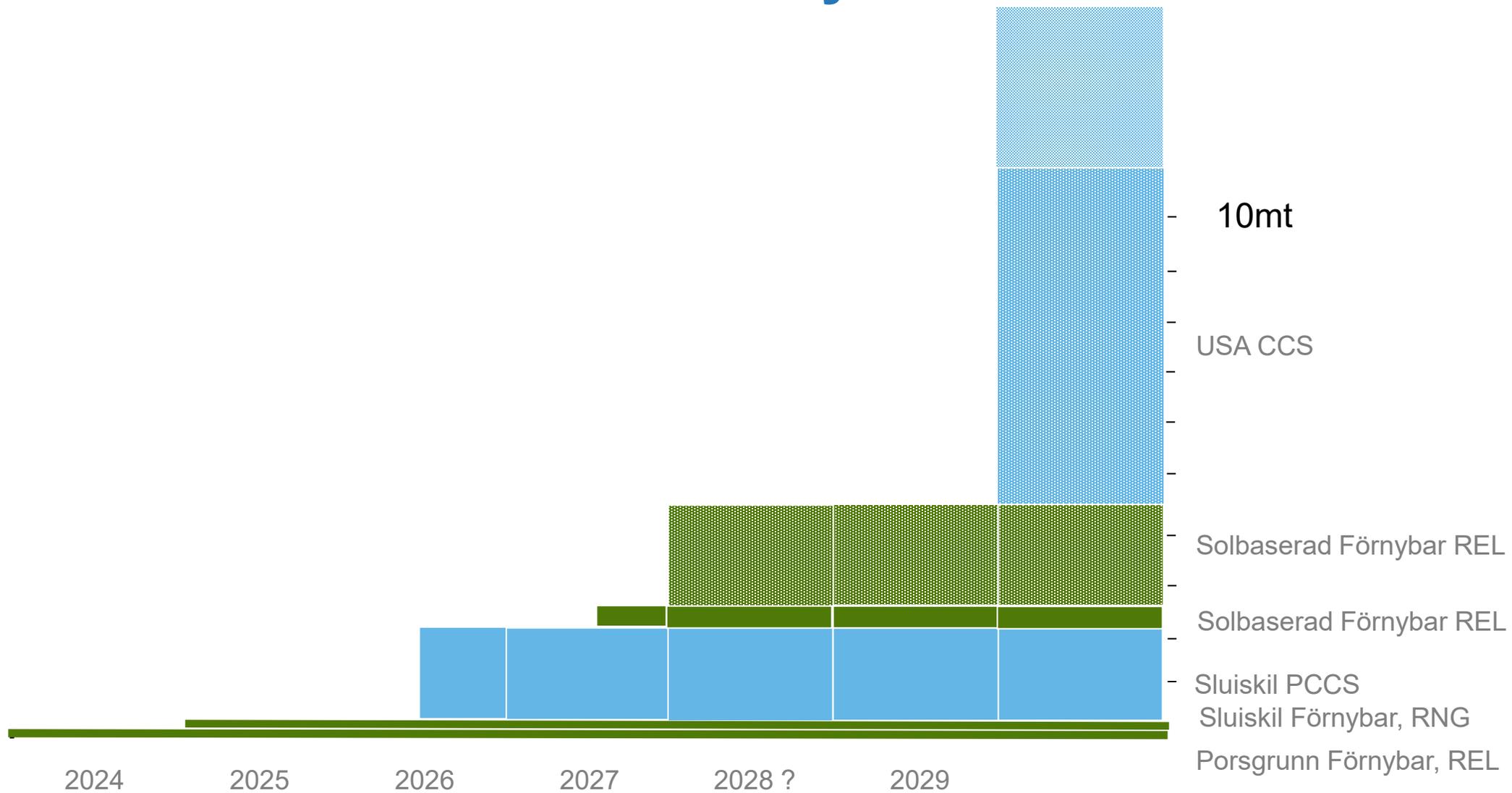
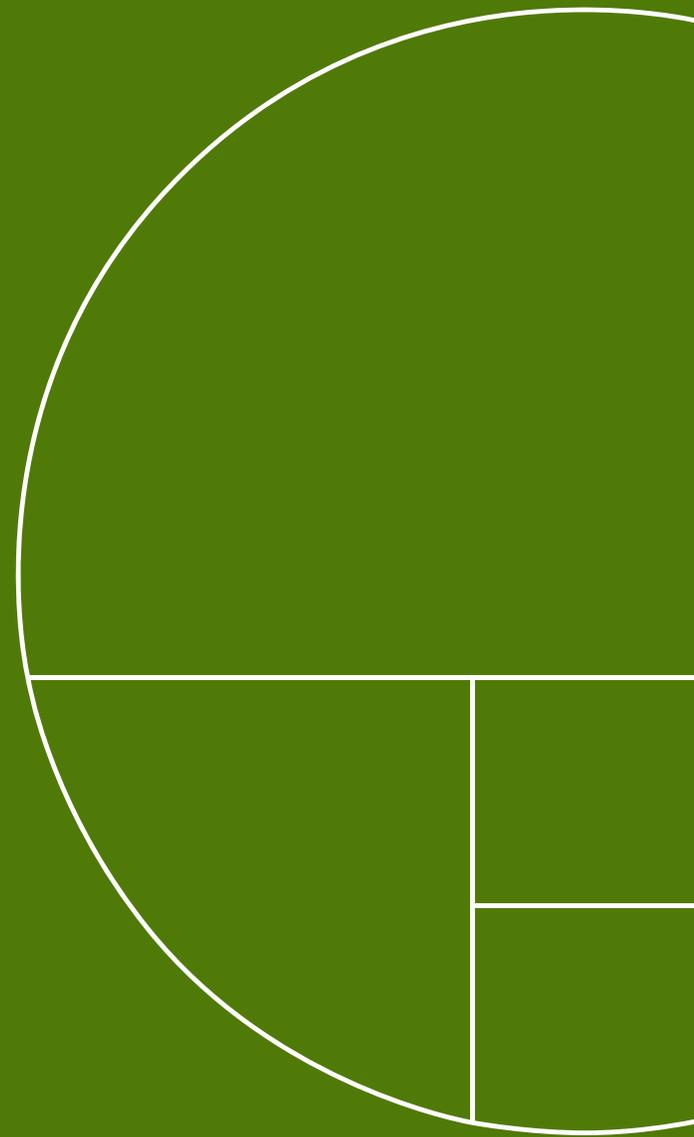


Figure SPM.4. Overview of geological storage options (based on Figure 5.3) (Courtesy CO<sub>2</sub>CRC).

# Yara's Climate Choice-volymer framåt



**Hur långt har vi kommit?**



# Leveranser av



# igång sedan december -23

- Samarbete med Lantmännen från start (Klimat&Natur)
- Tillgängligt via alla återförsäljare
- Livsmedel på marknaden sedan mars -25



REITAN  
RETAIL



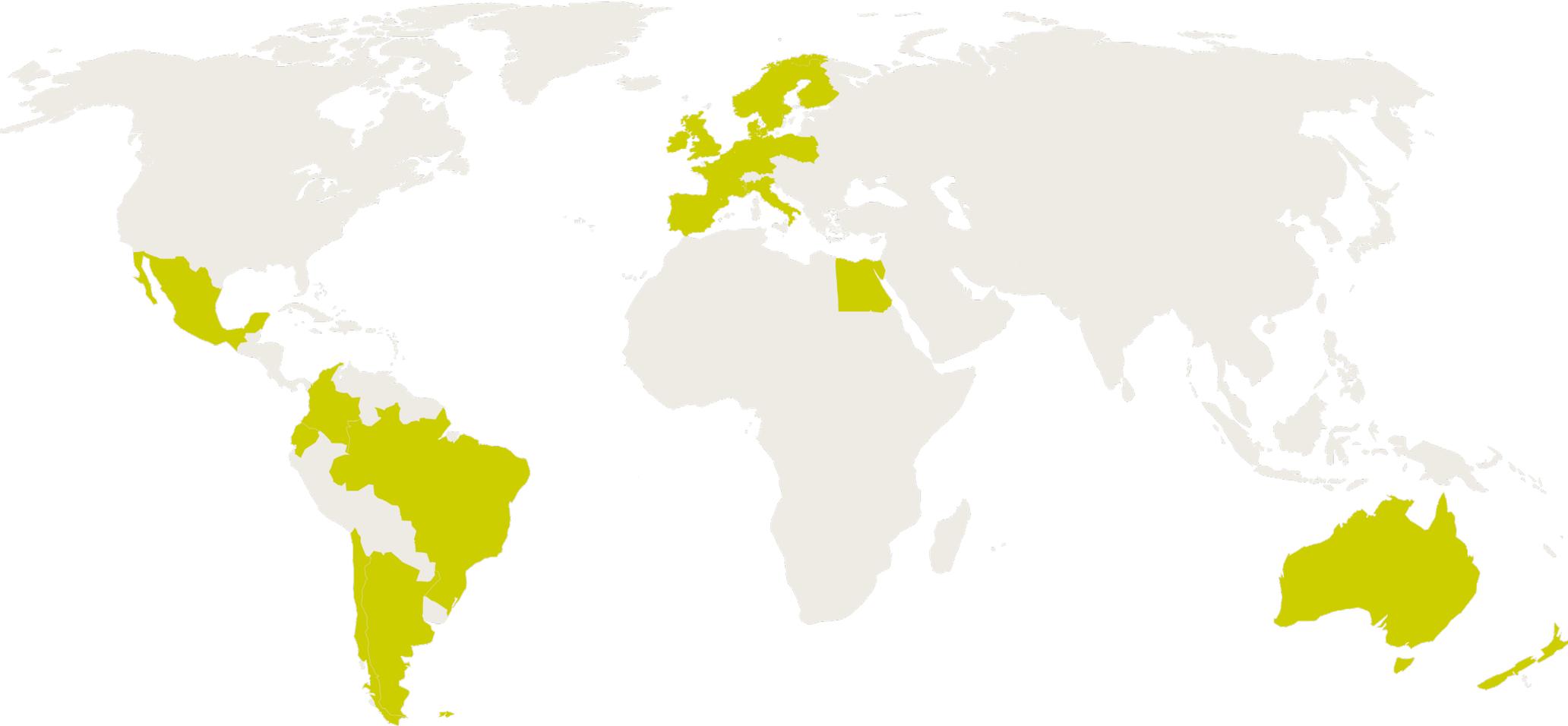
PEPSICO





The  
technology  
explained

# Yara is partnering with key actors in the food chain to decarbonize the food future - together



DEKALB

EL PARQUE PAPAS®

Felleskjøpet

Bindewald Gutting  
MÜHLENGRUPPE

Lantmännen

Nordzucker

PEPSICO

SIMPSONS MALT  
The home of good malt

# Example 1: Lantmännen



Lantmännen



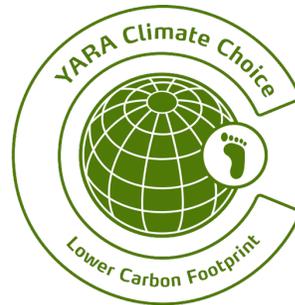
Yara and Lantmännen have entered a commercial agreement to introduce Yara Climate Choice fertilizers to the Swedish market, aiming to reduce the carbon footprint of food production. These lower carbon fertilizers are produced using renewable energy sources, such as Norwegian hydropower, resulting in an 80–90% lower carbon footprint compared to conventional fertilizers. This initiative supports the transition towards climate-neutral farming and meets the increasing market demand for sustainable products.

## Example 2: PepsiCo

PepsiCo Europe and Yara have partnered to decarbonize crop production by supplying up to 165,000 tons of low-carbon fertilizers annually by 2030. The initiative will support 1,000 farmers across 128,000 hectares, initially focusing on potatoes and later expanding to oats and corn. Using Yara's Climate Choice fertilizers and digital precision tools, the collaboration aims to reduce PepsiCo's carbon footprint while improving crop yields and nutrient efficiency.



**PEPSICO**



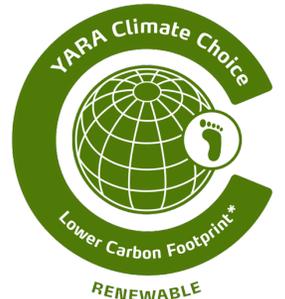


## Example 3: El Parque Papas

Yara has signed a memorandum of understanding with El Parque Papas to deliver lower carbon footprint fertilizers to the biggest potato farmer in Argentina. This marks an important step towards making one of the most popular snacks in the country climate friendly. Using Yara Climate Choice fertilizers for potato production will remove around 28.8 percent of greenhouse gas emissions at the farm level. For potato chips specifically, using renewable fertilizer will reduce the carbon footprint by around 5-10 percent.



**EL PARQUE PAPAS**®



# Example 4: Simpsons Malt

Yara UK has entered a long-term collaboration with Simpsons Malt Ltd and Varda to significantly reduce the carbon footprint of malting barley and distilling wheat production. This partnership aims to achieve carbon-neutral production by 2030 through the use of renewable-based fertilizers, data-driven precision farming, and Varda's Global Field ID™ system. These initiatives will help growers improve nutrient use efficiency and contribute to lowering CO<sub>2</sub> emissions in the supply chain





## Example 5: Cooxupe

Yara and Cooxupé have partnered to introduce Brazil's first lower carbon fertilizers, reducing emissions by up to 90%. This collaboration supports more sustainable coffee production by providing farmers with innovative solutions to lower their carbon footprint. By integrating Yara's expertise with Yara Climate Choice fertilizers with Cooxupé's extensive network of coffee growers, the initiative helps meet growing global demand for environmentally responsible sourcing while enhancing farm productivity and sustainability.



# Example 6: Bindewald & Gutting Milling Group

Yara Germany, the Bindewald & Gutting Milling Group, and Harry-Brot have partnered to decarbonize cereal cultivation in Germany by introducing lower carbon fertilizers produced from renewable energy sources. Starting in the 2023/24 growing season, contract farmers utilize Yara's Climate Choice renewable fertilizers on 1,200 hectares. This initiative aims to reduce the carbon footprint throughout the food value chain, from fertilizer production to end consumers.





## Example 7: Reitan

Reitan Retail, Norgesmøllene, Felleskjøpet Agri and Yara have entered a collaboration to produce a bread, made from Norwegian oats, with lower carbon footprint. This partnership focuses on producing lower carbon bread by decarbonizing wheat cultivation and bread production in Norway. It is a unique collaboration with stakeholders across the value chain, targeting consumer products with reduced environmental impacts.



REITAN  
RETAIL



Felleskjøpet





Knowledge grows

