

# CO2-ROADMAPS

## ENERGIETRANSITIE IN MEERGEZINSWONINGEN EN KANTOORGEBOUWEN: UITDAGINGEN!

14/09/2022

*Bert Lemmens*

*Expert Lead – Sustainable Buildings Design*

# CO<sub>2</sub>-roadmaps

**Arcadis – Bert Lemmens**

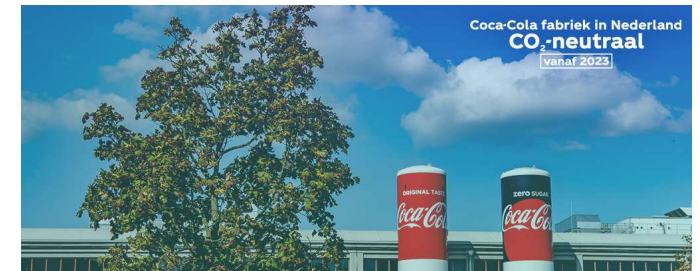
14 September 2022

# Inhoud

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| 2 | Wat is CO <sub>2</sub> -neutraliteit? | 5 | Hoe is CO <sub>2</sub> -neutraliteit haalbaar voor bedrijven? |
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**Wat is CO<sub>2</sub>-neutraliteit?**









# CO<sub>2</sub>-neutraal

De **CO<sub>2</sub>-emissies** van jouw organisatie zijn gelijk zijn aan de opname van CO<sub>2</sub> uit de atmosfeer, typisch over 1 jaar

 **ARCADIS**

**Atic**  
for HVAC professionals 



# Net Zero

Alle broeikasgasemissies (CO<sub>2</sub>e) van jouw organisatie zijn gelijk zijn aan de opname van CO<sub>2</sub> uit de atmosfeer, typisch over 1 jaar



# Klimaatpositief

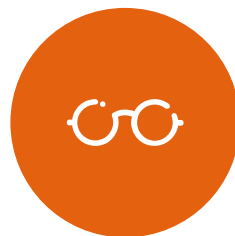
Jouw organisatie of proces haalt  
méér broeikasgassen uit de  
atmosfeer dan dat zij uitstoot.



## Principes achter de claim



Reduceert jouw organisatie broeikasgasemissies?



Werkt jouw organisatie op de juiste scope in een transparante manier?



Wordt compensatie op de juiste manier aangepakt?

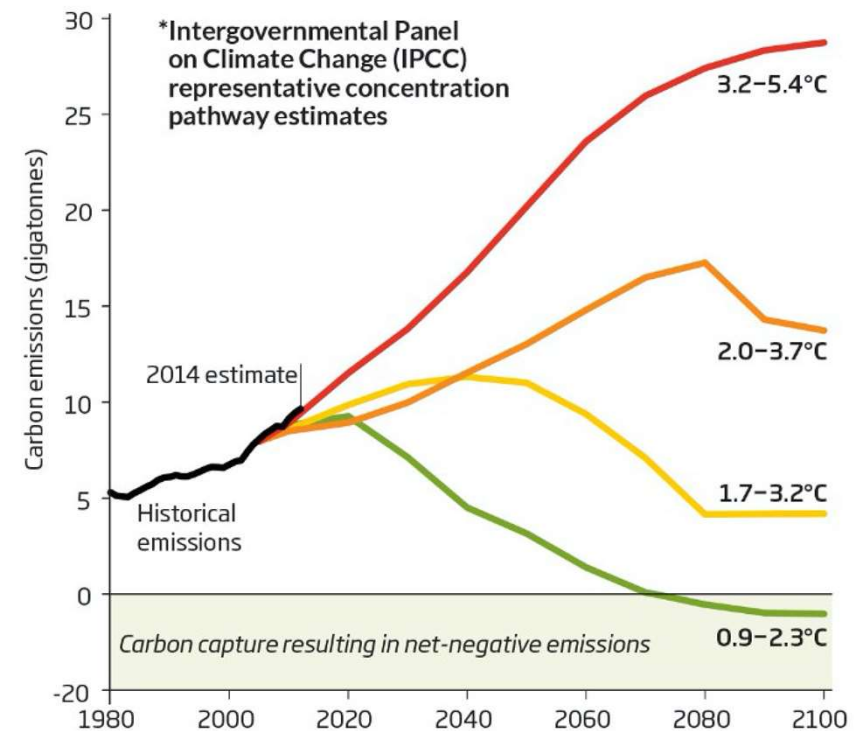
# Wat is de wettelijke context? \*

\* Onder voorbehoud van wijzigingen

# Science-Based Targets

- Duidelijk pad om broeikasgasemissies te reduceren
  - Halveren tegen 2030
  - Net Zero tegen 2050
- 1,5°C tov pre-industrial levels (vanaf juli 2022)

*" Science-based target setting makes business sense – it future-proofs growth, saves money, provides resilience against regulation, boosts investor confidence, spurs innovation and competitiveness – while also demonstrating concrete sustainability commitments to increasingly-conscious consumers."*





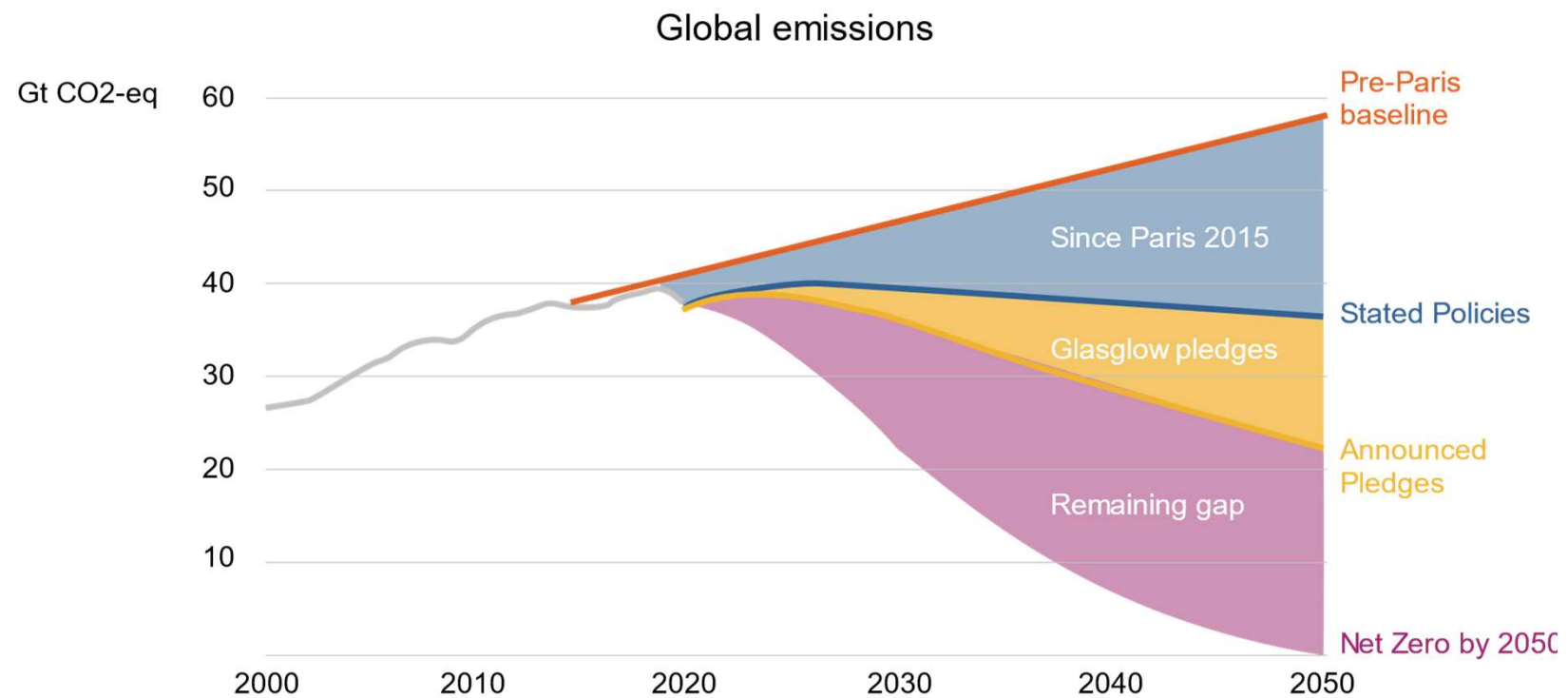
# Evolutie wetgeving



2021 - 2025

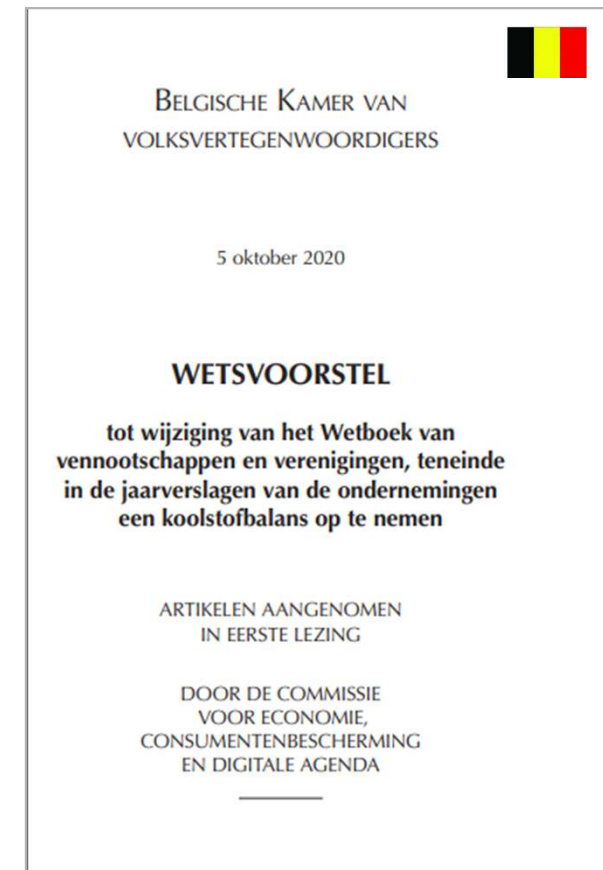


## Wat op tafel ligt, is niet voldoende...



# Federaal wetsvoorstel CO<sub>2</sub>-rapportage

- Vanaf 01/01/2023
- Voor bedrijven met 500+ medewerkers (voorlopig)
- Verplichte rapportering:
  1. Meting van de uitstoot van broeikasgassen (niet alleen CO<sub>2</sub>) van Scope 1 & 2 volgens een erkend meetprotocol dat zal worden bevestigd in het Koninklijk Besluit
  2. Actieplan om deze emissies te verminderen met schatting van deze reducties



# The future of Europe

What will Europe look like in 2050? The effects of climate change, demographic developments and resource scarcity will shape the European economy that has transformed into a Circular Economy. Rapid technological advancement, a more sustainable financial sector and a policy framework focused on a sustainable future will strongly influence the shape and speed at which Europe evolves towards 2050.

## 3 Enablers

### DIGITAL TECHNOLOGY

Europe is fully connected. Its population continuously communicates with its social and physical environment including buildings. The Internet of Things (IoT) autonomously manages many day-to-day aspects of our life and helps us to monitor our impact, performance, health and wellbeing.

### FINANCE

The financial sector has embedded the principles of a circular economy and climate change in its criteria to access to finance and focuses on impact investing. The European economy has adopted new business models that have emerged in the circular economy, radically changing the dynamics of our economy.

### POLICY REGULATION

The scope of policies and regulation includes all the relevant sustainable topics from climate change, energy neutrality, reduce management to management of chemical use. The successful criteria of current certification schemes have been adopted by legislation and regulations.

### URBANIZATION

European cities have grown due to continued urbanization. Cities have merged and are surrounded by large rural-urban ('rurban') areas.

### CLIMATE CHANGE

Europe is confronted with drought, resulting in dry areas with a risk of desertification. In other regions, prolonged and intense rainfall provide challenges for water buffering capacity. Due to rising sea levels, the focus for new rural areas shifts inland.

### FOCUS ON HEALTH

The focus on preventive health measures takes a central role. The environment we live and working needs to prevent illness and increase our wellbeing. Technological solutions and non-toxic materials are key building blocks for a healthy Europe.

### CHANGES IN POPULATION

The European population reaches a minimum at about 529 million inhabitants. Aging of the population has seized. The cultural composition changes as more climate refugees seek asylum in Europe.

### RESOURCE SCARCITY

The European economy has become circular. Europe will increasingly use globally produced biobased resources and apply innovative alternatives for expensive virgin materials.

### PRICE VOLATILITY

The European economy has changed to a sustainable monetary system where energy prices and capital investment costs will be more fluctuating based on the sustainable value of the product.

## 6 Trends

Climate change

Resource scarcity

Focus on health

Urbanization

Changes in population

Price volatility



**Wat is de impact op de  
energiemarkt en ons land?**

# Essentiele elementen om koolstofneutraliteit te bereiken



## Energiezuinigheid

Reductie van de vraag



## Energie-efficiëntie

Systeemrendement



## Elektrificatie

Shift scope



## Eigen productie

Lokale duurzame bron



## Groene aankoop

Off-site duurzame bron



## Carbon capture

Storage / Utilization

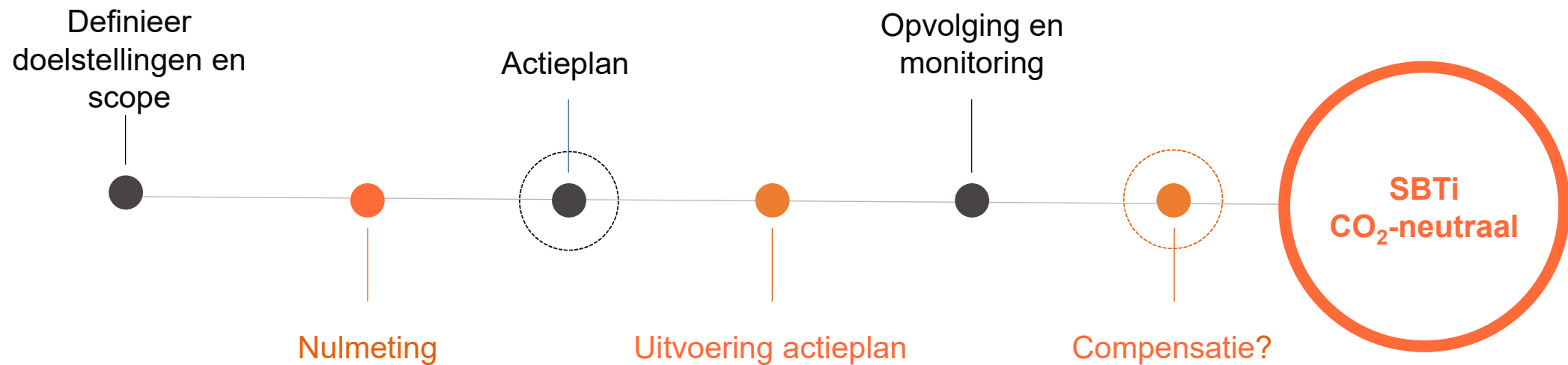


## Offsetting

Compensatie

**Hoe is CO<sub>2</sub>-neutraliteit haalbaar  
voor bedrijven?**

# Stap voor stap richting SBTi of CO<sub>2</sub> -neutraliteit





The background image is a wide-angle, high-angle shot of a large industrial manufacturing facility. The space is filled with various pieces of heavy machinery, including robotic arms mounted on overhead cranes, conveyor systems, and large structural steel components. The floor is a light-colored concrete, and the ceiling is high with visible steel beams and lighting fixtures. The overall atmosphere is one of a busy, modern industrial environment.

# Carbon roadmap

## Industrial client

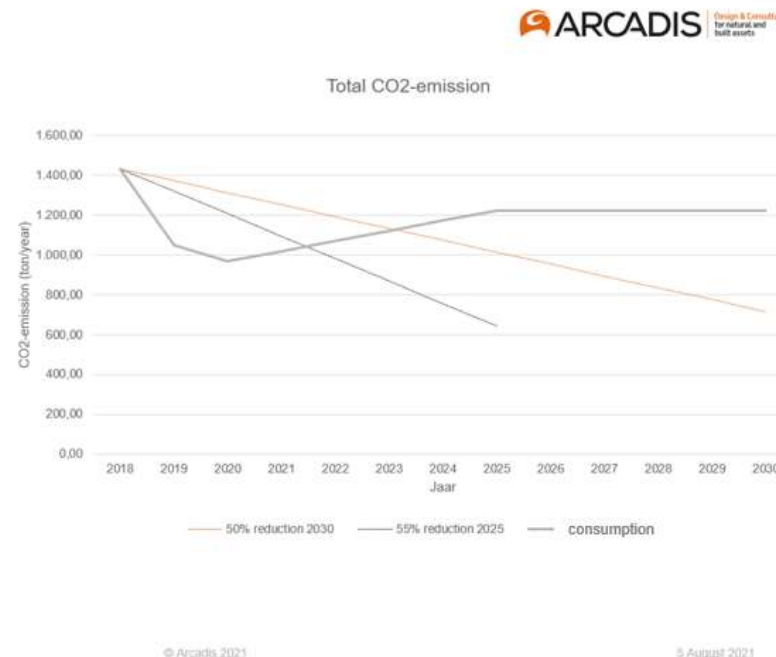
## Case 1 | CO<sub>2</sub> reduction roadmap : industrial client

- **Setting reduction goals**
- Determining Baseline for Scope 1 & 2 emissions
- Qualitative assessment of measures - ranking
- Economic feasibility assessment of packages
- Scenarios

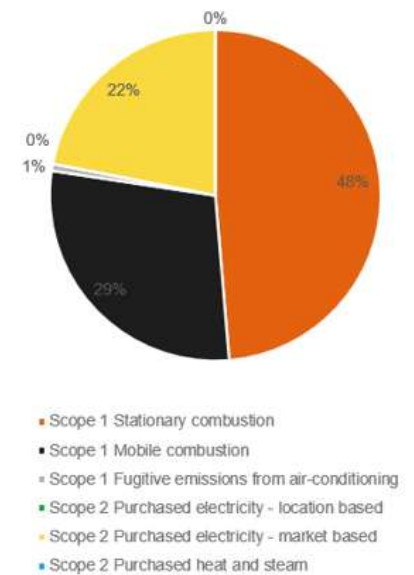


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Emissions scope 1 + 2 in 2020





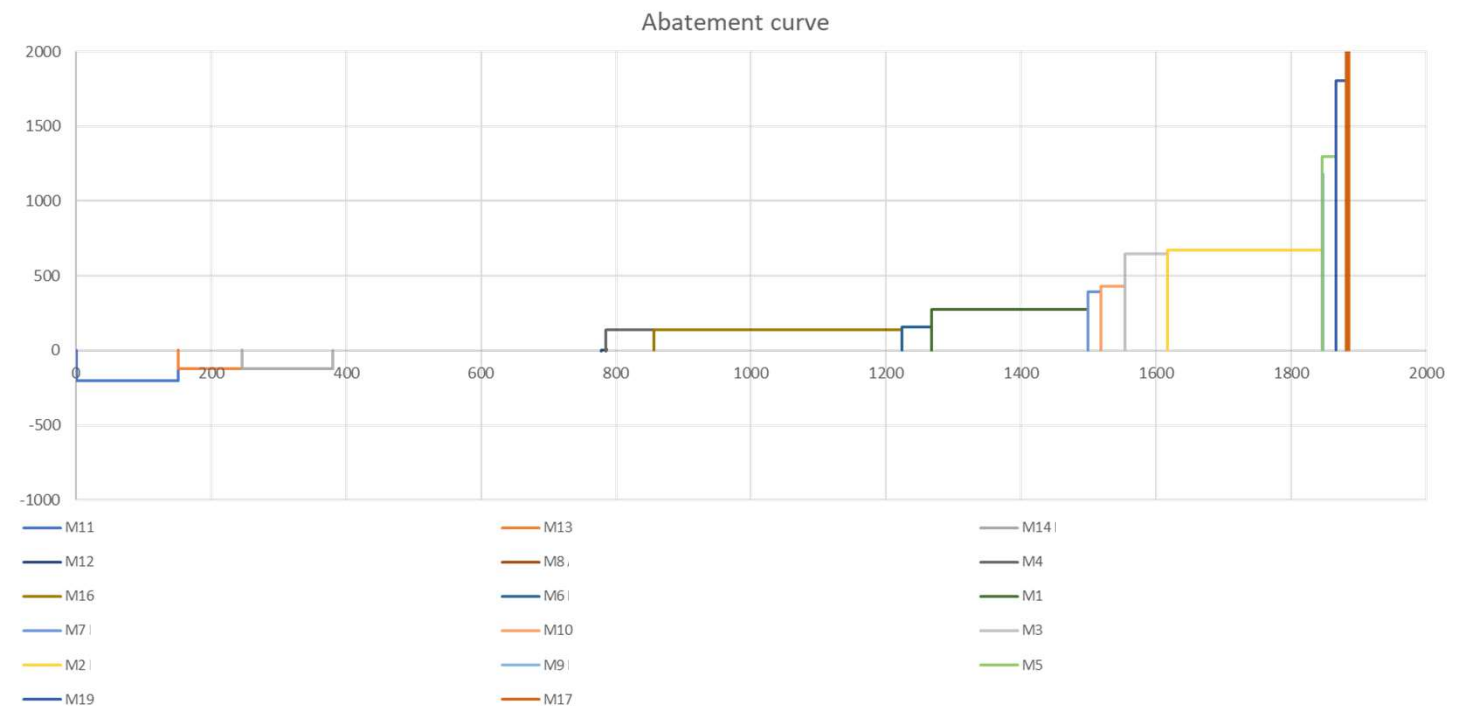
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Maatregel	CO2 impact	€/ton CO2	Investering	ROI	Inpasbaar	Operaties
Gewicht	3	3	1	1	2	2
	1 (klein) tot 3 (groot)	1 (veel) tot 3 (weining)	1 (groot) tot 3 (klein)	1 (lang) tot 3 (kort)	1 (slecht) tot 3 (goed)	1 (nadelig) tot 3 (geen impact)
M1 Ketels vervangen door L/W WP	3	2	1	1	2	2
M2 Ketels vervangen door KWO	3	1	1	2	2	2
M3 Ketels AIRCO 1 vervangen door water-water koelmachine	2	2	2	2	2	2
M4 Aardgas met garanties van oorsprong	2	2	3	2	3	3
M5 Renovatie kantoor (buitenschil)	1	1	1	2	2	3
M6 Isolatie productiehallen	2	2	1	2	2	2
M7 Installatie extra zonnepanelen	2	1	1	3	3	3
M8 Alle koudevragers op KWO aansluiten	1	3	2	2	2	2
M9 Koeling persluchtcompressoren met KWO	1	1	3	2	2	2
M10 Warmterecuperatie en warmtenet voor droogproces	2	3	1	2	1	1
M11 Elektrificatie wagenpark + heftrucks + bestelwagen	3	3	2	3	2	3
M12 Natuurlijke koelmiddelen in alle koelkringen	1	3	3	1	3	3
M13 Reductie kantoorruimte	3	3	3	3	2	3
M14 Reductie productieruimte	3	3	3	3	2	3
M15 Windturbine	2	1	1	2	1	3
M16 Omschakeling fysieke servers naar waterkoeling	1	1	3	1	2	2
M17 Carbon Capture and Storage	3	1	1	1	1	3

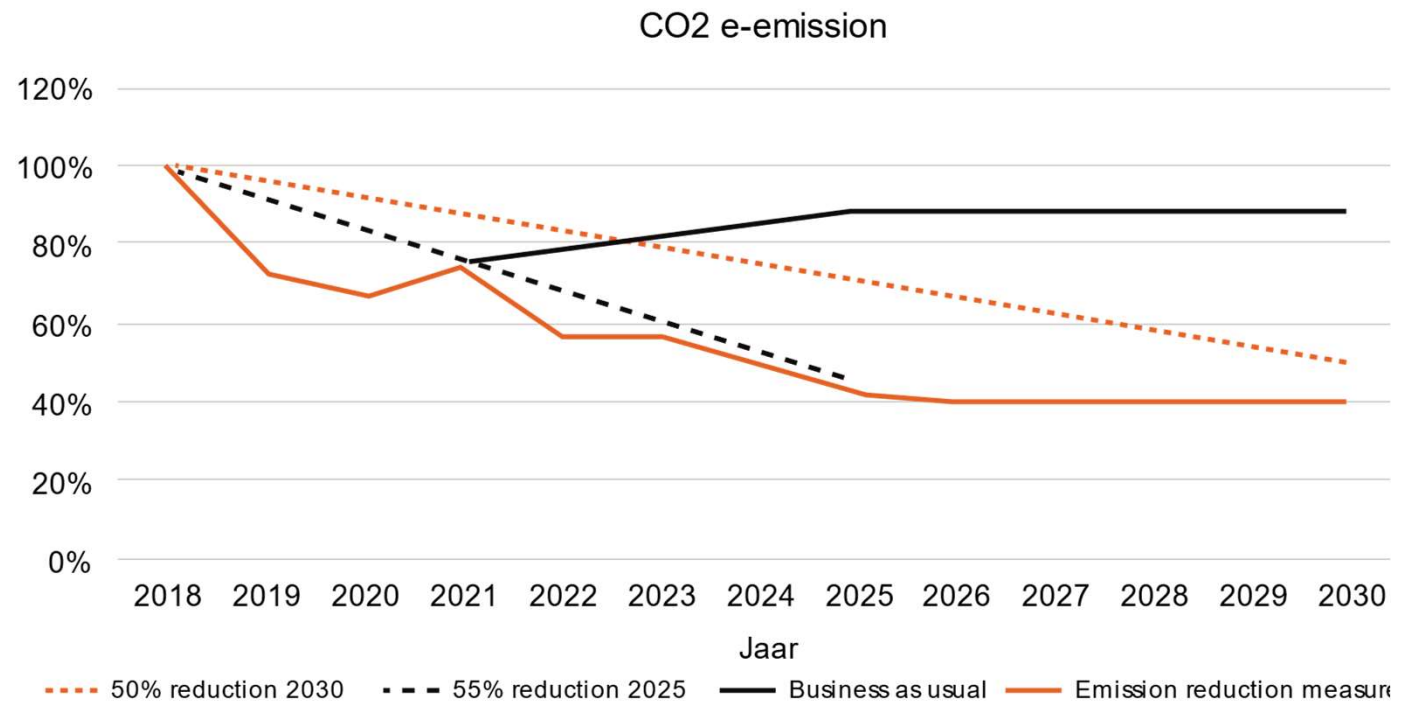
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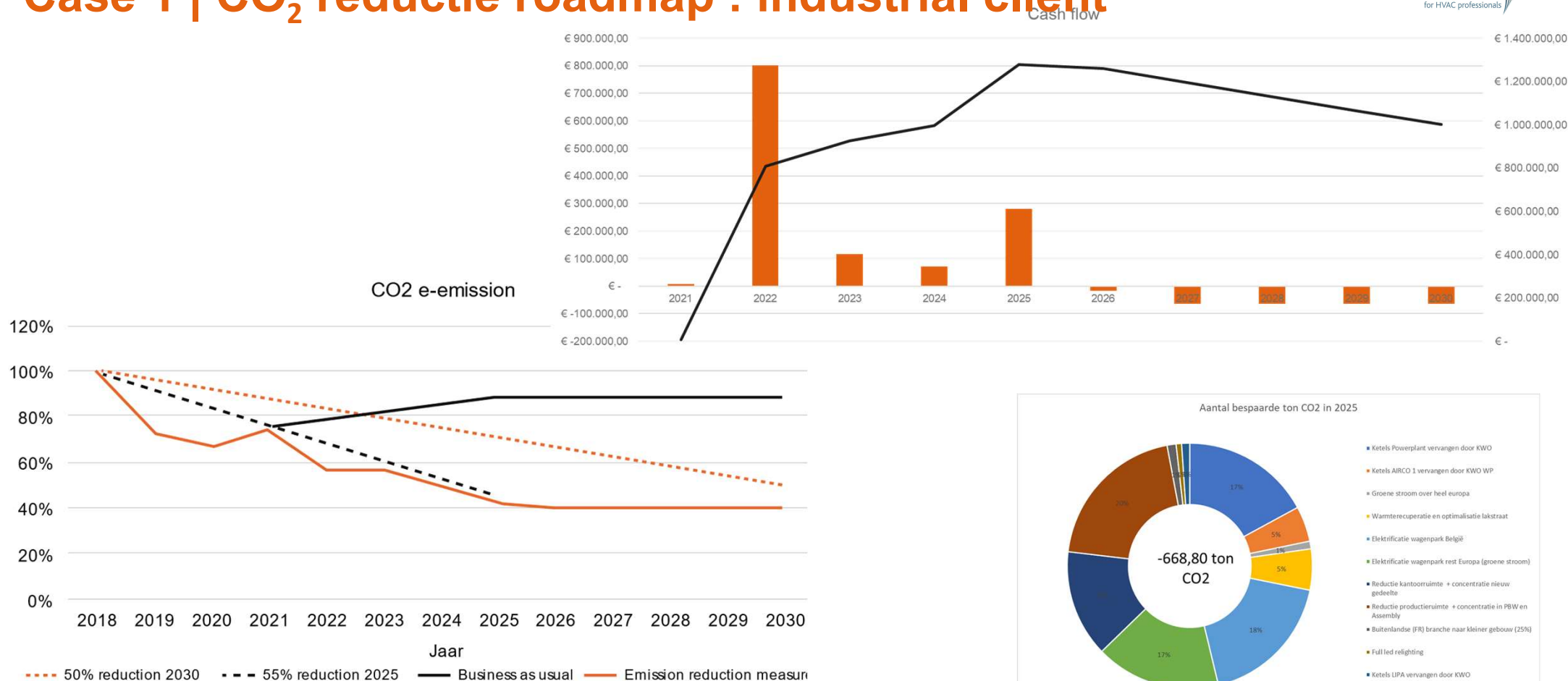


## Case 1 | CO<sub>2</sub> reductie roadmap : industrial client

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# Case 1 | CO<sub>2</sub> reductie roadmap : industrial client







# **Sustainability vision & roadmap**

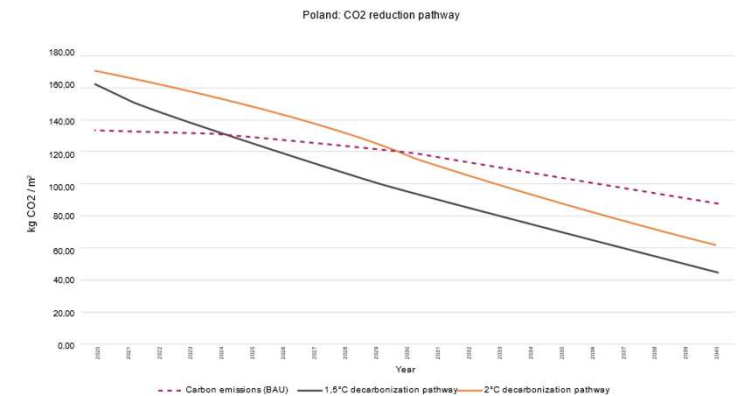
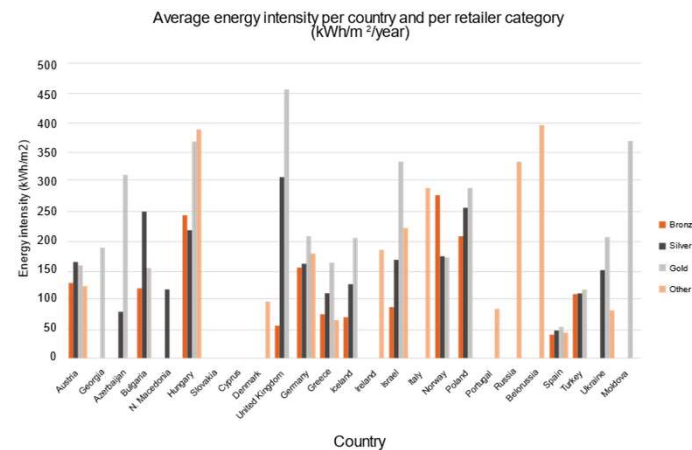
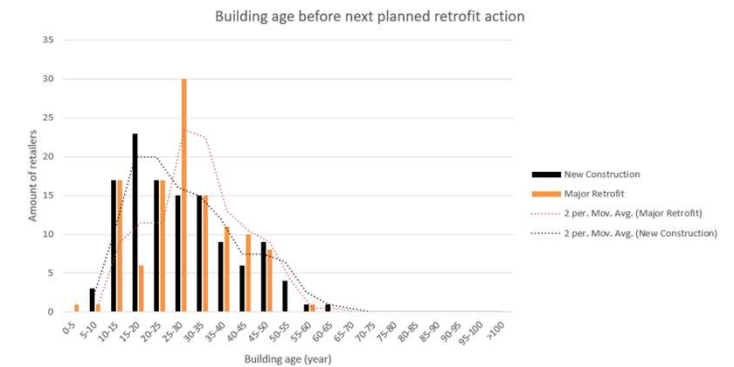
**Automotive Client  
European dealership**

- 
- ideation brainstorm**
- 7 functions: Operational ideas  
 8 modules: Operational ideas  
 9 modules: Operational ideas  
 10 modules: Operational ideas  
 11 modules: Operational ideas  
 12 modules: Operational ideas  
 13 modules: Operational ideas  
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 99 modules: Operational ideas  
 100 modules: Operational ideas
- SALES**
- VALUE CHAIN**
- BUILDINGS GROUNDS / LAND**
- SOCIETY & NATURE**
- MANAGEMENT / EMPLOYEES**
- MOBILITY COMPANY**
- 2050**
- NOW**
- Legend:**
- Yellow: Mobility
  - Blue: Infrastructure
  - Green: Society
  - Pink: Management
  - Purple: Buildings



# Case 2 | CO2 reductie roadmap: complete portfolio

- Setting reduction goals
- **Portfolio analysis**
- Technical assessment of measures & consistent packages
- Country specific time path for implementation



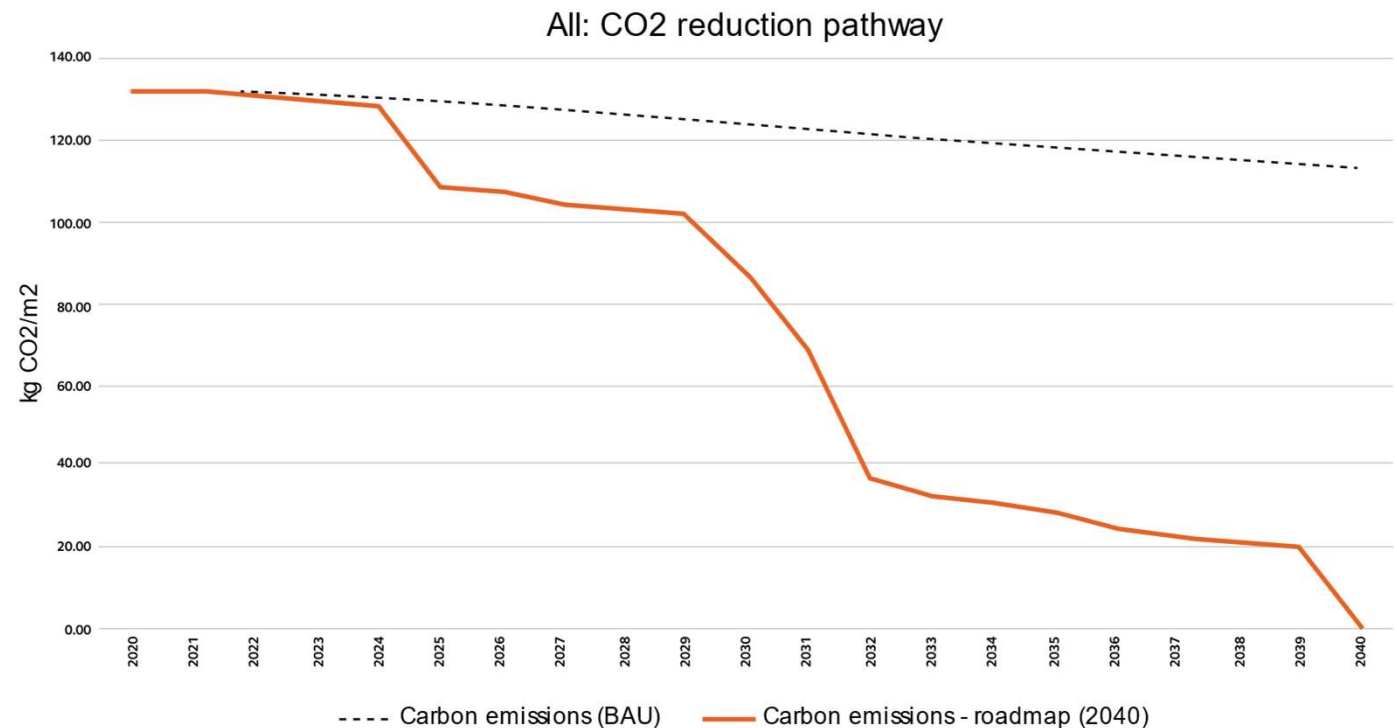
## Case 2 | CO2 reductie roadmap: complete portfolio

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	T25	T30	T40
<b>BAU</b>	398.120 ton CO <sub>2</sub>	379.766 ton CO <sub>2</sub>	345.414 ton CO <sub>2</sub>
<b>BUILDING BLOCK 1:</b> imposed retrofit / new construction interval	387.280 ton CO <sub>2</sub> (-5%)	357.967 ton CO <sub>2</sub> (-12%)	226.747 ton CO <sub>2</sub> (-44%)
<b>BUILDING BLOCK 2:</b> <b>BUILDING BLOCK 1 +</b> fossil free heating for all major retrofits	383.741 ton CO <sub>2</sub> (-5%)	339.276 ton CO <sub>2</sub> (-16%)	106.470 ton CO <sub>2</sub> (-74%)
<b>BUILDING BLOCK 3:</b> <b>BUILDING BLOCK 2 +</b> acquisition of green electricity	332.753 ton CO <sub>2</sub> (-18%)	265.722 ton CO <sub>2</sub> (-35%)	0 ton CO <sub>2</sub> (-100%)

## Case 2 | CO2 reductie roadmap: complete portfolio

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**De essentie**

## De essentie

- Maak echt het verschil
- Reduceer in lijn met 1,5°C is de basis (en al heel ambitieus)
- Nieuwe wetgeving is onderweg, wees voorbereid
- Er is geen silver bullet, kies voor een globale energie-efficiëntie aanpak, stap per stap
- Grijp de kansen die zich aandienen
- Elektrificeer waar het kan



# Contact Us



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