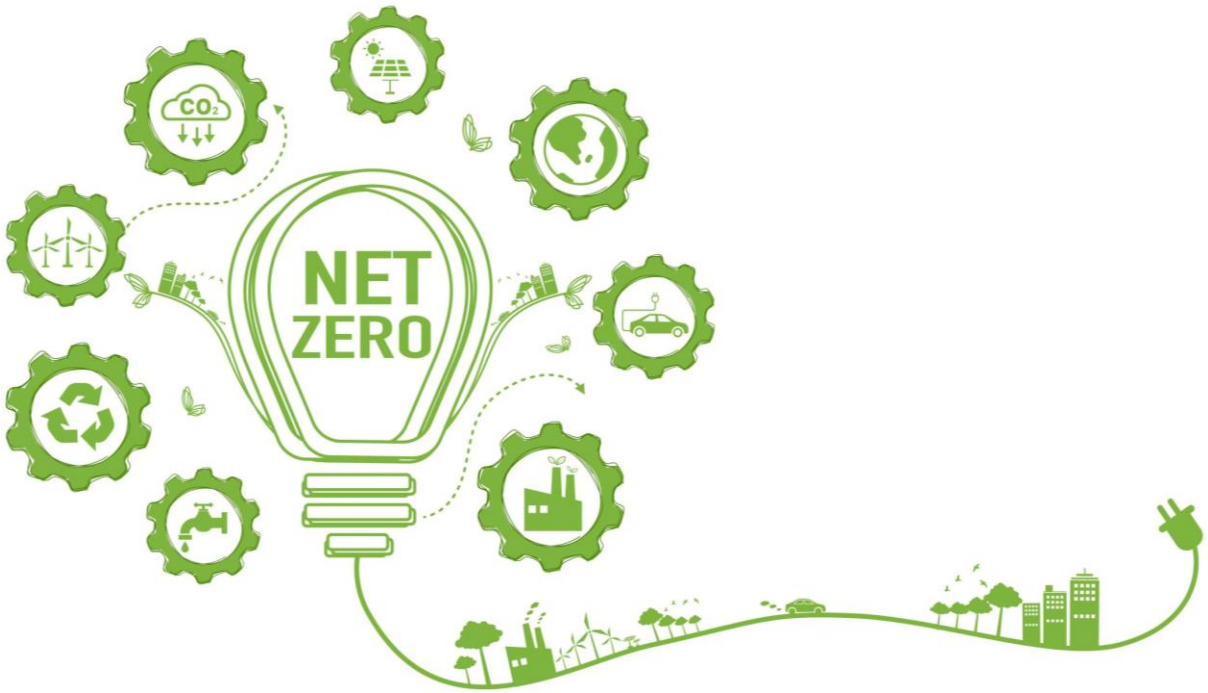


Decarbonization landscape

Dr. Martyn Wakeman

martyn.wakeman@epfl.ch

Learning objectives

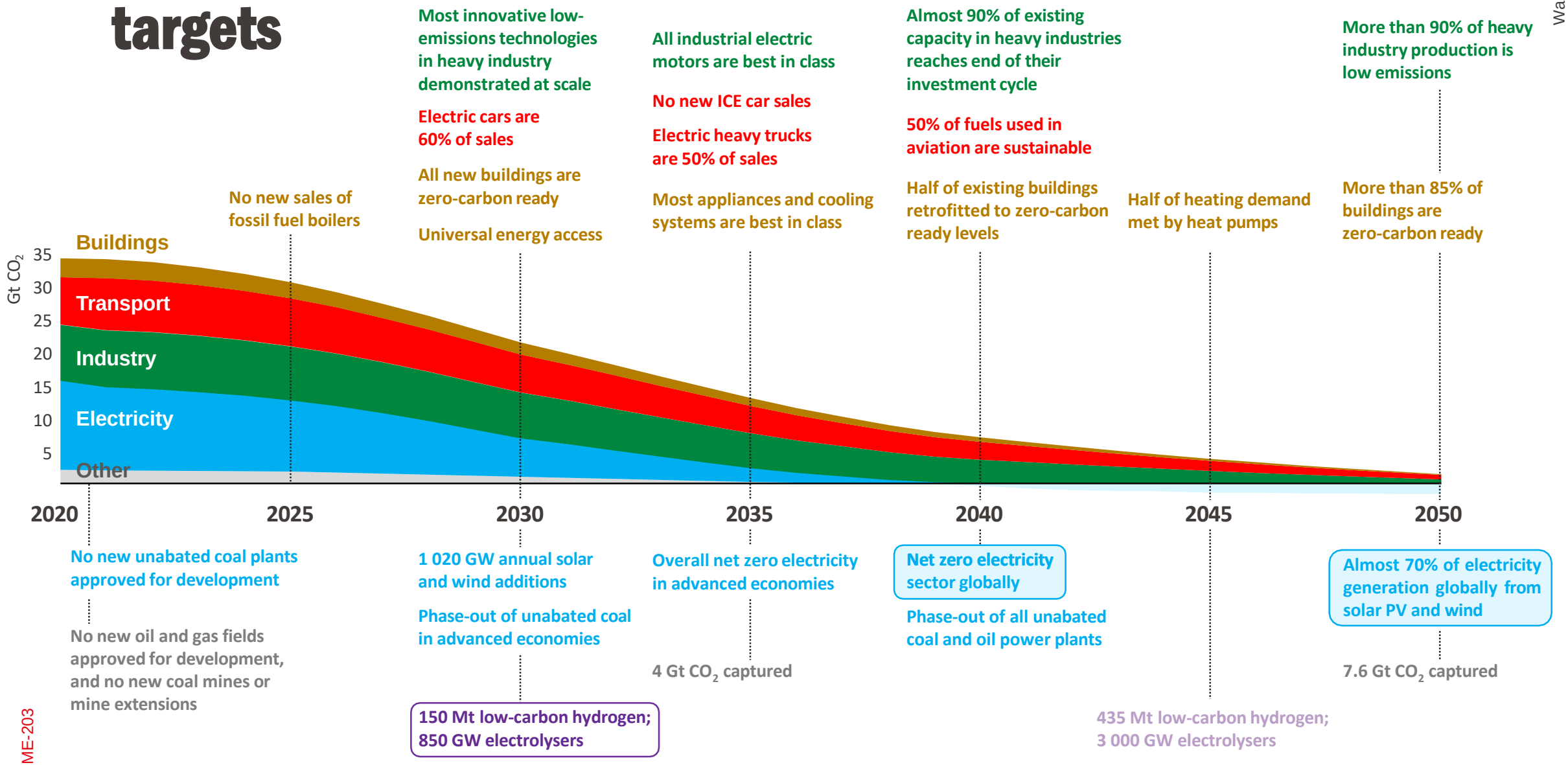
- Understand the NetZero journey
  - from a macro-economic
  - meso-space (inside an industry)
  - micro (within specific companies) perspective
- Give examples of initiatives
- Examine greenwashing

Overview

- Macro economic models
- Country models
- Industry wide trends
- Company specific
- NetZero vs. NetPositive

Wakeman

Set near-term milestones to get on track for long-term targets

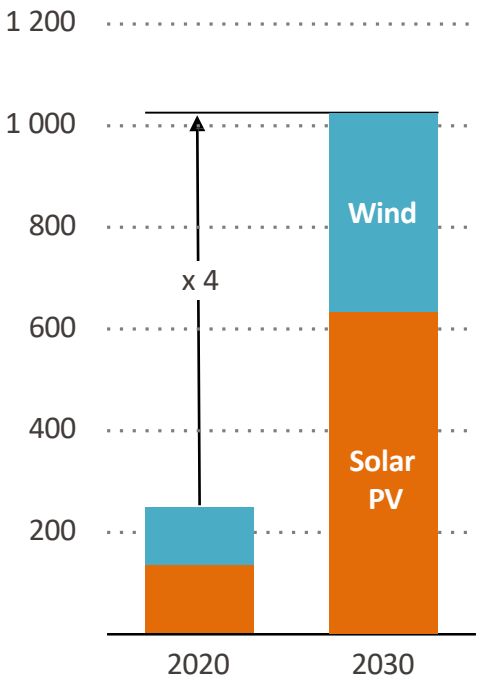


ME-203

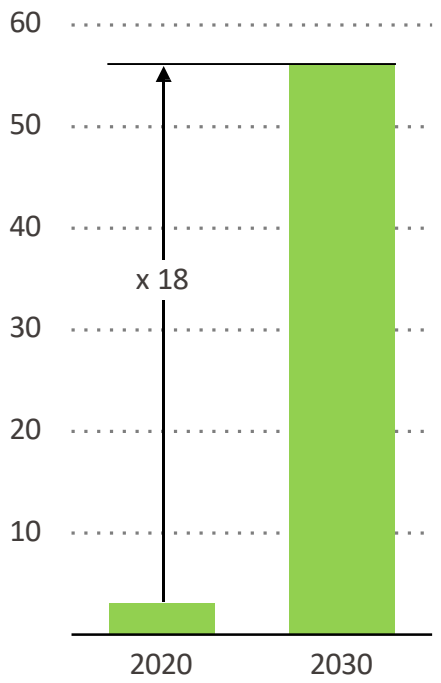
International Energy Agency (2021), Net Zero by 2050, IEA, Paris

Make the 2020s the decade of massive clean energy expansion

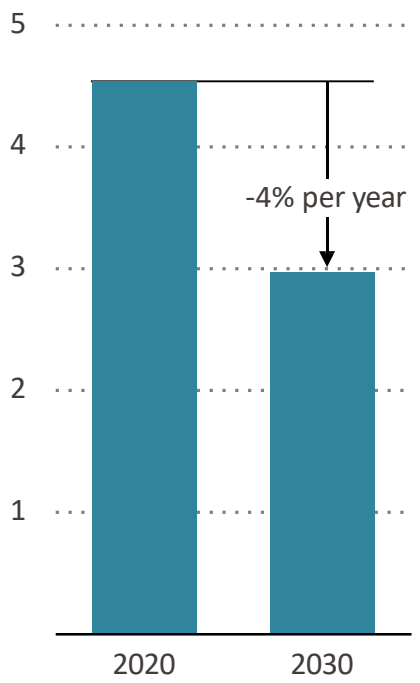
Solar PV and wind capacity additions (GW)



Electric car sales (millions)



Energy intensity of GDP (MJ per USD PPP)

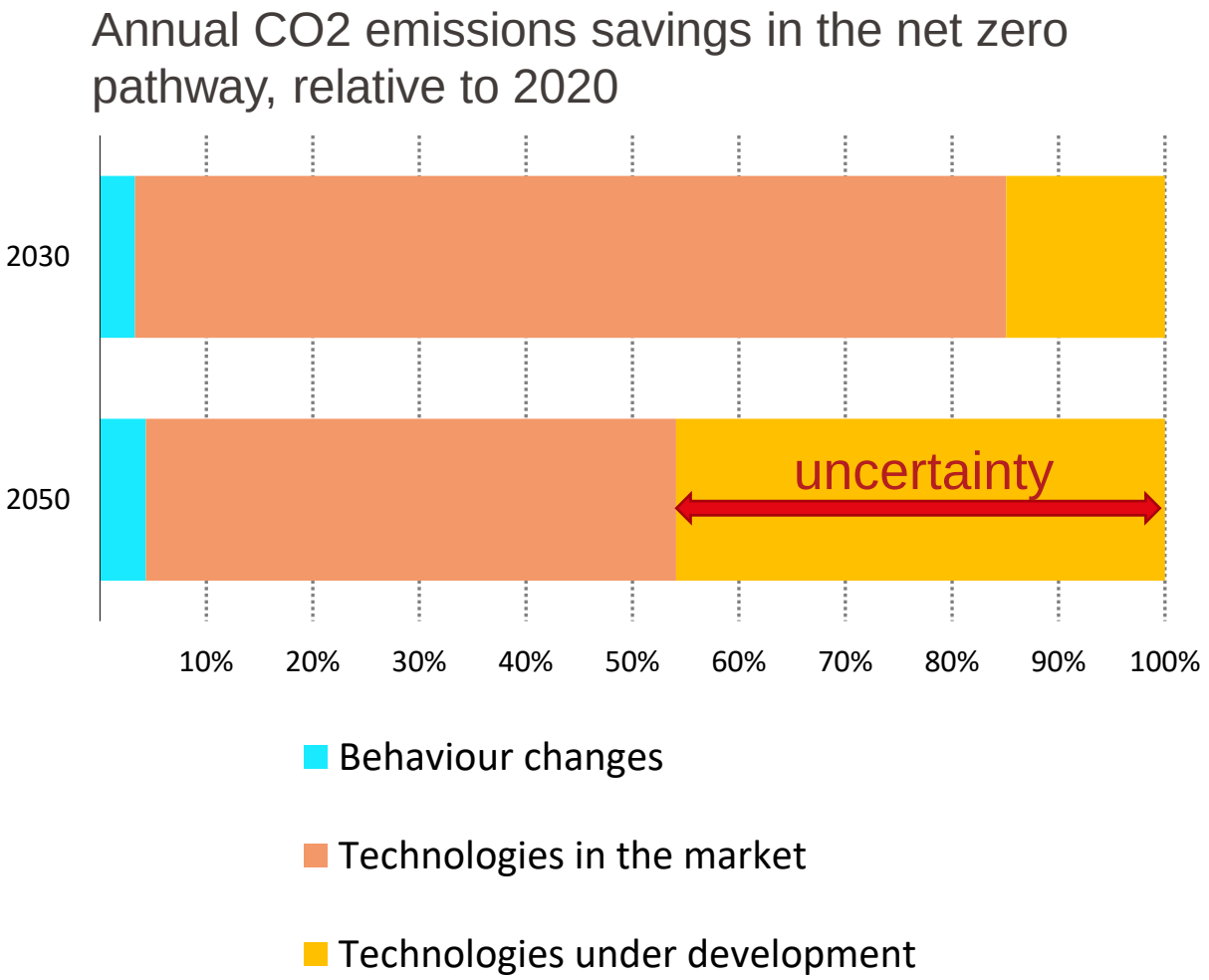


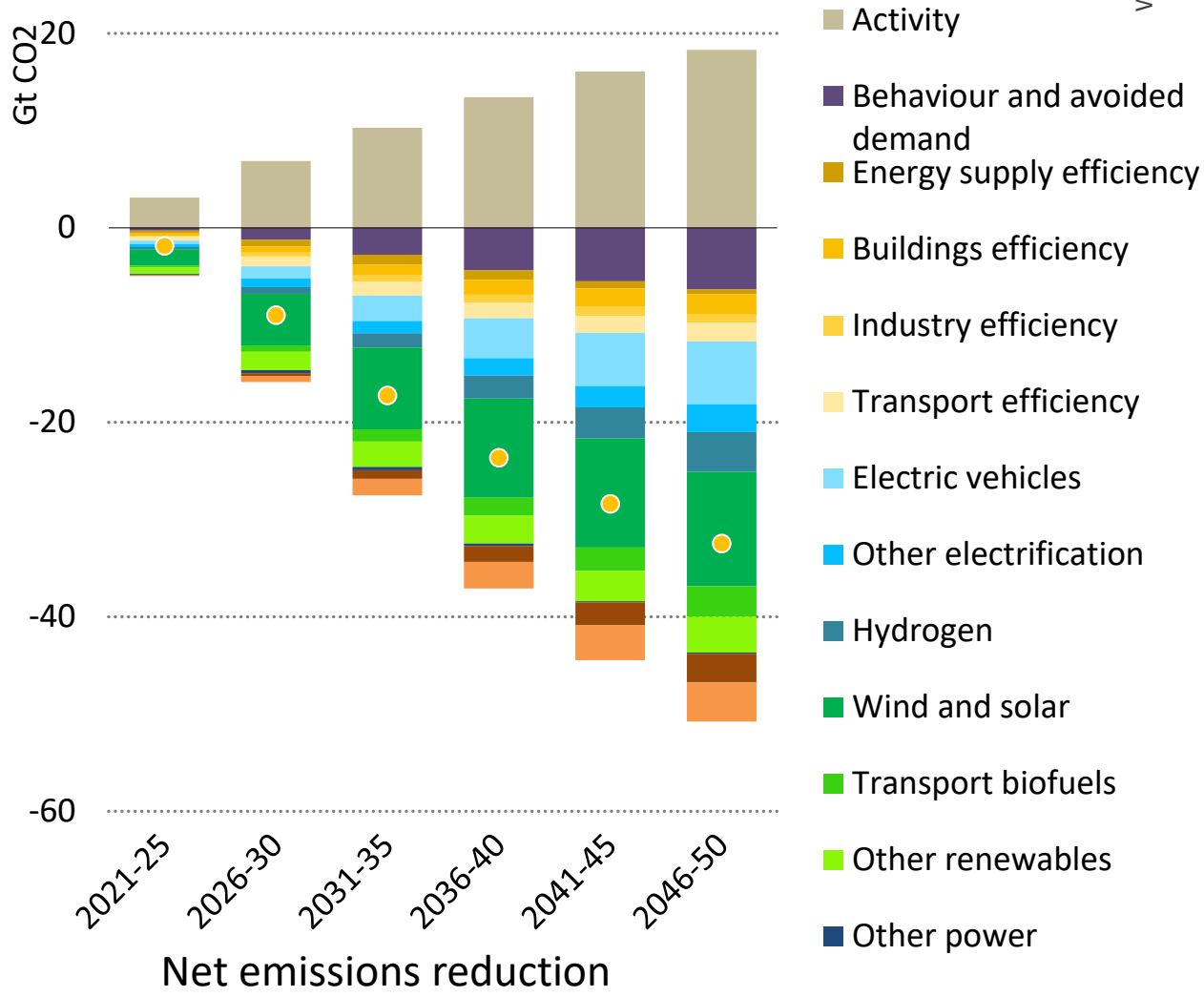
Technologies for achieving the necessary deep cuts in global emissions by 2030 exist, but staying on the narrow path to net-zero requires their immediate and massive deployment.

International Energy Agency (2021), Net Zero by 2050, IEA, Paris

Behavioral change in NZ economy

Wakeman





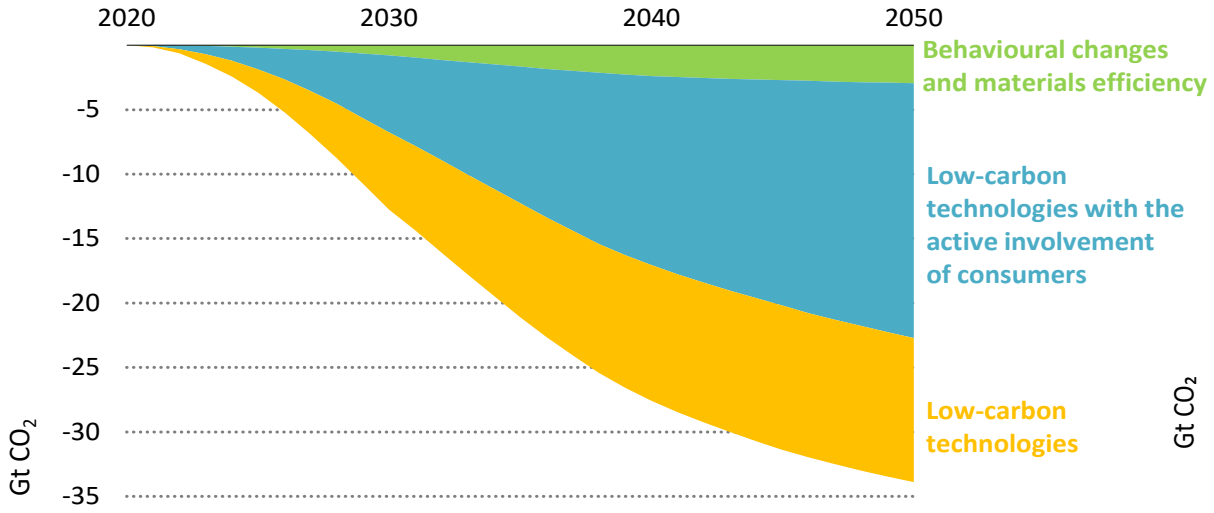
ME-203

Net Zero by 2050 Scenario - Data product - IEA

Behavior changes and avoided demand are critical to achieve net-zero emissions; together with efficiency, renewables, electrification, and a wide range of measures and technologies.

Behavioral change in NZ economy

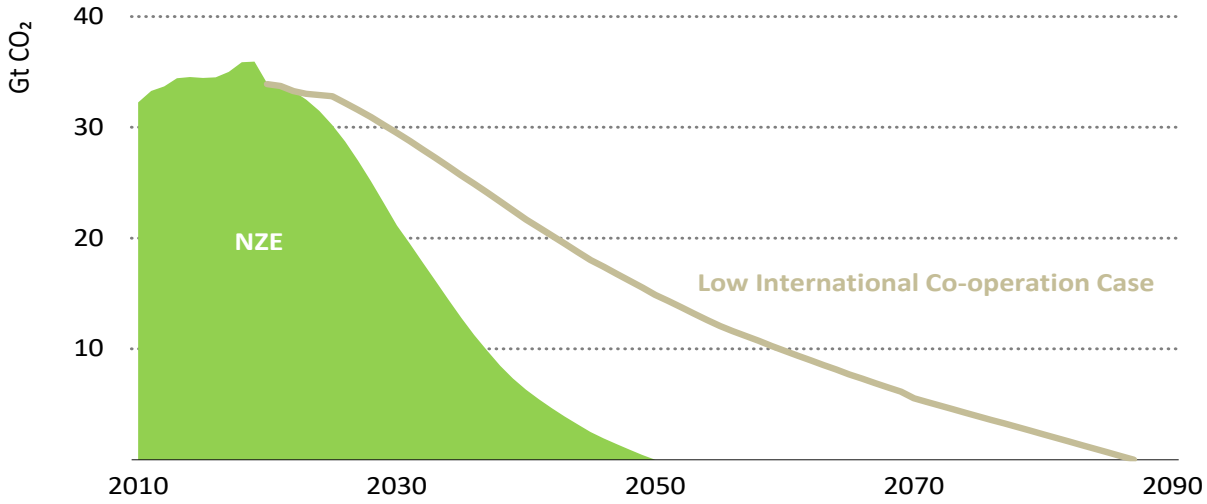
Wakeman



Role of technology and behavioral change in emissions reductions in the NZE

Around 8% of emissions reductions stem from behavioral changes and materials efficiency but including the needed active customer involvement increases this to 67%

CO2 emissions in the Low International Co-operation Case and the NZE

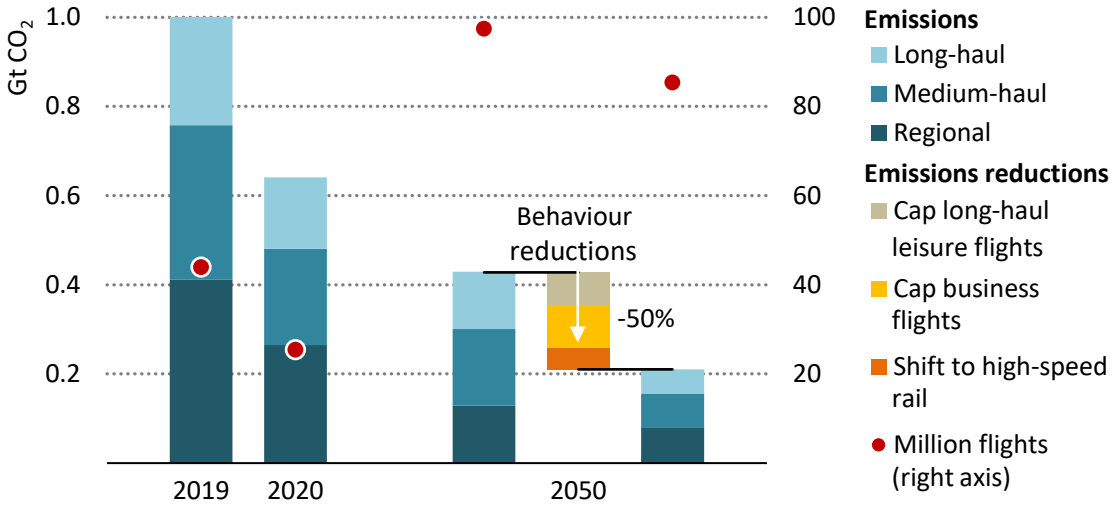


Without international co-operation, the transition to net zero would be delayed by decades

Net Zero by 2050 Scenario - Data product - IEA

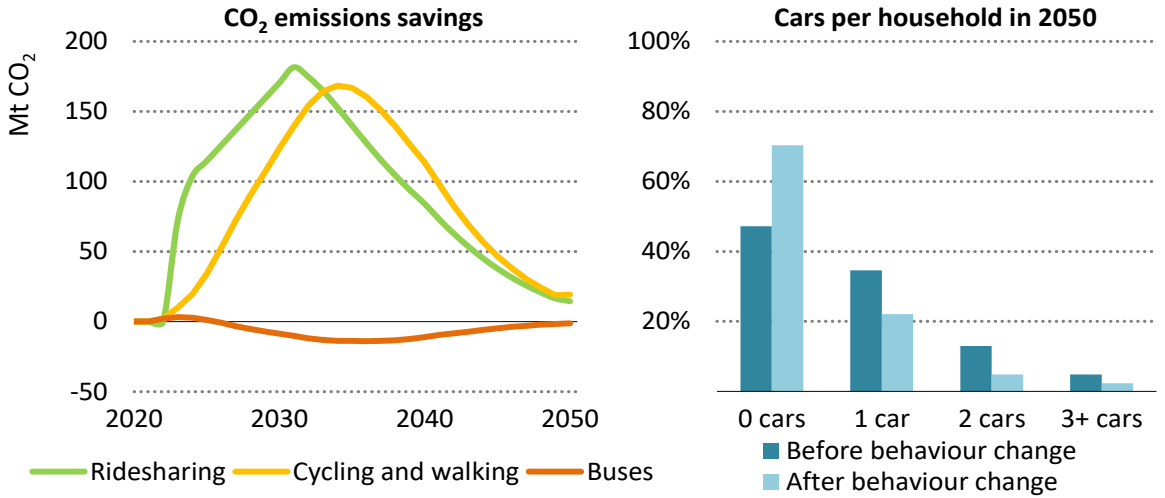
Behavioral change in NZ economy

Wakeman



Global CO2 emissions from aviation and impact of behavioral changes in the NZE

Demand for passenger aviation is set to grow significantly by 2050, but behavioral changes reduce emissions by 50% in 2050 despite reducing flights by only 12%



Global CO2 emissions savings and car ownership per household due to behavioral change in the NZE

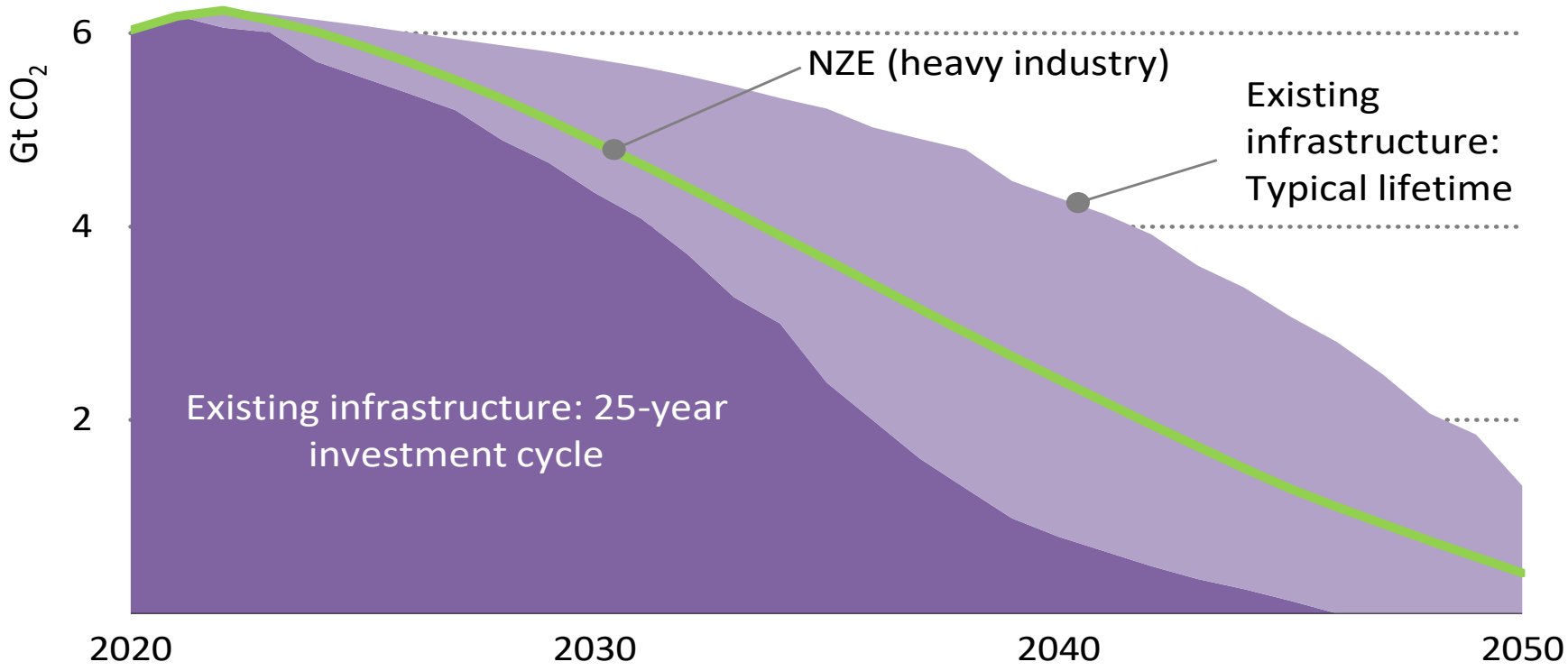
Policies discouraging car use in cities lead to rapid reductions in CO2 emissions and lower car ownership levels, though the impact diminishes over time as cars are electrified

ME-203

Net Zero by 2050 Scenario - Data product - IEA

NZE - Renewal of infrastructure (stranded assets)

Wakeman



CO2 emissions from existing heavy industrial assets in the NZE

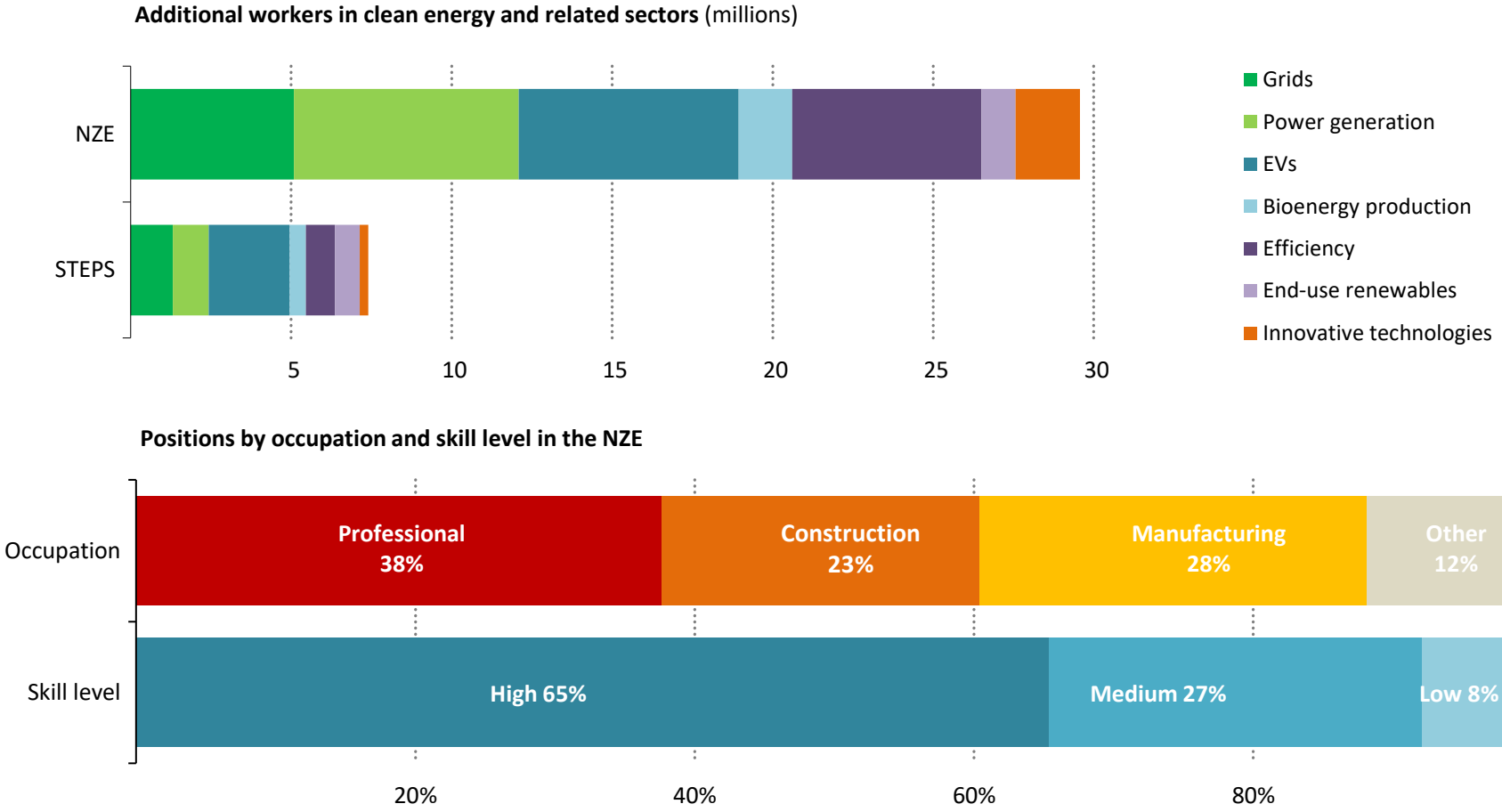
Intervening at the end of the next 25-year investment cycle could help unlock 60 Gt CO2, around 40% of projected emissions from existing heavy industry assets.

Net Zero by 2050 Scenario - Data product - IEA

NZE - Reallocation and retraining of workers

Wakeman

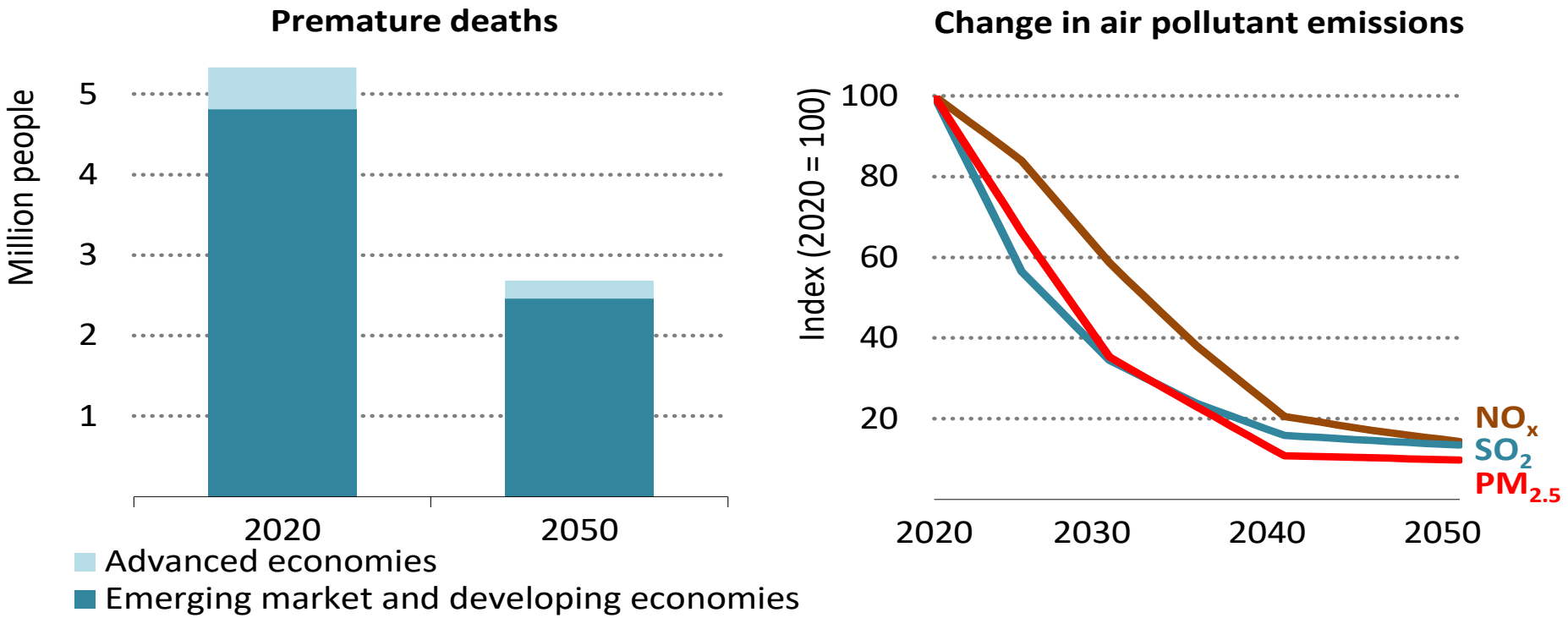
New workers in clean energy and related sectors and shares by skill level and occupation in the NZE and the STEPS in 2030



Net Zero by 2050 Scenario - Data product - IEA

About 30 million new workers are needed by 2030 to meet increased demand for clean energy, efficiency, and low-emissions technologies; over half are highly skilled positions

NZE increases human health



Global premature deaths and air pollutant emissions in the NZE

Reductions in major air pollutants mean 2 million fewer premature deaths per year

Net Zero by 2050 Scenario - Data product - IEA

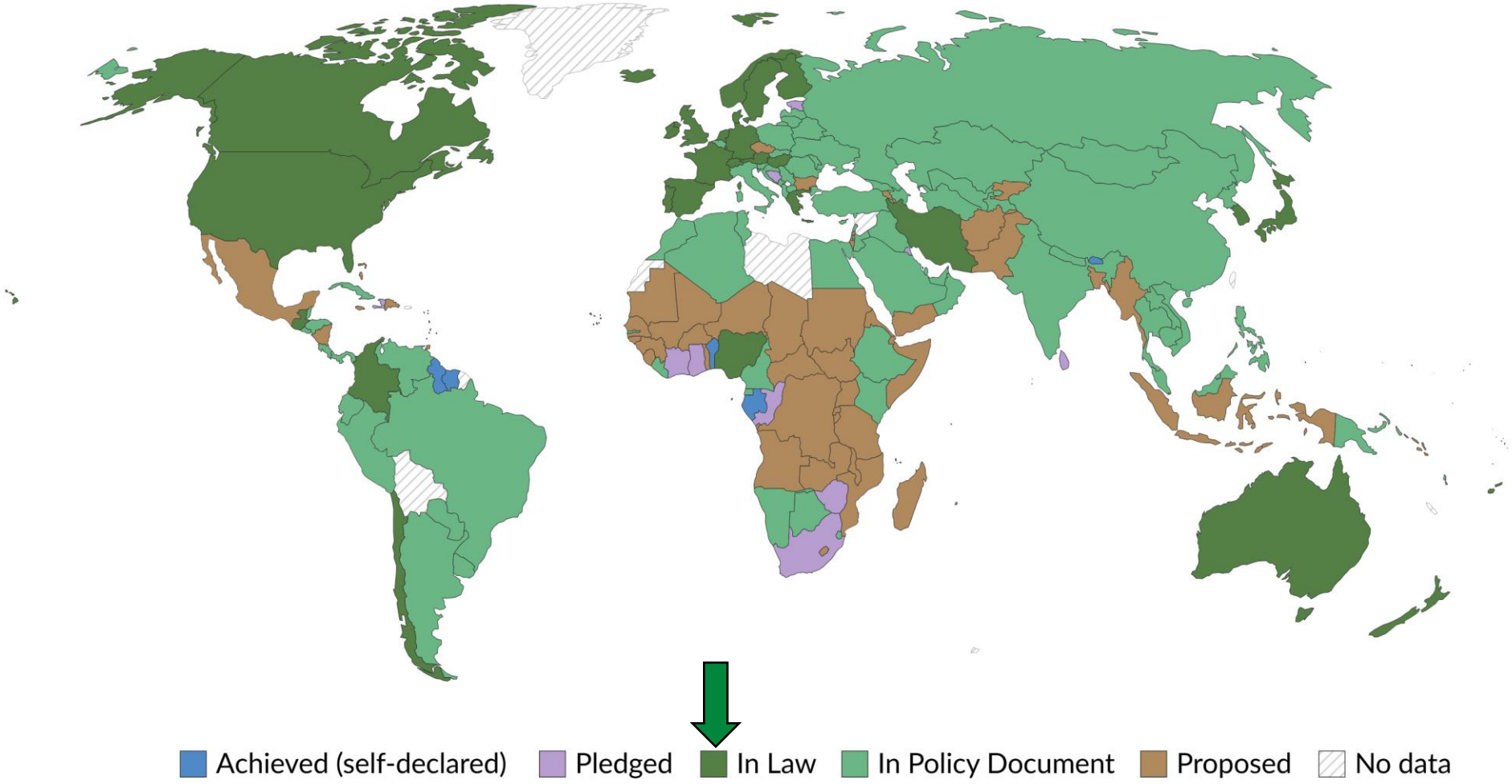
Overview

- Macro economic models
- Country models
- Industry wide trends
- Company specific
- NetZero vs. NetPositive

Status of net-zero carbon emissions targets

Our World in Data

The inclusion criteria for net-zero commitments may vary from country to country. For example, the inclusion of international aviation emissions; or the acceptance of carbon offsets. To see the year for which countries have pledged to achieve net-zero, hover over the country in the interactive version of this chart.



Data source: Energy and Climate Intelligence Unit, Data-Driven EnviroLab, NewClimate Institute, Oxford Net Zero - Net Zero Tracker (2023)

OurWorldinData.org/co2-and-greenhouse-gas-emissions | CC BY

National targets

GOV.UK

Home > Business and industry > Business and the environment

Policy paper

Net Zero Strategy: Build Back Greener

This strategy sets out policies and proposals for decarbonising all sectors of the UK economy to meet our net zero target by 2050.

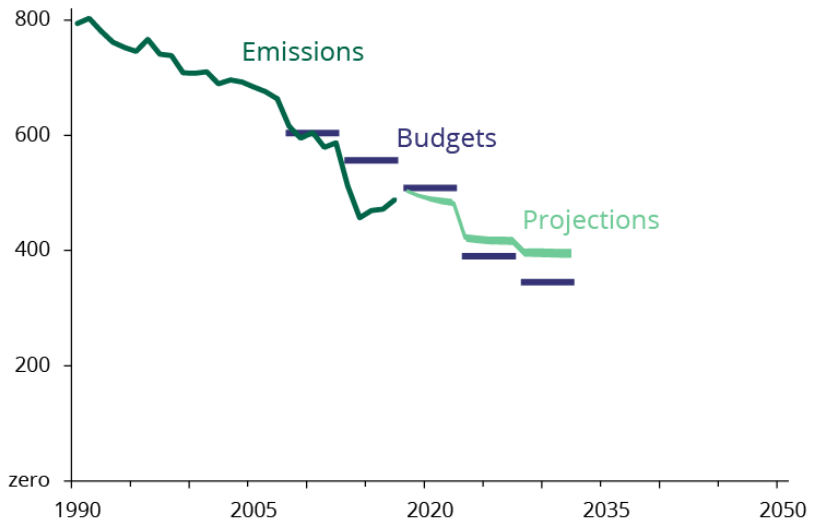
From: Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy

Published 19 October 2021

Last updated 5 April 2022 — See all updates

Chart 1: UK net emissions are falling...but there is a long way to go

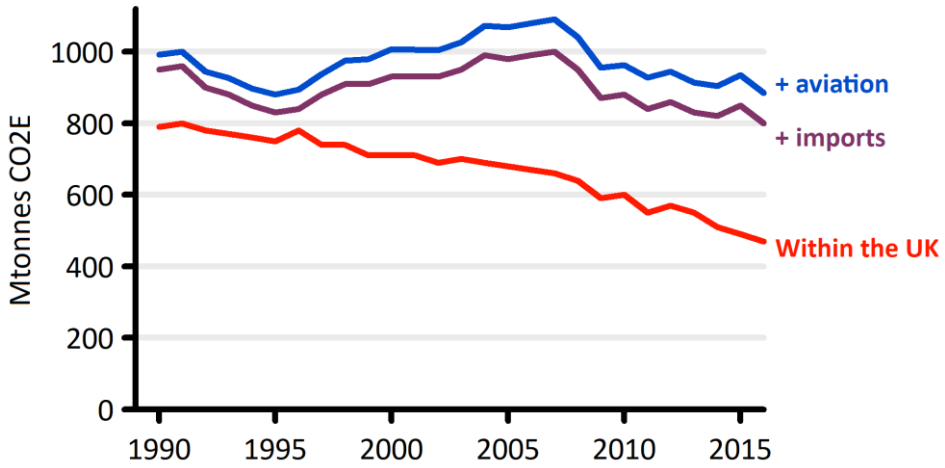
Million tonnes of CO2 equivalent



Acting on climate change: The plan for net zero emissions in the UK

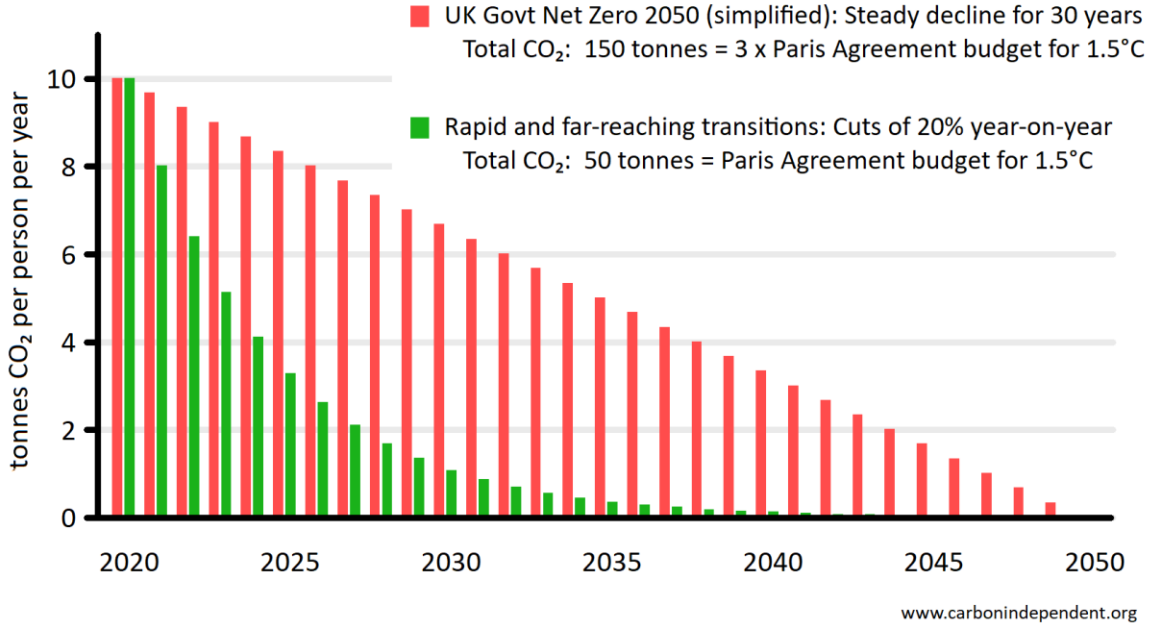
net-zero-strategy-beis.pdf

UK Greenhouse Gas Emissions



Wakeman

UK CO_2 emissions per person - two possible strategies



The 'Net Zero 2050' UK Government fallacies

Overview

- Macro economic models
- Country models
- Industry wide trends
- Company specific
- NetZero vs. NetPositive

Wakeman

Scope 1, 2, 3 emissions

CO_2 CH_4 N_2O HFCs PFCs SF_6

Scope 2
INDIRECT

Purchased electricity, steam, heating & cooling for own use

Scope 3 upstream
INDIRECT

Purchased goods and services

Capital goods

Fuel and energy related activities

Transportation and distribution

Waste generated in operations

Business travel

Employee commuting

Leased assets

Scope 1
DIRECT

Oil used on-site

Company facilities

Company vehicles

Scope 3 Downstream
INDIRECT

Transportation and distribution

Processing of sold products

Use of sold products

End-of-life treatment of sold products

Leased assets

Franchises

Investments

Upstream activities | **Reporting company** | **Downstream activities**

Corporate-Value-Chain-Accounting-Reporing-Standard_041613_2.pdf

Apple video 1

Apple's Ingenious Plan To Become Carbon Neutral

5min50s

Business level – sustainability initiatives

Wakeman

01

Commitments and ambitions are high

Despite persistent headlines about companies retreating from their sustainability initiatives, our research tells a different story: **More companies than ever are committed to decarbonization.**

02

Setting the table for shared value

The data tells an interesting story about what companies are learning as they execute against Scope 1, 2 and 3 emissions. While strides are being made, **the greatest remaining opportunities are related to engaging and innovating with value chain partners to address Scope 3 emissions.**

03

The recipe for success is becoming clearer

Successful decarbonization hinges on four differentiators:
i) how an organization governs its approach to climate,
ii) how it funds climate initiatives,
iii) **the effectiveness of its stakeholder engagement**, and
iv) the ability to reduce Scope 3 emissions through product sustainability.

04

The greatest value unlock is yet to come

A key motivator for Scope 3 decarbonization is the revenue and margin growth opportunities that companies are identifying related to **meeting demand for more sustainable products and services**. Many companies are at the beginning of this journey, and the evolution will yield clear winners and losers.

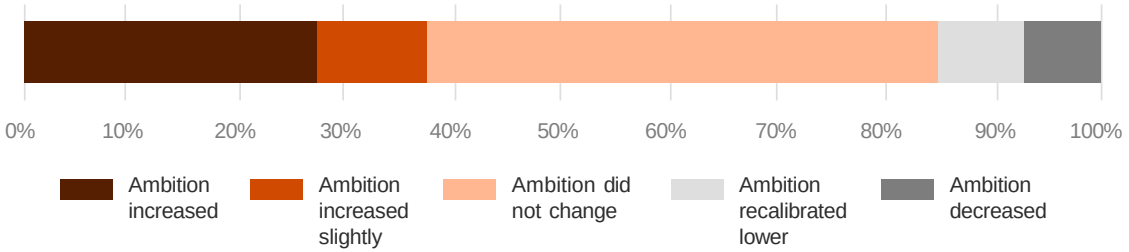
PricewaterhouseCoopers, also known as **PwC**,[4] is a multinational professional services network based in London, United Kingdom. It is the second-largest professional services network in the world[5] and is one of the Big Four accounting firms, along with Deloitte, EY, and KPMG.[

pwc-sustainability-decarbonization-2025.pdf

Growth in company decarbonization targets

Year over year growth in ambitions

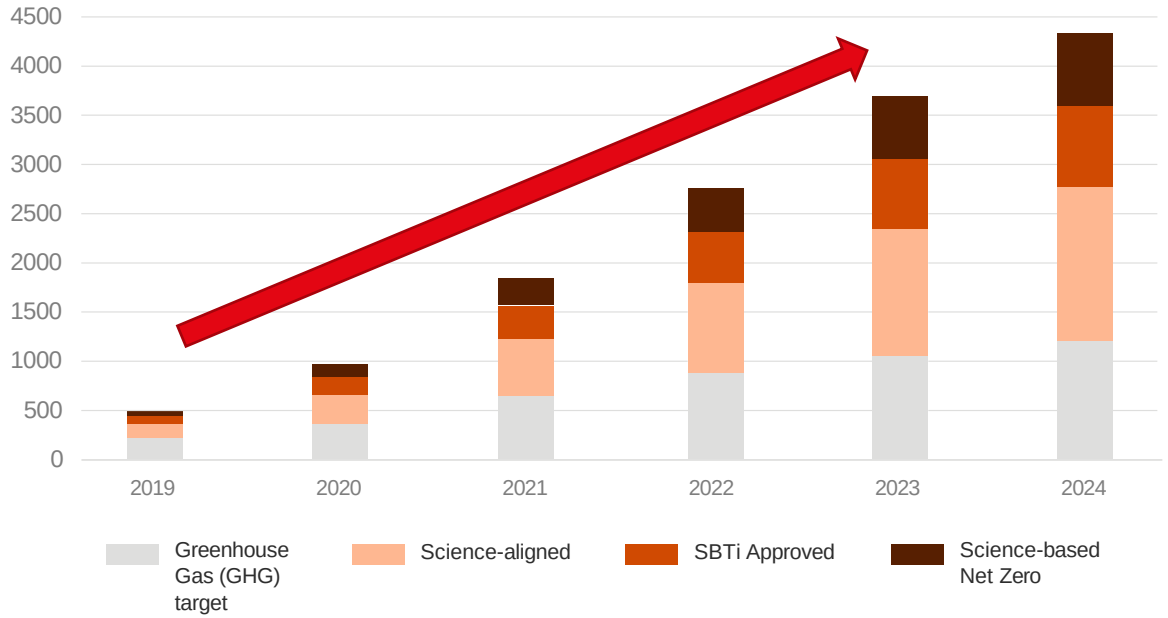
(% of companies)



Source: PwC analysis, CDP (2024)

Growth in companies with decarbonization targets

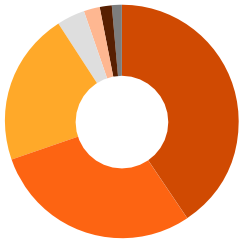
(Cumulative number of companies)



Source: PwC analysis, CDP (2024)

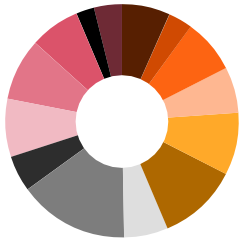
Scope of analysis

The assessment focused on 4,163 public companies that responded to 2024 questionnaire.



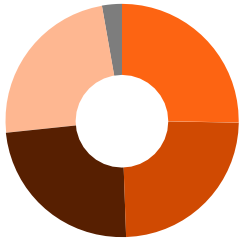
Breakdown of companies by region

- Africa
- Asia
- Europe
- North America
- MIddle East
- Oceania
- South America



Breakdown of companies by sector

- Agriculture, food and beverage
- Automotive
- Chemicals
- Construction
- Consumer goods and retail
- Electronics manufacturing
- Energy
- Financial services
- Healthcare
- Industrials
- IT and communications
- Metals and mining
- Other
- Shipping and logistics



Breakdown of companies by size

- Very Large (>$7B)
- Large ($2B-$7B)
- Small (<$500M)
- Medium ($500M>$2B
- No info

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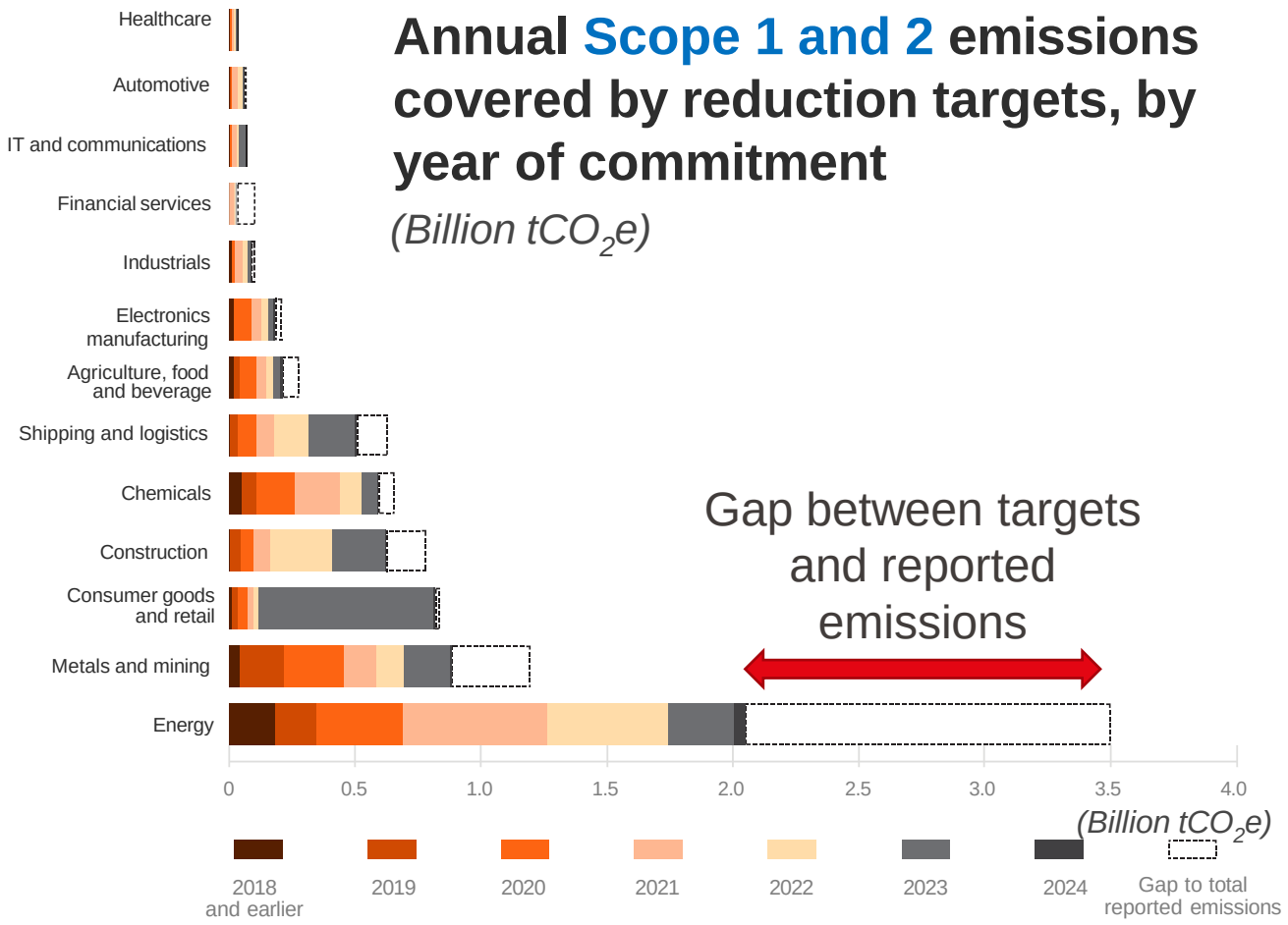
Scope 1&2: Commitments & ambitions



Source: PwC analysis, CDP (2024)
Note: The gap to total reported emissions represents company emissions that are not included under a reduction target. For example, a company that emits 100 tCO_2e with an 80% absolute reduction target has a gap of 20 tCO_2e.

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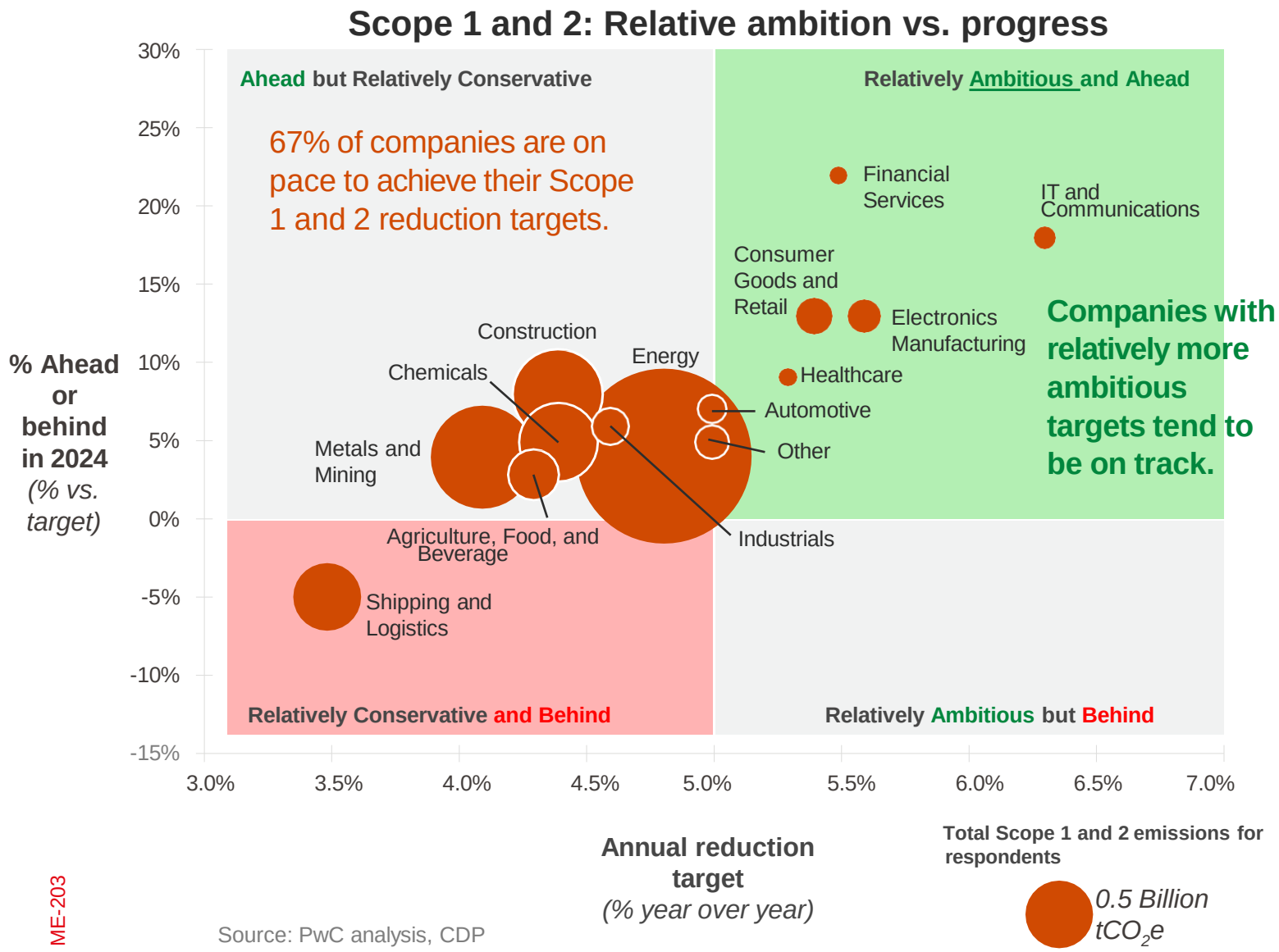
- Targets cover a majority of emissions across all sectors.
- For sectors with lower operational emissions, ranging from healthcare to IT and financial services, **most companies that publicly disclose their emissions have also committed to reducing them**.
- **SC impact:** companies in or supplying these sectors, the pressure is on and having targets is critical.
- However, **target adoption is less common in hard-to abate sectors such as energy, metals and mining and construction**.
  - *But the targets that have been announced still cover over 60% of annual emissions and commitments continue to grow each year.*
- Next steps: **improve target quality,** deeper & more credible abatement commitments **and strategies to deliver on those commitments.**

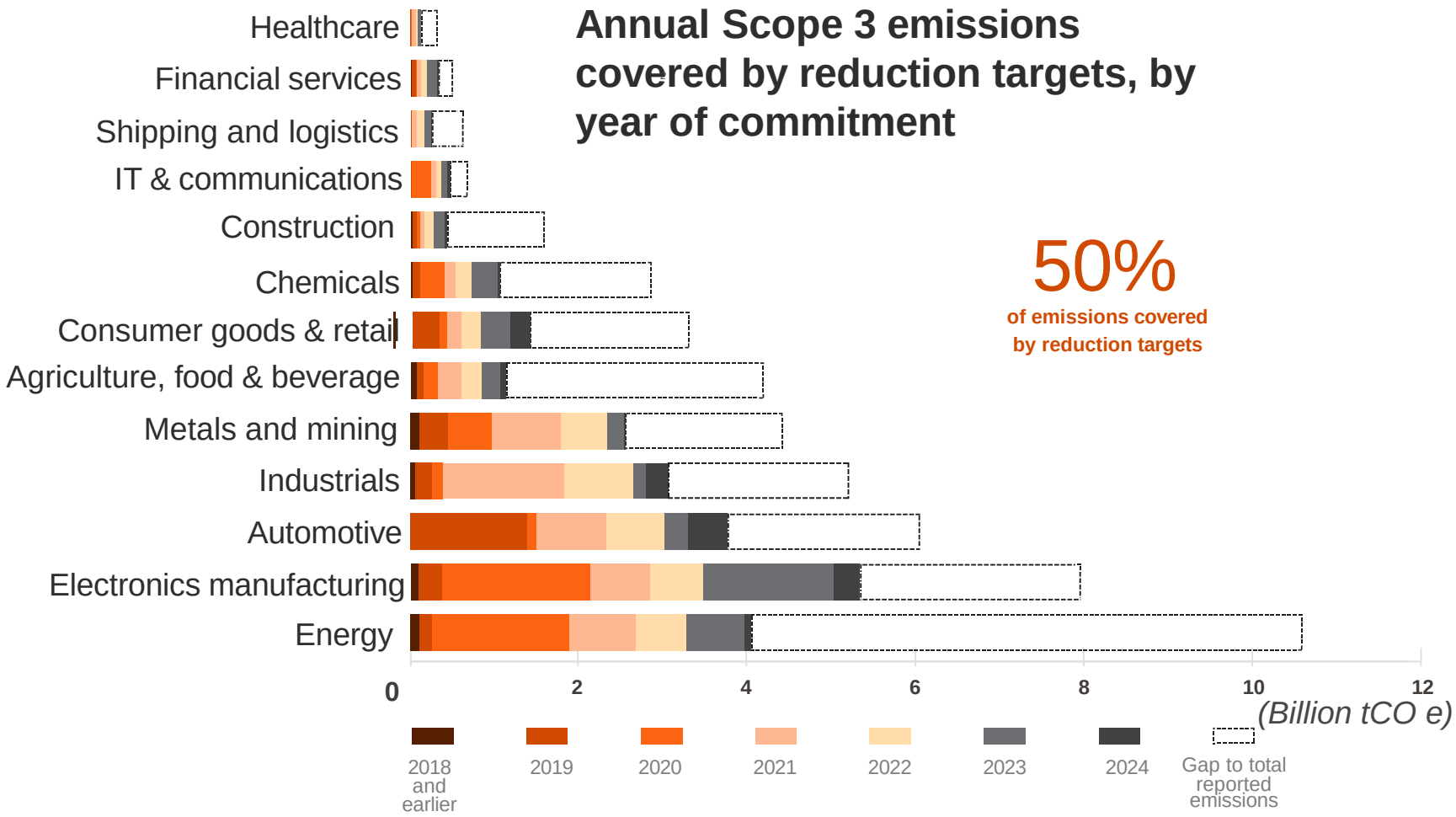
Scope 1 and 2: Progress vs. Ambition



Source: PwC analysis, CDP (2024)

- **Companies with relatively more ambitious targets tend to be on track,** while those that are taking a more conservative approach are behind their targets.
- The ambition and progression journeys are sector specific.
- Service-based industries like financial services and IT and communications may have an easier path to decarbonizing Scope 1 & 2 emissions since most Scope 2 emissions can be abated by purchasing renewable energy.
- Industries that use a lot of fuels and have high Scope 1 emissions (shipping, logistics or metals and mining) - the path to decarbonization is more challenging.
- Solutions like low carbon fuels can have limited availability and may be cost prohibitive.

Scope 3 *targets* are less common but growing



Source: PwC analysis, CDP (2024)
Note: The gap to total reported emissions represents company emissions that are not included under a reduction target. For example, a company that emits 100 tCO_2e with an 80% absolute reduction target has a gap of 20 tCO_2e.

- Emissions in companies' upstream and downstream value chains are much harder to measure, influence and abate.
- Relative proportion of Scope 3 *target coverage* is lower than Scope 1 & 2, Scope 3 targets are much larger and further reaching:
  - Scope 1 & 2 = 6 billion tonnes
  - **Scope 3 = 24 billion tonnes**
- When Scope 3 embodied carbon is lowered in a product, often means there is also less energy and materials needed for that product which can translate to lower costs and improved margins.
- **Scope 3 targets and action remain an important focus area** (with the potential to unlock a lot of value for companies and their customers)**.**

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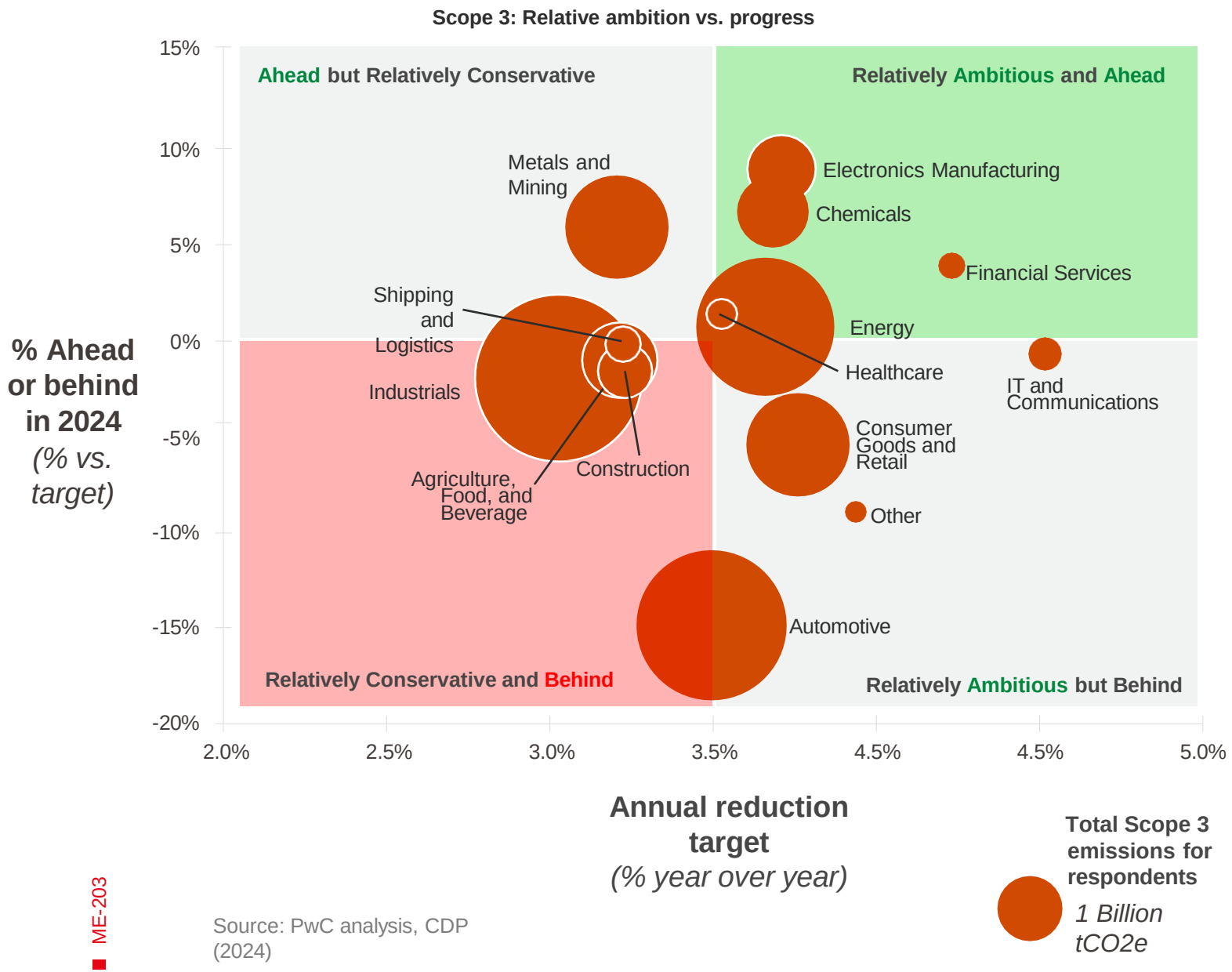
Scope 3: Relative ambition vs. progress



Source: PwC analysis, CDP (2024)

- Most companies several years ahead on their Scope 1 & 2 reduction vs. Scope 3.
- Maturity of supplier and customer engagement programs will grow as companies work to decarbonize their value chains and realize the value of **sustainable innovation.**
- For sectors like industrials and automotive (92% and 83% of Scope 3 emissions in the use of sold products), progress on Scope 3 will largely depend on their ability to deliver more sustainable products to customers.
- *Political headwinds aside,* the automotive sector continues to see double digit annual growth in electric vehicle sales but remains off track as EV adoption has trailed aggressive forecasts.
- The relative lack of overall progress and lower overall ambitions compared to Scope 1 and 2 targets on an annual basis reinforces that Scope 3 remains an area of great opportunity.
- **Companies who aggressively pursue Scope 3 reductions stand to build more resilient value chains & capture greater cost savings and revenue upside.**

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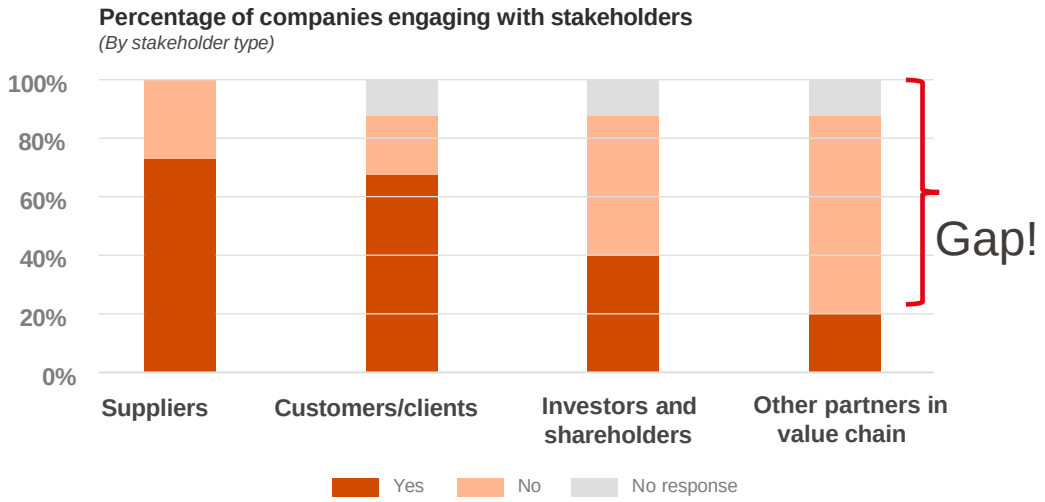
Percentage of companies engaging with stakeholders



Engagement on the rise

- Businesses recognizing that progress depends on collaboration across the value chain.
- 72% of companies are engaging with their suppliers while 67% are engaging with their customers/clients.
- With suppliers, collaboration can help unlock innovation such as low-carbon materials that enable more sustainable products.
- Engagement with customers helps suppliers better understand their customers' needs which can stimulate ideas that help their customers lower their emissions.
- Companies who engage with both suppliers and customers connecting evolving customer demand with upstream supply chains to drive business growth and decarbonization across the value chain.

Opportunity to improve supplier engagement effectiveness

- While engagement levels are high, analysis shows that companies' engagement practices are still lagging
- Helps explain some struggles companies are experiencing with Scope 3 emissions reductions.
- Leading companies are both incorporating climate commitment requirements into their contractual agreements and actively supporting their suppliers in meeting these targets.
- These companies driving change by facilitating access to renewable energy procurement, offering financing support, or providing certain volume purchase commitments over time.

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The quiet momentum turning climate commitments into competitive advantage

- Corporate sustainability initiatives are not slowing down — rather they're **quietly progressing and becoming more rigorous**.
- Despite the noise about corporate backpedaling, more companies than ever, from industry giants to small suppliers, are making climate commitments and holding firm to their goals. And for good reason — there is business value available from climate and decarbonization efforts.
- Progress is being made on reducing Scope 1 and 2 emissions, the real breakthrough is still ahead with Scope 3, where **addressing supply chain emissions and prioritizing product and supply chain sustainability can help define a wave of business transformation**.

Examples of business value available from climate and decarbonization efforts

Revenue Growth

- Increased price premium
- Increased market share
- New revenue streams to meet customer demand

Cost Reduction

- Lower energy use
- Less waste generation
- Lower raw material costs via circularity

Risk Reduction

- Higher energy resilience
- Stronger brand resilience
- Lower long-term costs for climate mitigation and adaptation

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Overview

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- Country models
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- Company specific
- NetZero vs. NetPositive

EPFL

Lego to replace oil in

Company is on track to ensure that more than half of the resin it needs in 2026 is certified according to the mass balance method, up from 30% in the first half of 2024.

Climate & Energy | Circular Economy | Fuel | Refining | Climate Change

Lego to replace oil in its bricks with pricier renewable plastic

https://www.reuters.com/business/retail-consumer/lego-replace-oil-its-bricks-with-pricier-renewable-plastic-2024-08-28/

By **Jacob Gronholt-Pedersen**

August 28, 2024 8:06 PM GMT+2 · Updated a month ago

Lego's suppliers are using bio-waste such as cooking oil or food industry waste fat as well as recycled materials to replace virgin fossil fuels in plastic production.

Rival toymaker Hasbro has started including plant-based or recycled materials in some toys, but without setting firm targets on plastic use. Mattel plans to use only recycled, recyclable or bio-based plastics in all products by 2030.

Around 90% of all plastic is made from virgin fossil fuels, according to lobby group PlasticsEurope.

[1/9] A view of a Lego figure on display inside their headquarters in Billund, Denmark, April 25, 2024. REUTERS/Jacob Gronholt Pedersen Purchase Licensing Rights

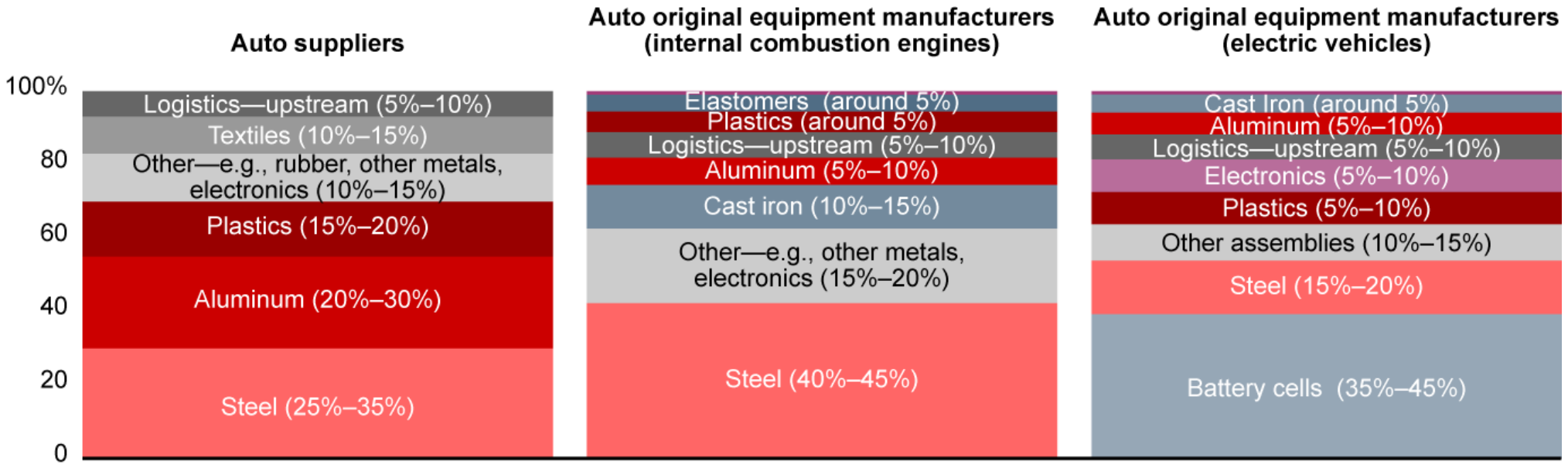
Ineos project one

4min 45s

Climate change: Waiting is no longer an option - INEOS Project ONE

Typical automotive scope 1,2,3

Percentage of upstream Scope 3 emissions by category (2022)



	Auto suppliers	Auto original equipment manufacturers (internal combustion engines)	Auto original equipment manufacturers (electric vehicles)
Scope 1	5%–10%	0–5%	0–5%
Scope 2	5%–20%	0–5%	0–5%
Scope 3 upstream	**65%–80%**	**20%–30%**	**40%–50%**
Scope 3 downstream	0–50%	70%–80%	45%–55%

Note: Large differences in emissions depend on product offering (e.g., tires vs. passive safety vs. engine systems)

Note: Highly dependent on energy mix for charging—with green energy, vast majority is upstream emissions →

Note: Auto suppliers data includes directional estimates based on around 15 of the largest Tier 1 suppliers' mix
Sources: CDP data; Bain analysis

Capturing Value by Decarbonizing the Automotive Supply Chain | Bain & Company

Sustainable Practices in Automotive: Growth Drivers 2024-2050

Driver	1–2 Years	3–4 Years	5–27 Years
End of Life of EV Components: Business opportunities are available with 2nd life application of electric vehicles (EVs) and their **recycled** raw materials, such as nickel and cobalt, to gain a popular business model for various automotive OEMs.	High	High	High
Advanced Manufacturing Process: Concepts such as digital twins, **energy-efficient manufacturing systems**, and microfactories will reduce the GHG emissions and waste that factories generate and ensure sustainability in the assembly of vehicles.	High	High	Medium
SDG: As a part of SDG goals and UN member countries' commitment toward sustainable development in 2030, governments are increasingly imposing regulations on automotive OEMs to increase sustainable practices and reduce GHG emissions along the **entire value chain**.	Medium	High	High
Circular Economy Principles: A sustainability-focused design that includes the concepts of **end-of-life recycling and modular assembly** practices will begin from the concept stage of design to ensure sustainable practices in vehicle design in upcoming years.	Medium	Medium	High
Lightweight Materials Usage: Automotive manufacturers adopting lightweight materials for their vehicles will **reduce overall weight**, improving fuel efficiency and lowering emissions.	Medium	Medium	Low

Insights-frost-auto.pdf

Source: Frost & Sullivan

Sustainable Practices in Automotive: Growth Restraints, Global, 2024–2050

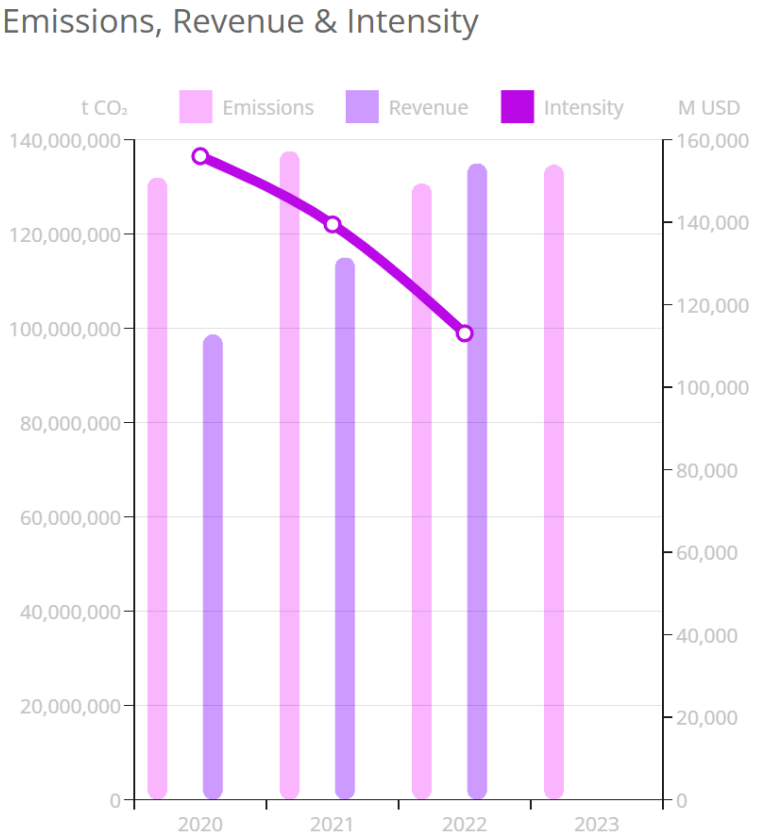
Restraint	1–2 Years	3–4 Years	5–27 Years
High Implementation Costs to Achieve Sustainability: Implementing sustainable practices in areas such as material usage and energy generation involves huge **investments**, burdening automotive OEMs, especially small- and medium-scale automakers.	High	High	Medium
Lack of Standard Regulations: The sustainability standards differ in various regions. European standards are much stricter compared to standards in Asian countries. Hence, it becomes tedious for an automaker to implement sustainability across various manufacturing locations, as plants in each region have separate priorities.	High	High	Medium
Monitoring the Vehicle Life Cycle: To monitor the sold vehicles and their return, ensuring proper end-of-life disposal becomes crucial for automakers. The **recycling and disposal standards are becoming strict**, threatening automakers.	High	High	Medium
Limited Consumer Awareness: Consumer interest and awareness in buying green products, such as eco-friendly interiors in cars and modular vehicles, have limitations. The **willingness to pay** for these green products is growing slowly, making automakers cautious about investing in these areas.	High	Medium	Medium
Limitations with Sustainable Material Usage: Although sustainable materials usage is seeing encouragement, it has limitations in certain areas. For instance, using plant-based materials instead of plastics will improve renewable material usage yet promote deforestation.	Medium	Medium	High

Insights-frost-auto.pdf

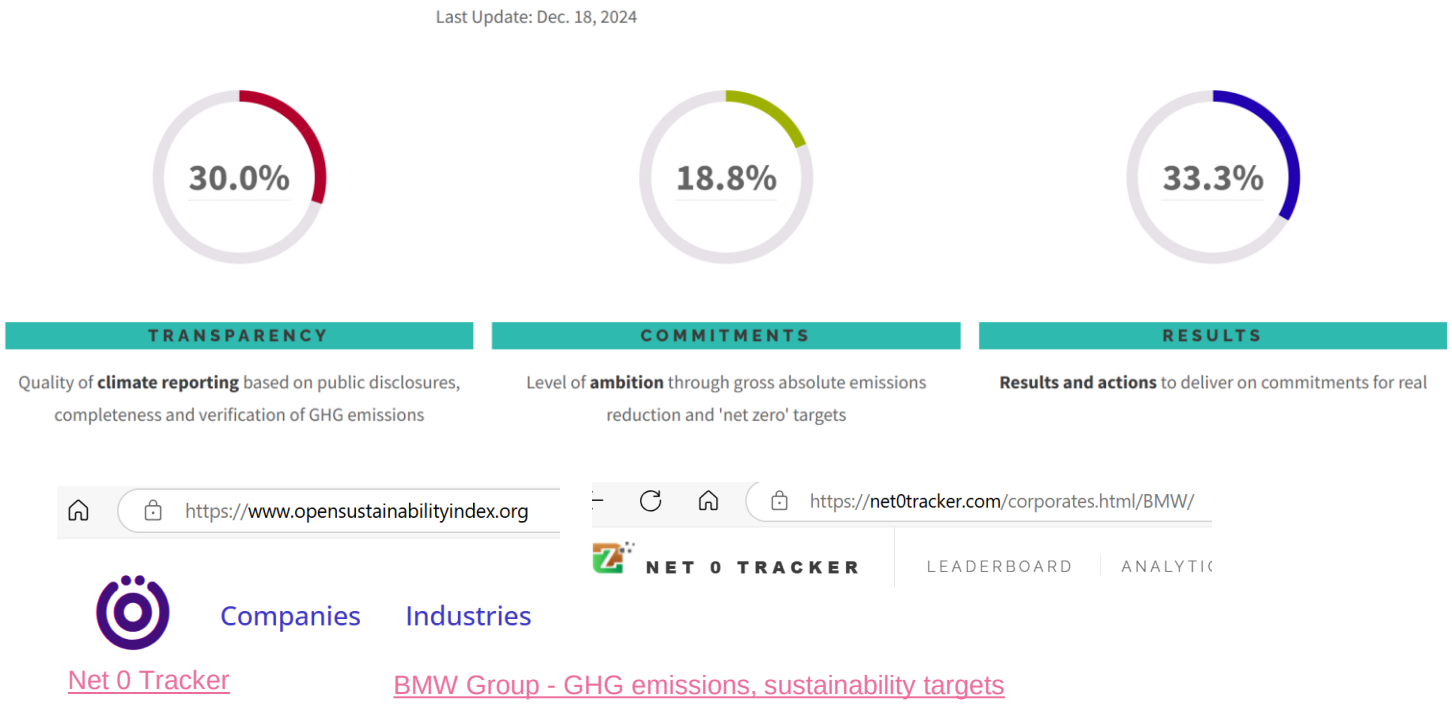
Source: Frost & Sullivan

BMW scope 1, 2, 3

- BMW Group commits to reduce scope 1 and 2 GHG emissions 80% per vehicle produced by 2030 from a 2019 base year.*
- BMW Group commits to reduce scope 3 GHG emissions from use of sold products 50% per vehicle kilometer by 2030 from a 2019 base year.
- BMW Group commits to reduce scope 3 GHG emissions from purchased goods & services and upstream transportation & distribution services 22%per vehicle sold by 2030 from a 2019 base year.



Wakeman



Net 0 Tracker

BMW Group - GHG emissions, sustainability targets

Near-term for 2030 (scope 3)

Base year:	**2019**
Target year:	**2030**
Reduction:	**0.5**
Classification:	**Well-below 2°C**

BMW Group commits to reduce scope 3 GHG emissions from use of sold products 50% per vehicle kilometer by 2030 from a 2019 base year.

Source: Science Based Target initative

BMW fully-recyclable car

- The i Vision Circular car
- It plans to launch in 2040
- A design that uses 100% recyclable materials, including the battery pack, underlines BMW's ambitious plans

The BMW Group emphasizes its consistent focus on sustainability at the 2021 IAA Mobility: More stringent CO2 targets go hand in hand with concrete measures and concepts for implementation

06.09.2021 PRESS RELEASE TOP AGED UPDATE

The BMW Group is putting circular economy and sustainable urban mobility at the centre of its presence at the 2021 IAA Mobility. At the motor show, the company is consistently demonstrating its sustainability and CO2 targets as well as its concrete measures and concepts to achieve these goals.

#i20 · #G26 · #Motor Shows · #BMW iX · #BMW i · #Finance, Facts, Figures · #Design, Concepts, Studies · #Design, Concepts, Studies · #Europe · #Corporate · #Sustainability · #Lifestyle Products · #Lifestyle · #Corporate Events · #BMW i4

https://autovista24.autovistagroup.com/news/bmw-considers-lifecycle-of-a-vehicle-with-fully-recyclable-car/

BMW joins responsible mining group with BASF, SAMSUNG

- **Initiative for Responsible Mining Assurance (IRMA)**
  - Development of innovative and sustainable technologies in lithium-ion batteries, from mining and processing the raw materials to production and recycling
  - Measures performance mines against “Standard for Responsible Mining”
  - Emulate for industrial-scale mine sites what has been done with certification programs in organic agriculture, responsible forestry and sustainable fisheries

Cutting Out Middle-Men: BMW's New Way Of Sourcing Battery Materials

- Other OEMs (Ford, VW) joined the **Responsible Sourcing Blockchain Network (RSBN)**
  - Aims to encourage responsible sourcing in the minerals supply chain

BMW becomes first carmaker to join responsible mining group - MINING.COM

Photographing Congo’s Cobalt Empire | Fortune

Lithium Mining: The Electronic Boom - Heal the Planet

Video

https://youtu.be/YYYbo-_wqA0?si=tFculv52Wpjtuc6U

4min 45s
(8 min)

EPFL Polestar

How Polestar is using blockchain to increase transparency

Polestar looks at blockchain to validate ethical production of its batteries

February 8, 2021 - 10:46 am

Promoting transparency

For certain risk materials, such as mica and cobalt, we use blockchain technology to create traceability from raw materials to finished product. Blockchain has revolutionised supply chain visibility by offering an unchangeable, digital and fully transparent way of tracing materials.

Selecting suppliers

We carefully select our direct material suppliers, performing due diligence screening and risk assessments, and placing strict requirements on their operations before signing contracts. We require all Polestar battery suppliers to produce life-cycle assessments. With blockchain technology we make high-risk materials traceable, and all suppliers must adhere to our Code of Conduct for Business Partners. Through production and manufacturing we conduct audits to check adherence to our human rights values. Corrective actions are put in place where partners are found to fall short of our standards.

Three-step assessment

Our ongoing, three-step sustainability assessment program comprises an initial assessment (SAQ), a Supplier Sustainability Index (SSI) and a contractual commitment to adhere to our Code of Conduct for Business Partners. These steps aim to promote and preserve Polestar's values and sustainability goals from the initial supplier selection stage and throughout the subsequent working relationship.

We expect our partners to make improvements where necessary, and support them in doing so. In the case of repeated or severe violations to the Code of Conduct, and as a final resort, the supplier relationship may ultimately be terminated.

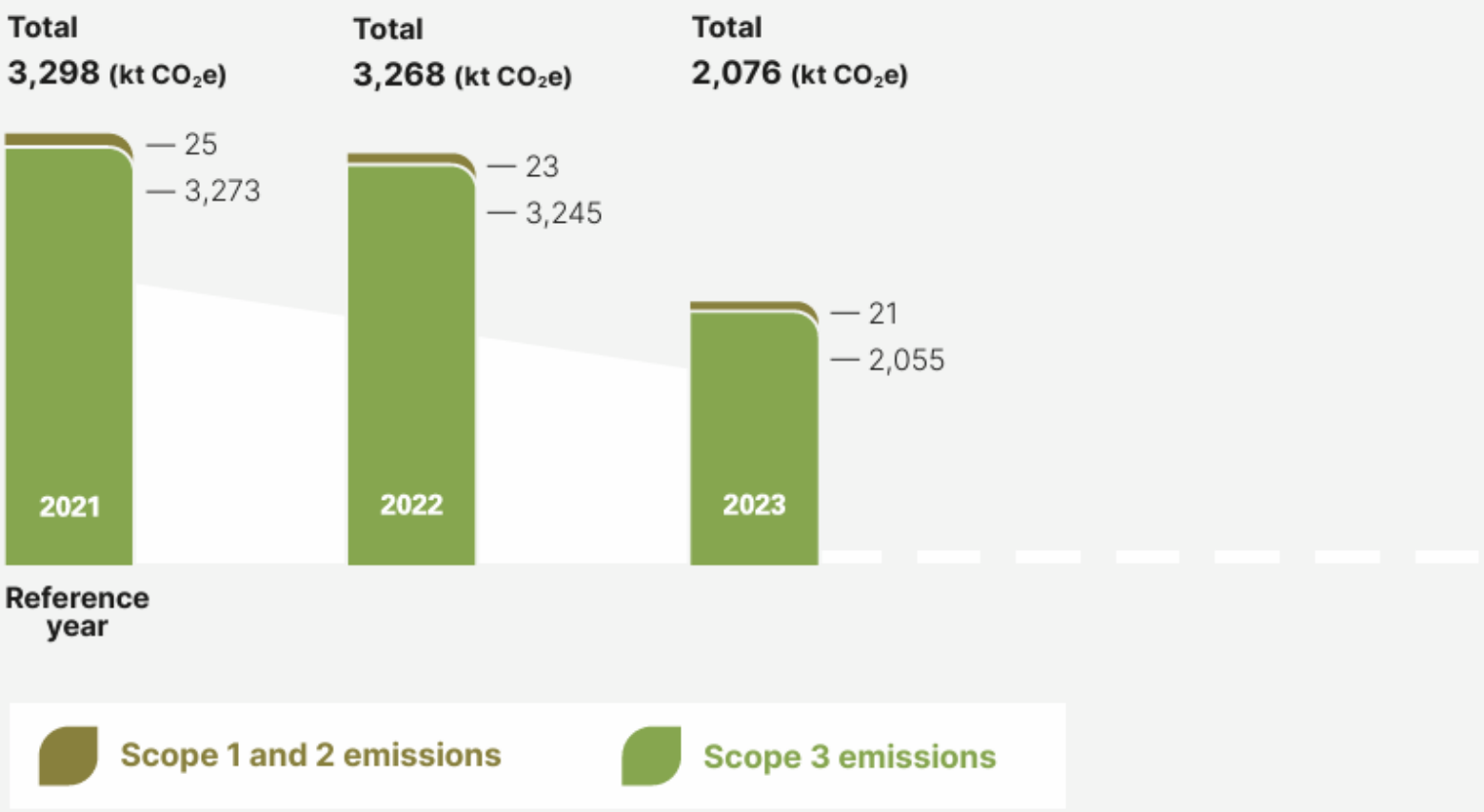
Code of Conduct for Business Partners

How Polestar is using blockchain to increase transparency (thenextweb.com)

1min

Volvo Cars use Blockchain to trace cobalt used in EV batteries - YouTube

Rolex scope 1, 2, 3

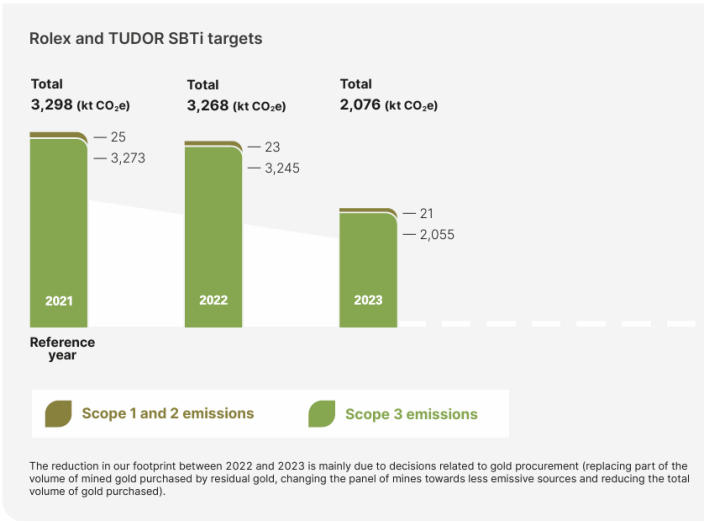


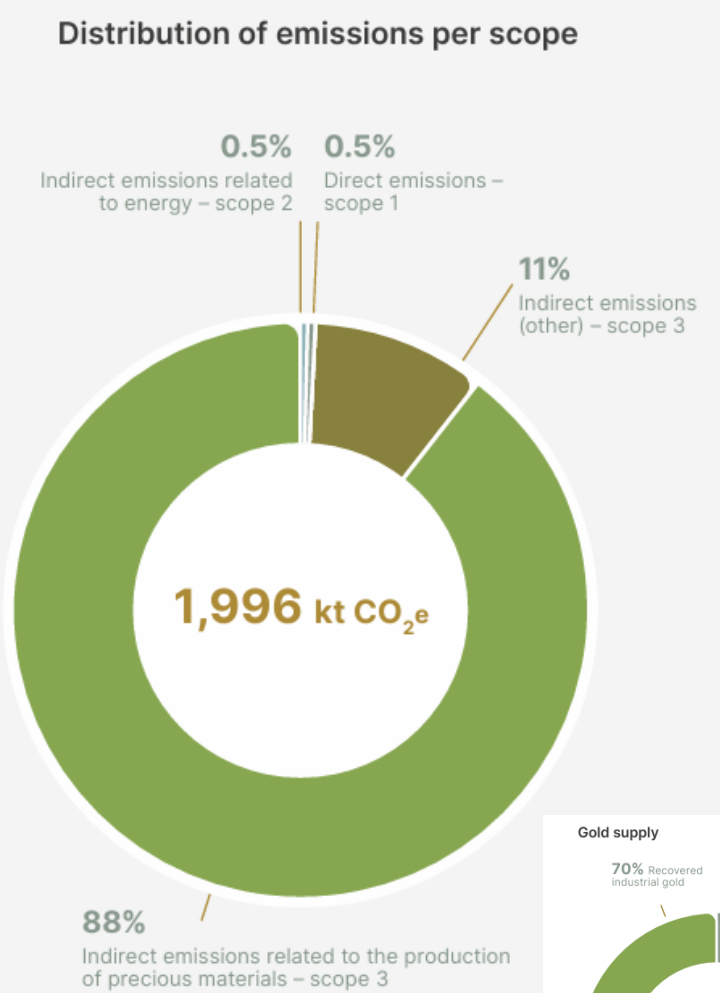
The reduction in our footprint between 2022 and 2023 is mainly due to decisions related to gold procurement (replacing part of the volume of mined gold purchased by residual gold, changing the panel of mines towards less emissive sources and reducing the total volume of gold purchased).

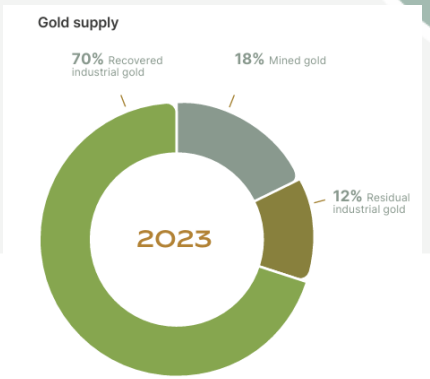
2023-csr-sustainability-report-digital_en

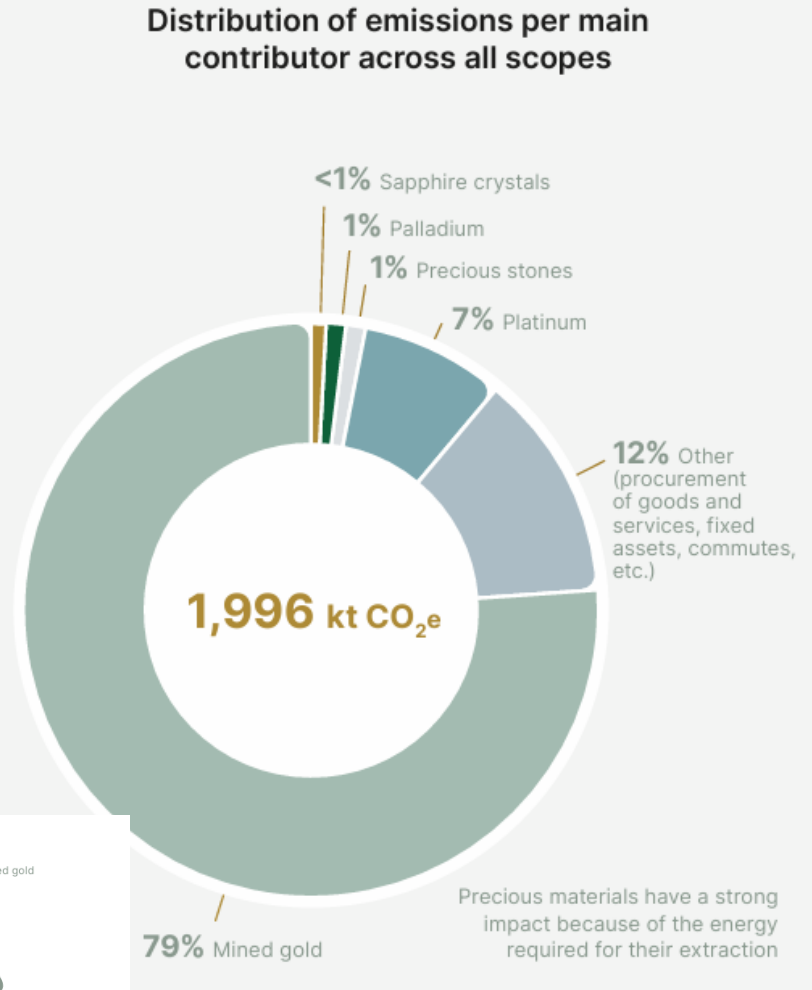
Example from Rolex

- 99% scope 3
- 88% precious metals
- 79% mined gold
- (but only 18% of gold used)









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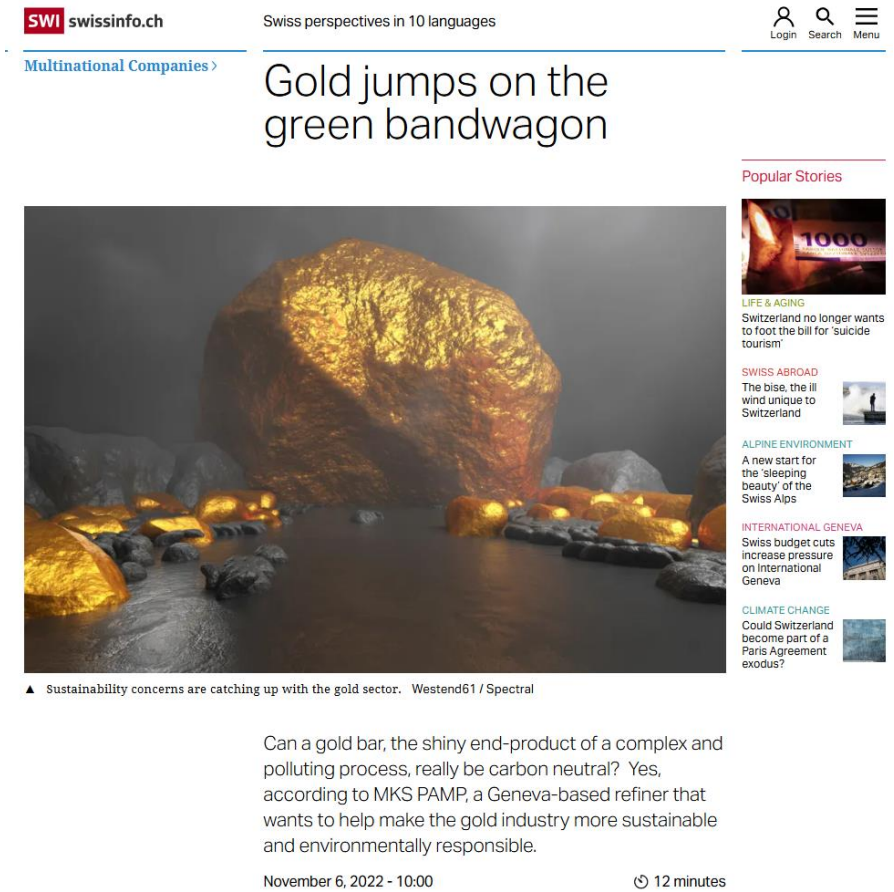
Carbon free gold?

- 1kg of gold creates 12,500kg of CO2 emissions
- When all stages and processes are combined, producing 1kg of gold requires 208,000 megajoules of energy, compared to 3,280 for silver of 53.7 megajoules for copper
- MKS PAMP is currently developing a carbon-neutral minted gold bar.



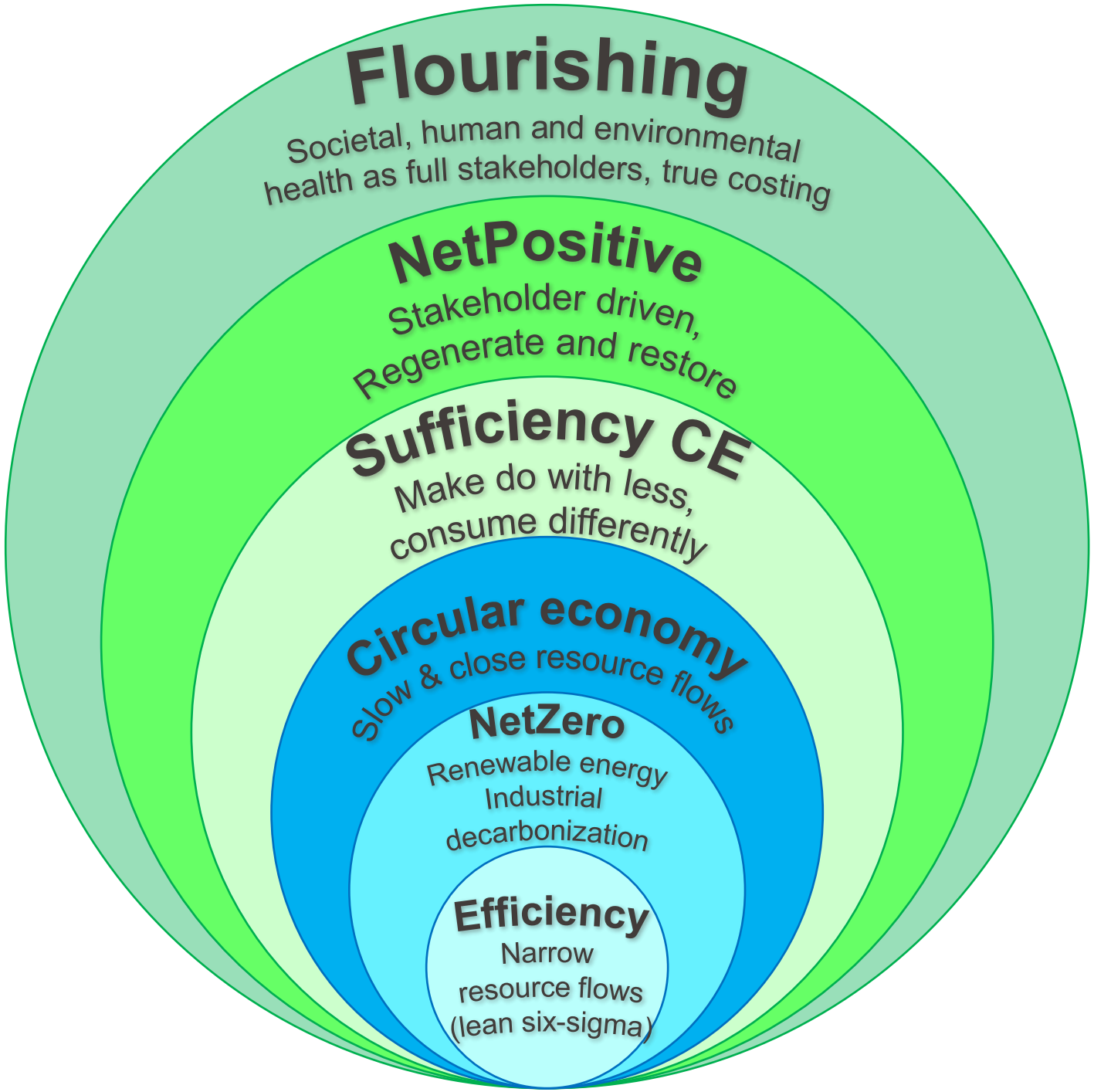
Carbon Verified Products | MKS PAMP
The Journey - Environmental Responsibility
Gold jumps on the green bandwagon - SWI swissinfo.ch

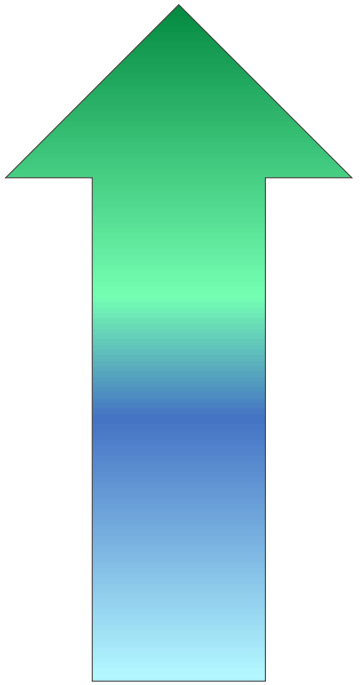
Example of sustainability initiatives related to gold in Swiss horologerie industry

	Scope 3 upstream		Scope 1 & Scope 2 indirect	Ethical gold Certifications
	Mining/extraction	Recycling	Reduce scope 3 by 25% 2030 Reduce scope 1&2 by 42% 2030	
Rolex (2Mtonnes CO2e in 2023, 99% scope3) Precious materials account for 88% of Rolex's 2023 footprint. The impact of mined gold is the most significant (89.5%),	Mined gold from industrial and small-scale mines (18%) 100% certified diamond (traceable to country) Tungsten, tin, tantalum RMI & CMRT Segregated equipment at refiners Mine's not disclosed 75% origin of Mother-of-pearl known	Circular industrial gold 70%, Gold residue from the watchmaking and electronics industries (12%). 40% brass recycled & titanium	Eliminate lead from 2025 LCA of watch box Recycling production waste Gold production waste recovery (even from fumes/brushes) Own foundry 10% cutting tool plastic packaging, aim is 90% in 2025 Natural gas still used Favours hydro power but no % given Some company electric vehicles Reduce VOC emissions by 50% 2030 29% of waste still incinerated, 4% landfill	Gold 99% traceable Deploy digital traceability for diamonds and precious metals. Guarantee geographical origins in line with Rolex's CSR criteria High risk suppliers (Unicef score) on-site visits Aims to copy gold approach to platinum and diamond to precious stones

2023-csr-sustainability-report-digital_en

Towards a flourishing society (regenerative & restorative)





Adapted from:
Frontiers | The Sufficiency-Based Circular Economy—An Analysis of 150 Companies (frontiersin.org)