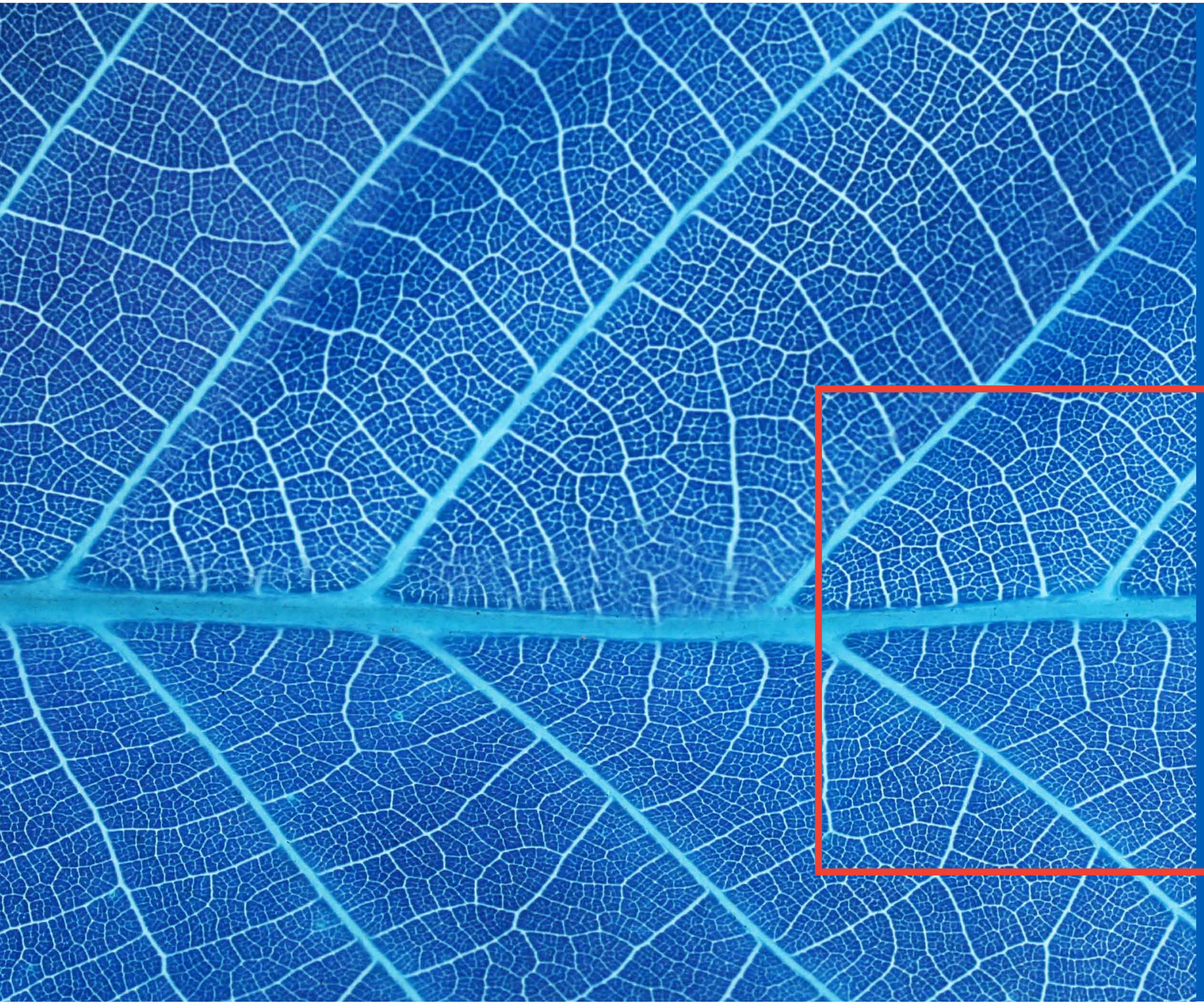
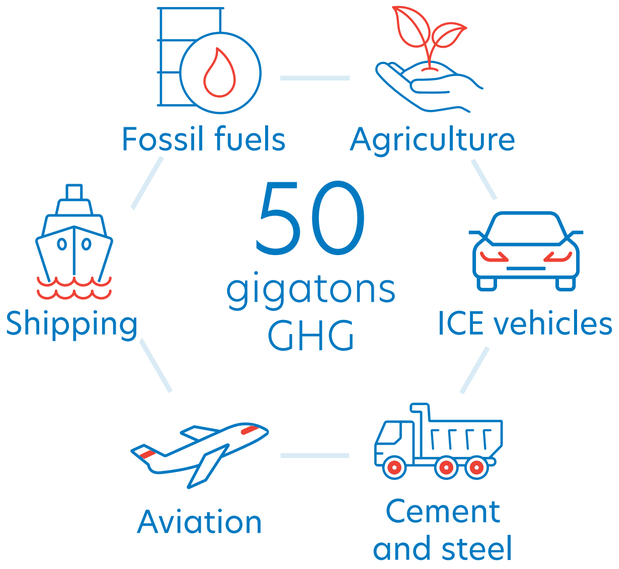


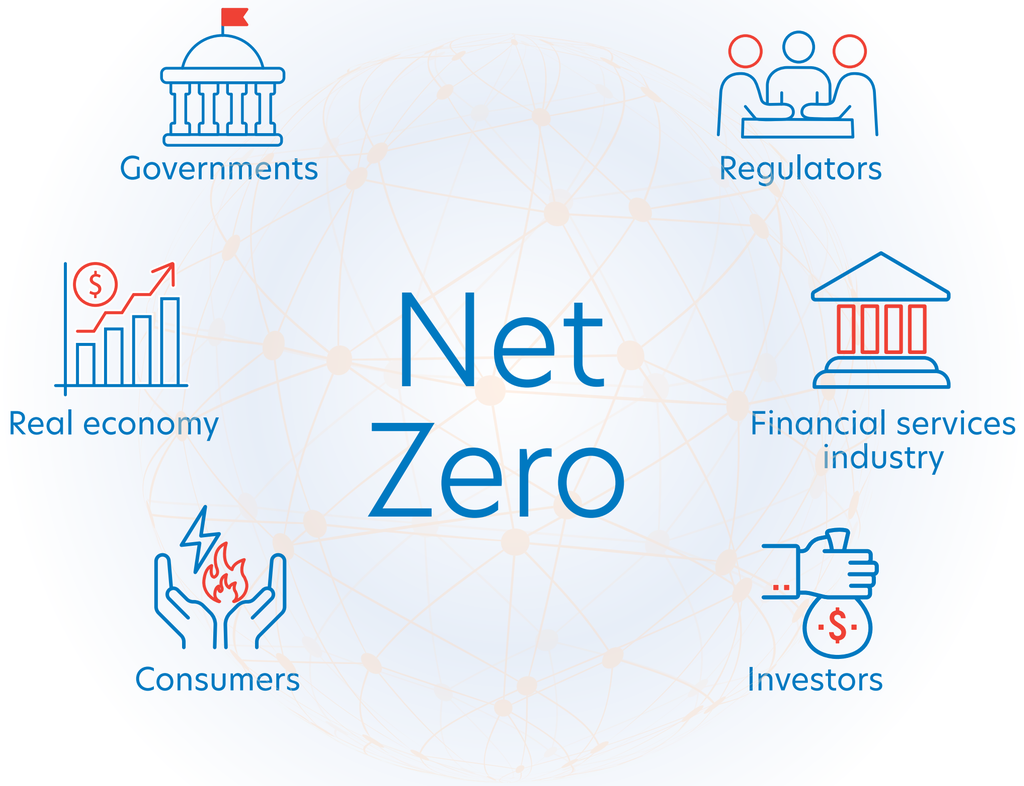
Forging our net zero future

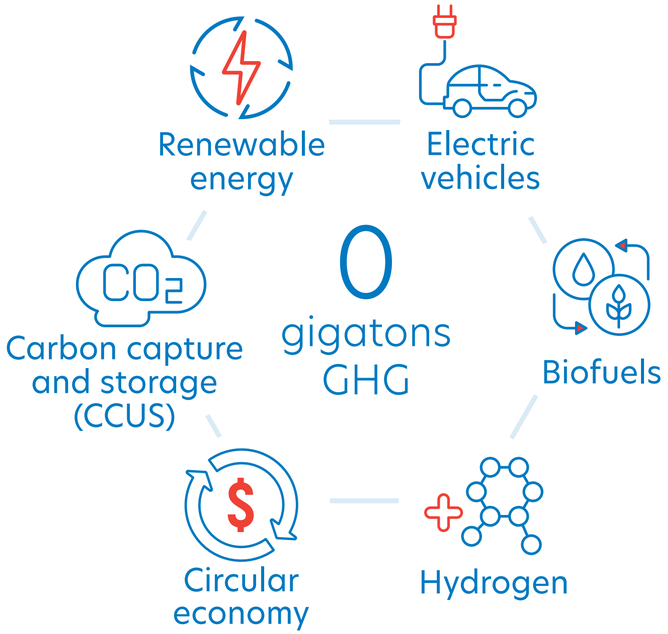
31 October 2022

The next industrial revolution to happen within 28 years



US$100 trillion
of investments required



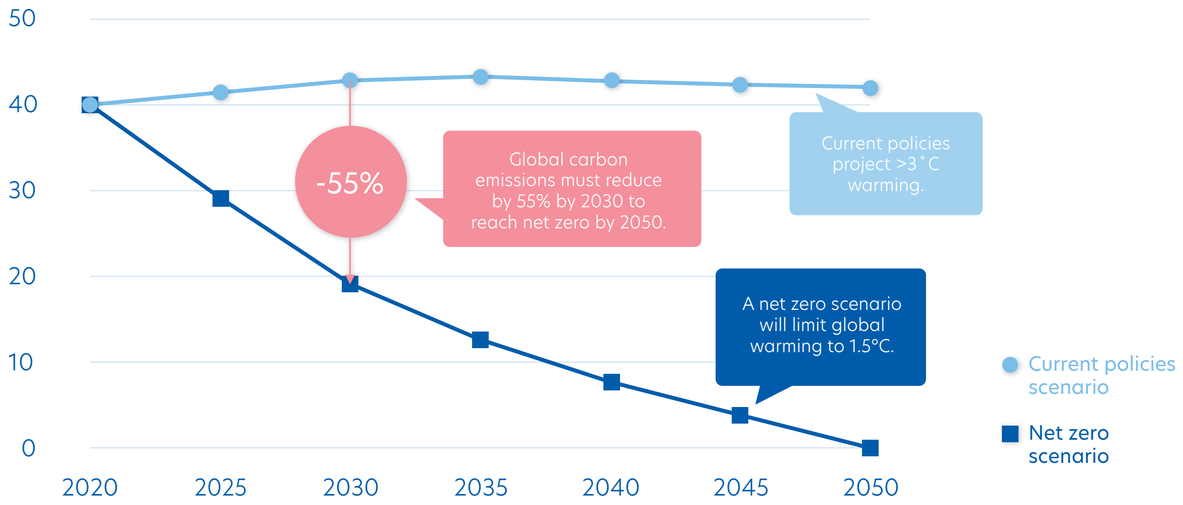


Climate change is intensifying with global greenhouse gas emissions continuing to rise

» **Importance of reaching net zero** – If global warming continues to increase at the current rate, global temperatures are likely to exceed 1.5°C above pre-industrial levels between 2030 and 2052. Unabated greenhouse gas (GHG) emissions will have profound negative implications across the global community and economy.

» **The net zero concept** – Net zero emissions are achieved when man-made emissions of GHG to the atmosphere are balanced by removals over a specified period. Following a net zero pathway will help limit the rise in global temperatures to 1.5°C and avert the most severe effects of climate change.

Global carbon dixoide emissions projections
(NGFS REMIND)
$GtCO_2$ / year, 2020 - 2050



Source: International Energy Agency (IEA), International Institute for Applied Systems Analysis' Network for Greening the Financial System (NGFS) Scenario Explorer, Intergovernmental Panel on Climate Change, Oliver Wyman analysis

» **Current commitments fall short of what is required.**
Global warming is likely to exceed 1.5°C between 2030 and 2052 if it continues to increase at the current rate.

» **The path to achieving net zero is narrowing.**
To reach net zero by 2050, we need to work on halving global GHG emissions by 2030.

» **Achieving net zero is an exceptionally ambitious target.**
The scale and pace of transformation required is unprecedented in human history. Countries and businesses will need to be bold in their aspirations and to speed up implementation of their commitments, which currently fall short of what is required.

Our commitment to net zero is grounded in the realities of the region where we operate

- **Southeast Asia is one of the most vulnerable regions to climate change.** Southeast Asia is facing stark consequences – rising sea levels, heat waves, droughts and increasingly severe rainstorms and floods. The region faces a risk of losing more than 35% of its gross domestic product (GDP) by 2050.

- **We must consider the just transition of the region.** Environmental commitments must also integrate energy security, economic growth as well as economic and social equity and equality. Southeast Asia has been reliant on fossil fuels such as thermal coal to drive massive economic expansion, urbanisation and industrialisation in the past two decades, and the shift towards decarbonisation can result in trade-offs with real-life consequences.

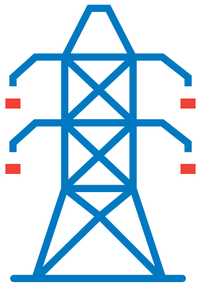
- **Southeast Asia will likely experience greater challenges on the net zero journey.** We recognise that, while the region will benefit from technological advances and solutions on the decarbonisation journey, cost may be a limiting factor on widespread adoption.

- **We have based our targets on regional pathways.** While we are guided by the science in setting our net zero targets and aligning with global net zero models, we have stayed pragmatic and where possible, extracted regional pathways that represent the fair contributions of our key markets.

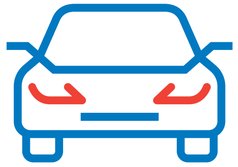
UOB's commitment to net zero demonstrates our strong belief in a just transition that continues to support economic growth and improve energy access across the diverse economies in the region.

Net zero portfolio alignment: Six sectors were chosen based on materiality for analysis on decarbonisation pathways

ENERGY



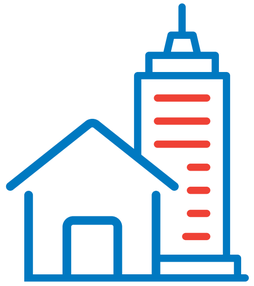
Power



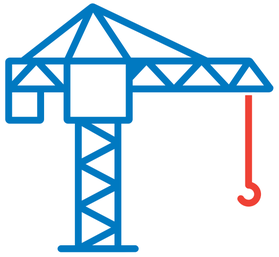
Automotive

Oil and Gas (O&G)

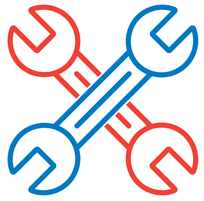
BUILT ENVIRONMENT



Real Estate



Construction



Steel

Principles for prioritising sectors

1 Emissions materiality

Focus on "brown" sectors with highest GHG emissions and criticality for achieving climate goals

2 Sector abatement horizon

Focus on sectors with largest expected decline in GHG emissions in coming years

3 Portfolio materiality

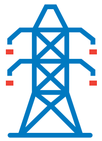
Cover sectors representing a significant portion of UOB book, where the Bank has greatest potential to effect change

~60% of our corporate lending portfolio

Dependencies and interdependencies

Our focus sectors are interdependent in the pursuit of zero GHG emissions. Greening the energy system is a key enabler to decarbonising sectors such as automotive, real estate, construction and steel, alongside catalysing the development and uptake of lower-emitting technologies within the respective sectors.

Cross-cutting dependency



Power

Transformation of energy infrastructure to scale up the use of renewables to support decarbonisation in other sectors.

Investments and technology innovation needed for renewable energy projects to address supply intermittencies (for instance deployment of energy storage technologies and upgrading of transmission and distribution infrastructure).

Key sectoral dependencies

Automotive

Regulatory push to scale up charging infrastructure for electric vehicles (EVs).

Availability of low-carbon electricity in lieu of fossil fuels.

Real Estate

Development and adoption of standards to address embodied emissions generated from building materials and construction process.

Continued efforts of our clients to improve the energy efficiency of their buildings.

Construction

Availability of electric-powered equipment, such as alternatives to heavy-duty trucks and diesel generators.

Greening of power supply for off-grid construction projects.

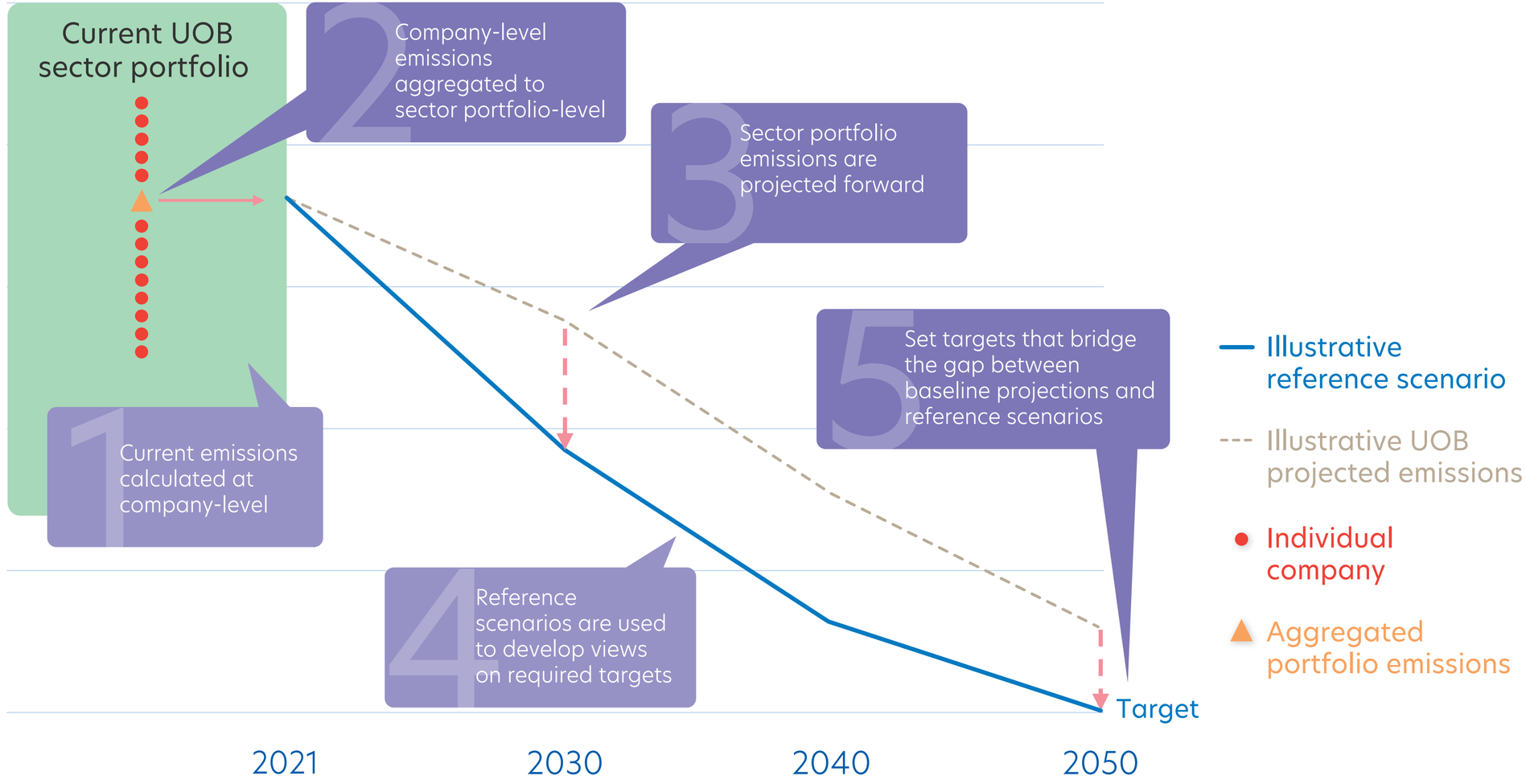
Steel

Industry-wide breakthroughs and regulatory push to scale up and reduce the cost of lower-emitting technologies.

Net zero portfolio alignment: Analyse client emissions by sector and benchmark against net zero reference scenarios

Example sector-level emissions pathway

MT CO_2 / sector unit, 2020 – 2050F



UOB net zero targets – Energy ecosystem

Why is this ecosystem material?

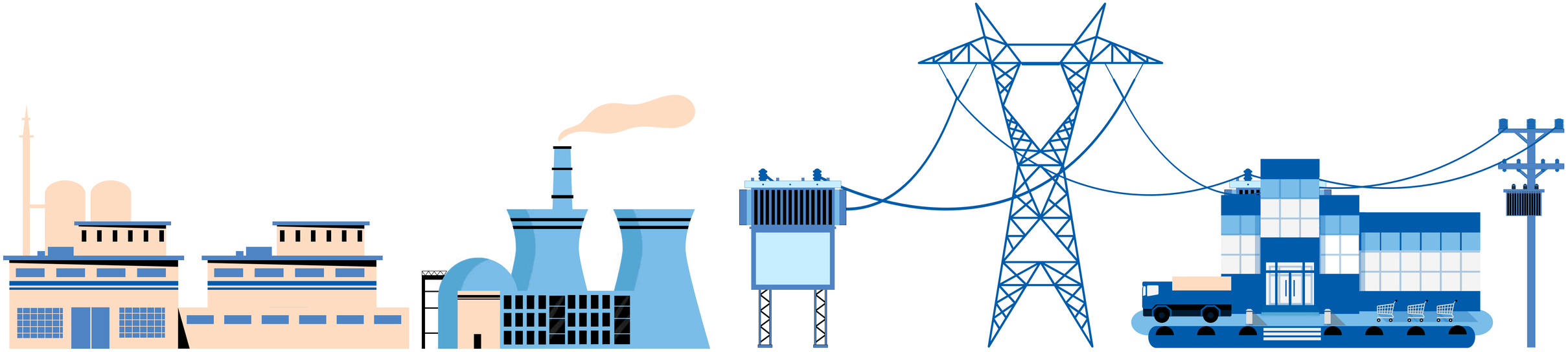
Reducing emissions from the burning of fossil fuels is central to addressing climate change. Burning of fossil fuels represents 73% of all global CO_2 emissions. The use of fossil fuels in power generation and transportation generates the largest share of GHG emissions.

The ASEAN context

Southeast Asia is a “middle income” region, with total energy consumption projected to rise 38% between 2020 and 2030 in tandem with economic development and a growing middle class. **The region’s primary energy comes from fossil fuels such as coal, oil, and natural gas.**

Our sectoral commitments

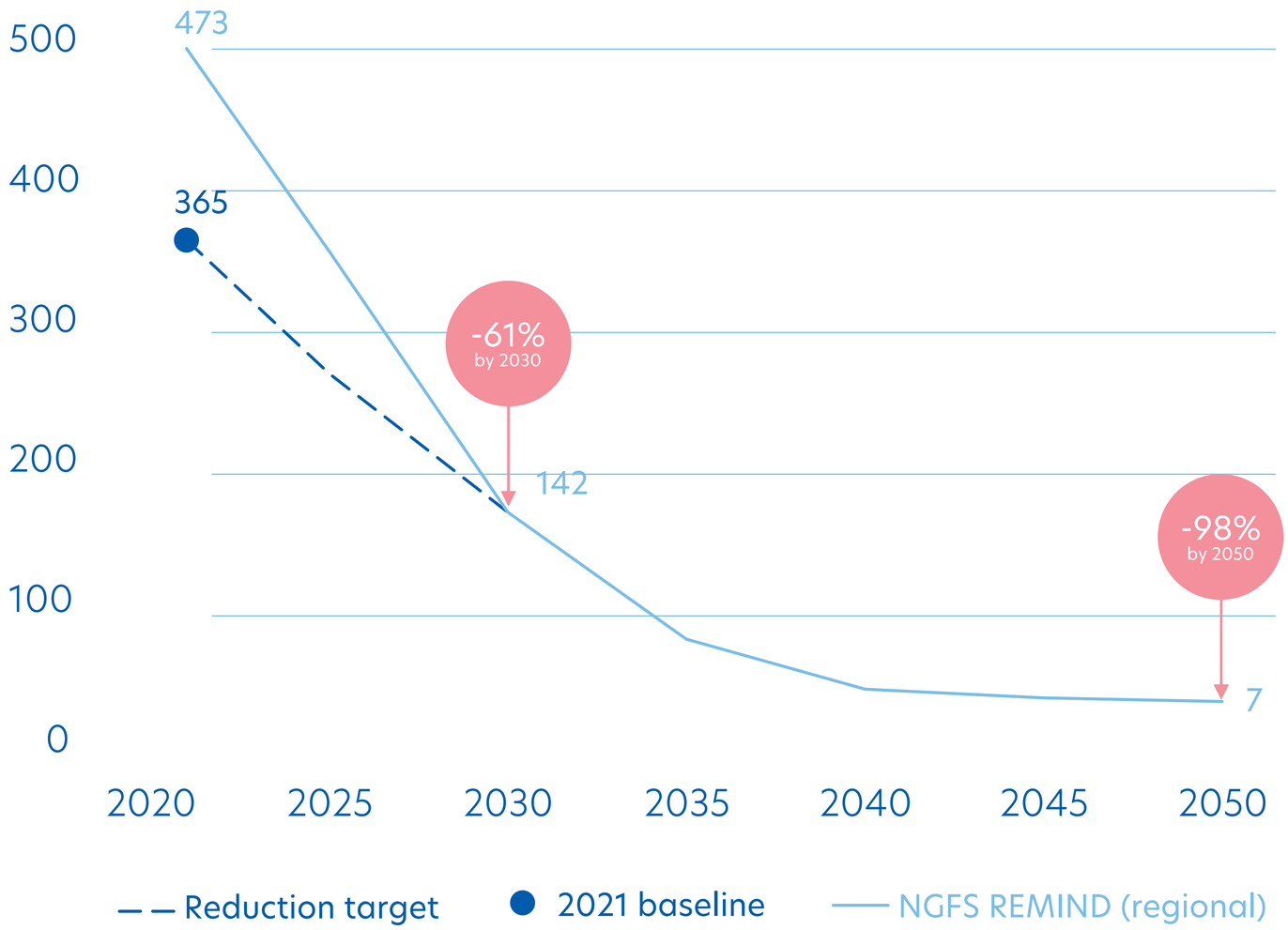
We have established emissions reduction targets to support **end-use decarbonisation** within the energy sector (power and automotive) and are making sectoral commitments to **limit the expansion of fossil fuel supply** (O&G and coal).



UOB net zero targets – Energy ecosystem

Power sector emissions baseline and targets

$kgCO_2/MWh$



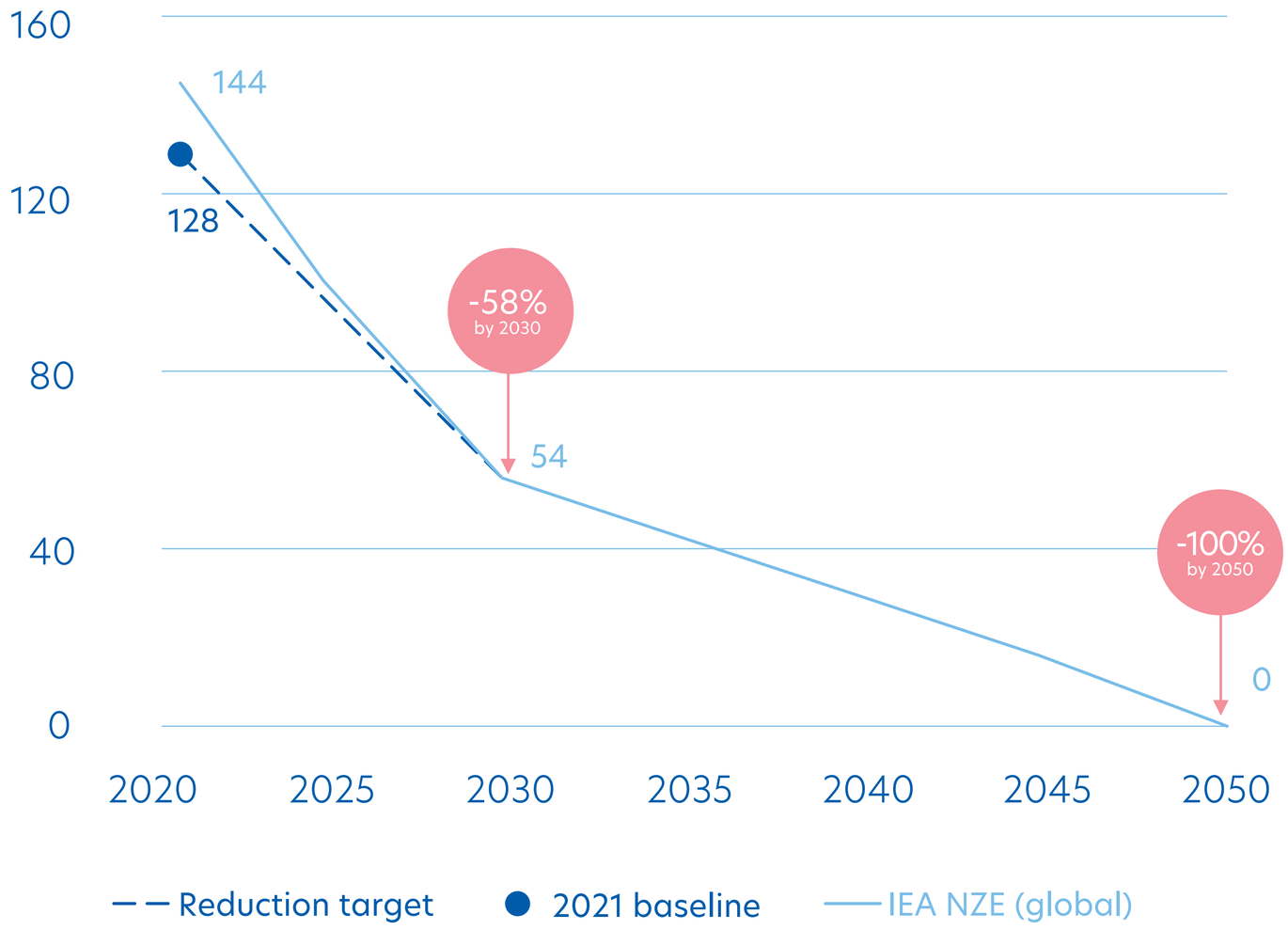
Power generation – Major user of coal and natural gas

- Electricity production in ASEAN set to triple. Share of fossil fuels under the projected net zero scenario to decrease from 72% in 2020 to 2% in 2050.
- Power transition will be gradual in emerging economies, and faster in developed countries.
- **We aim to reduce our financed emissions by 61% in 2030 and to reach net zero by 2050.**
  To achieve this, we will:
  - Increase our financing to support grid decarbonisation focusing on renewables;
  - Deliver on our commitment to not finance any new thermal coal developments; and
  - Refinance out of our existing thermal coal power exposure at the earliest opportunity.

UOB net zero targets – Energy ecosystem

Automotive sector emissions baseline and targets

gCO_2/vehicle-km



Automotive – Major user of oil

- Demand for transportation driven by growing middle class in ASEAN.
- Sales of electric vehicles projected to rise from 4% in 2020 to 65% in 2030, and further to 100% by 2050 under a net zero scenario.
- **We aim to reduce our emissions intensity by 58% in 2030 and to reach net zero by 2050.**
  To achieve this, we will:
  - Encourage our clients to adopt net zero targets, adapt their businesses and secure EV supply chains; and
  - Grow our portfolio in EV-focused business activities.

UOB net zero targets – Energy ecosystem

Our sectoral commitments

Oil & Gas

We commit to no new project financing for upstream O&G projects approved for development after 2022.

- Commitment is in line with calls from the IPCC, IEA and NGFS that the world must cease development of new fossil fuel resources.

Coal

We commit to exit financing for the thermal coal sector by 2039, as an enhancement to our existing prohibitions on new project financing of greenfield or expansion of coal-fired power plants and thermal coal mines.

- We will remain guided by the science towards a path to net zero should countries and businesses act to adopt mitigating technology or solutions for carbon neutrality by 2050, in support of a just transition.

UOB net zero targets – Built Environment ecosystem

Why is this ecosystem material?

The built environment is responsible for 39% of global energy-related carbon emissions — 28% from operational emissions and 11% from the use of materials and construction activities.

The ASEAN context

Southeast Asia is experiencing an urbanisation trend. Subsequently, **the demand for electricity as a share of energy demand in buildings has increased accordingly.** Rising household income also translates into higher appliance ownership and demand for cooling. **The energy demand from households is projected to increase by 15% in 2030 and 60% in 2050.**

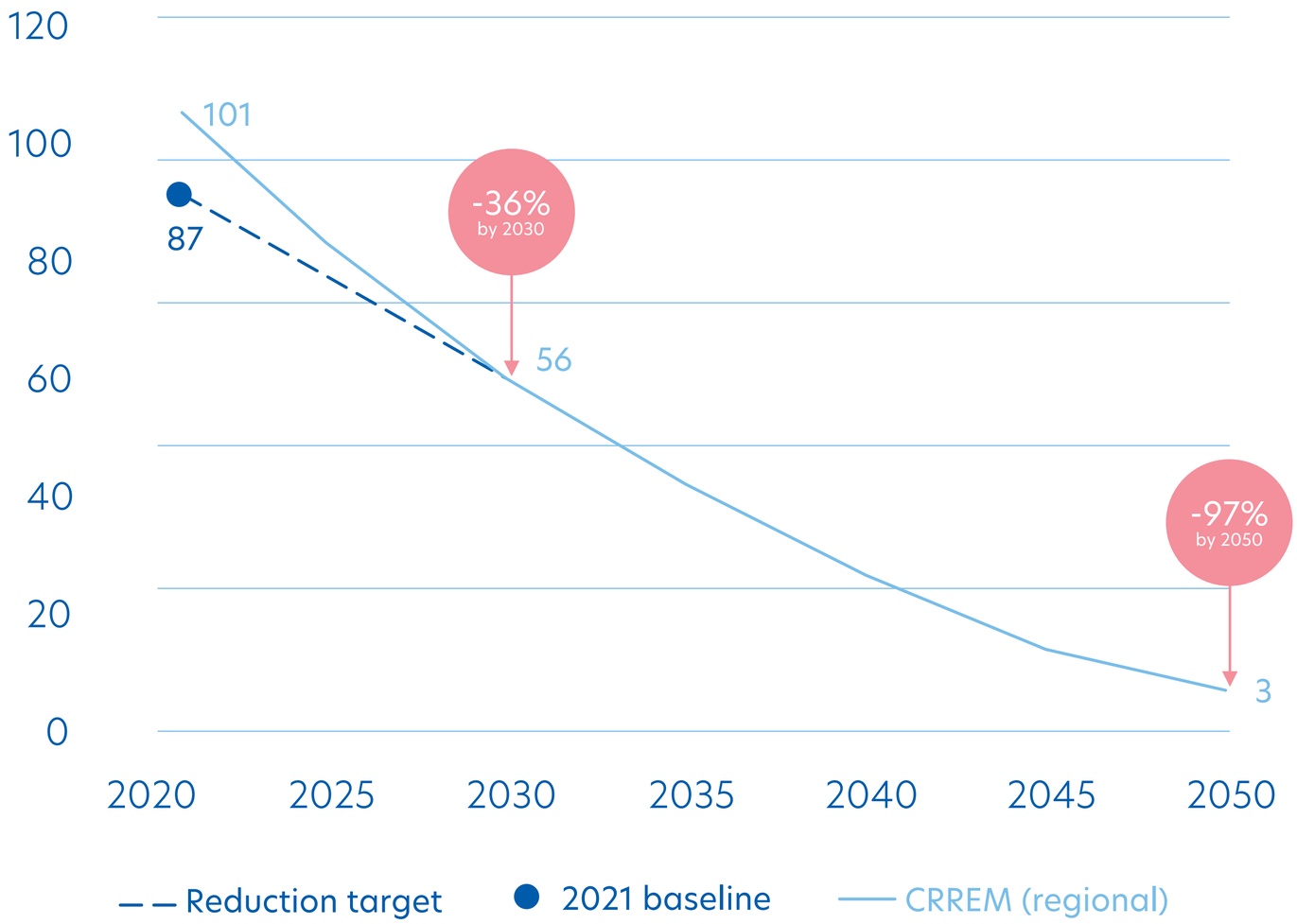
Our sectoral commitments

We have established emissions reduction targets **across the value chain** within the built environment ecosystem.

UOB net zero targets – Built Environment ecosystem

Real estate sector emissions baseline and targets

$kgCO_2/m^2$



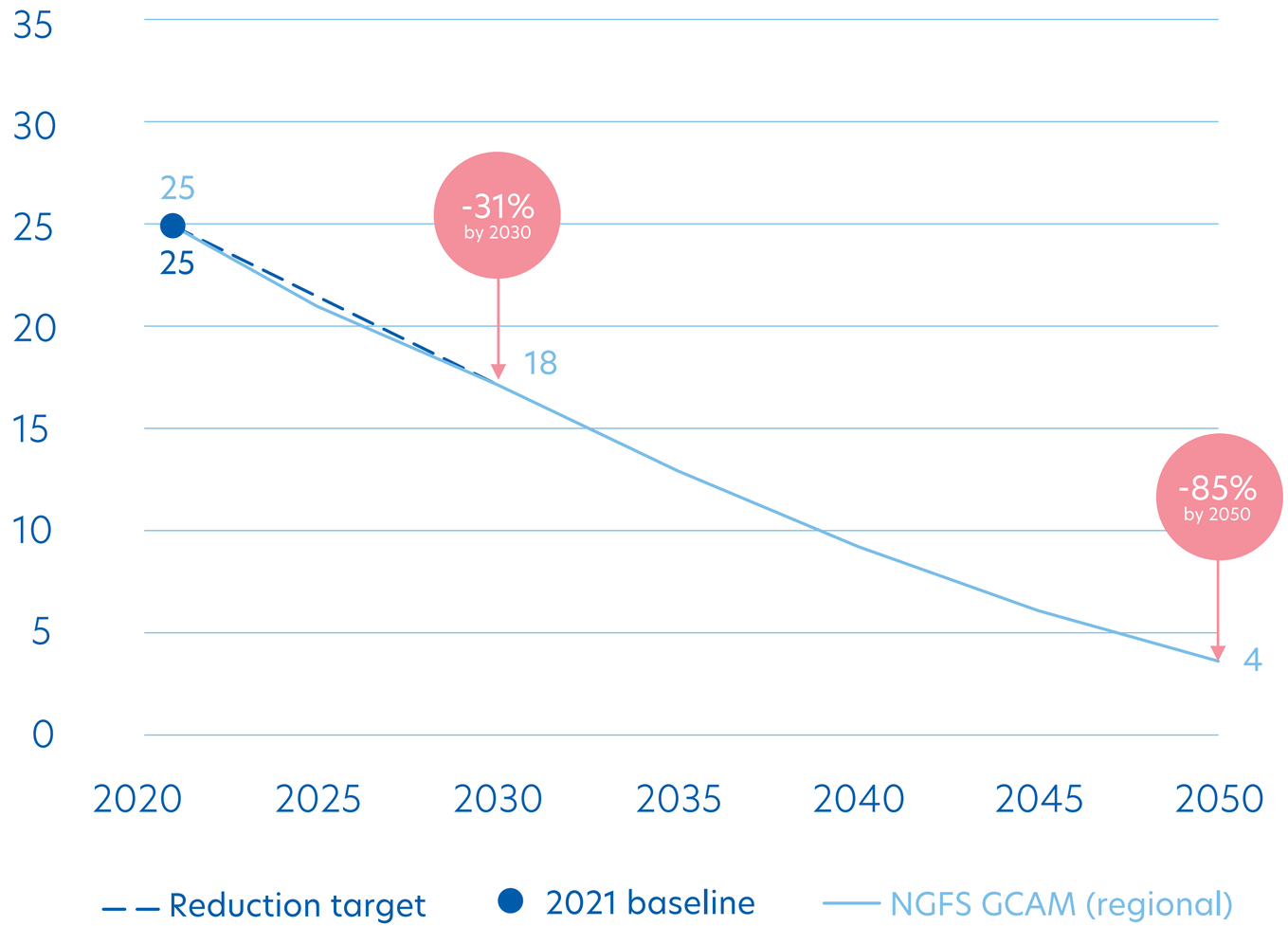
Real estate – Emissions generated directly (through burning of fossil fuels) or indirectly (through electricity consumption)

- There is pressure to continue improving energy efficiency through retrofitting and the use of smart technologies. However, decarbonisation within the real estate sector is highly dependent on progress made to phase out fossil fuels in electricity generation.
- **We aim to reduce our emissions by 36% in 2030, and to reach net zero by 2050.**
  To achieve this, we will direct our financing towards:
  - More energy-efficient buildings, referencing green building certification schemes; and
  - On-site energy efficiency improvements and renewable energy capacity installations.

UOB net zero targets – Built Environment ecosystem

Construction sector emissions baseline and targets

tCO_2/S$ million



Construction – Construction and demolition activities are parts of the value chain most responsible for carbon emissions

- **First to market with a pathway for the construction sector.** Our model, constructed bottom-up using the NGFS GCAM model, reflects the regional view of our markets. This model is consistent with continued GDP growth and improved living standards for middle-income countries. Decarbonisation occurs mainly via renewables growth and diesel truck use peaking by 2035.

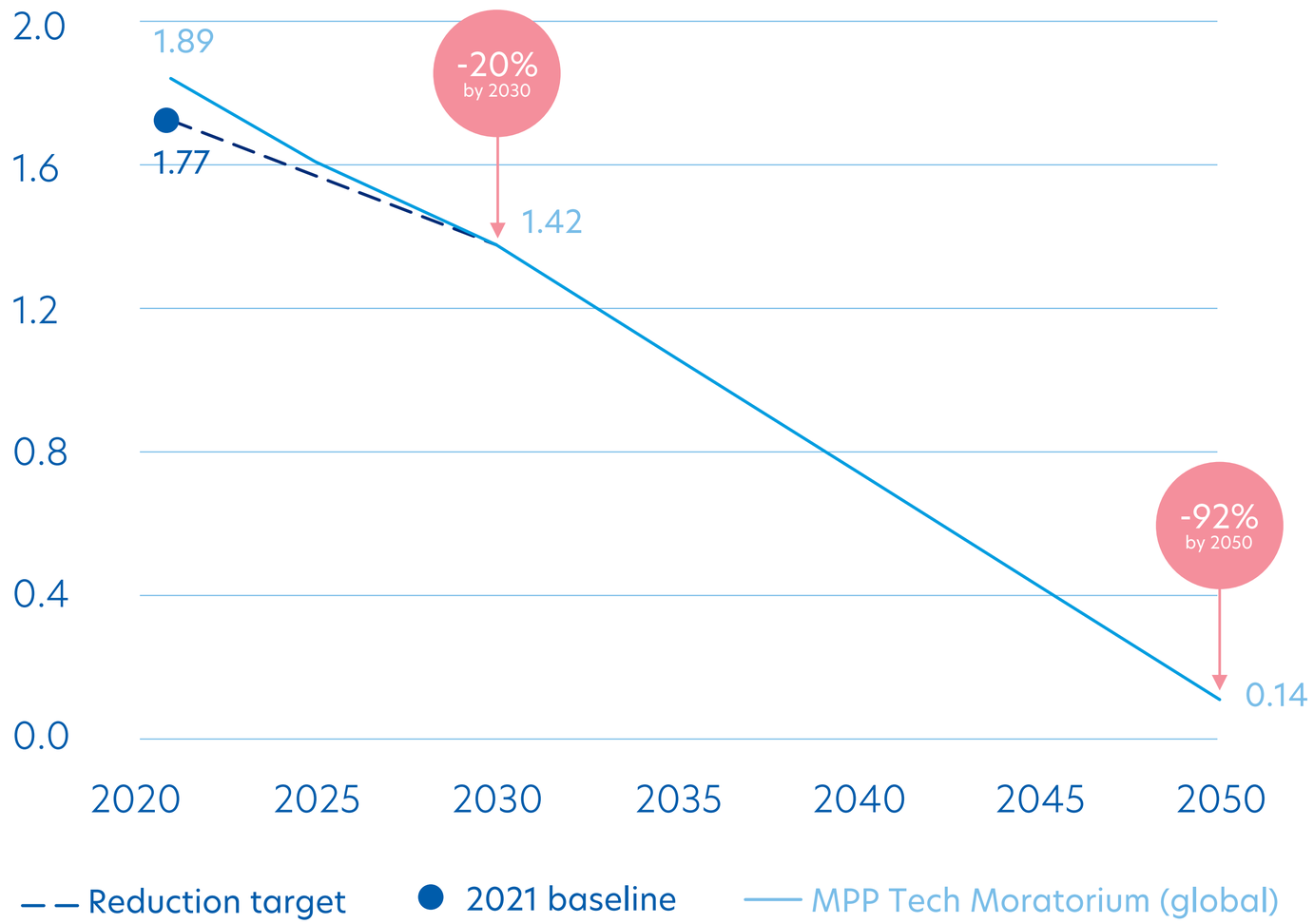
- **We aim to reduce our emissions by 31% in 2030 and by 85% in 2050.**

  To achieve this, we will:

  - Work with our clients to establish transition plans, support the electrification of site power supplies and equipment/plants, and to assess/finance new and novel technologies.

UOB net zero targets – Built Environment ecosystem

Steel sector emissions baseline and targets
tCO_2/tonne

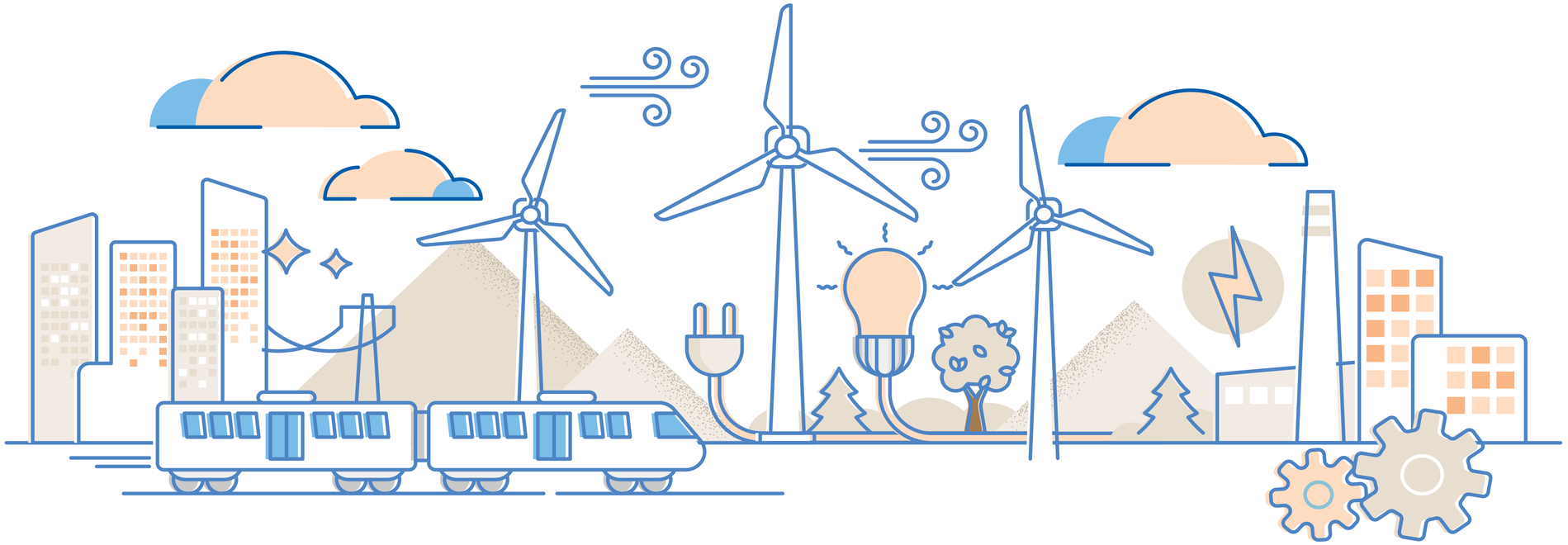


Steel – Foundational material in buildings and infrastructure, responsible for ~8% of global carbon emissions

- New technologies such as CCUS and green hydrogen are expected to significantly reduce emissions intensity. Unfortunately, significant advances in the viability and cost of these technologies are required. We expect these emissions technologies to be meaningfully adopted in steel production from 2030 onwards.

- **We aim to decline our emissions by 20% in 2030 and 92% in 2050 respectively.**
  To achieve this, we will:
  - Support our clients to shift to more efficient production methods and improvements in plant efficiency; and
  - Support our clients in their research and development of new technologies.

Achieving net zero will require collective efforts from multiple stakeholders



- Strong policy responses and sectoral decarbonisation strategies or roadmaps from countries
- Incentives and investments from governments
- Financing support from the private sector
- Technological solutions from the scientific and research community
- Credible decarbonisation commitments from corporates
- Demand for low carbon solutions from customers

Thank You

Technical glossary

Network for Greening the Financial System (NGFS)	The NGFS is a network of 114 central banks and financial supervisors that aims to accelerate the scaling up of green finance and to develop recommendations for central banks' role for climate change. The NGFS has produced different Integrated Assessment Models (IAMs), including GCAM and REMIND models.
NGFS GCAM	The NGFS GCAM is a global IAM that is produced by the Pacific Northwest National Laboratories (PNNL) and the University of Maryland. It represents the behaviour of and complex interactions between systems. The NGFS GCAM model is aimed at 1.5°C warming by 2050 and is classified by GFANZ as having high risk of overshoot.
NGFS REMIND	The NGFS REMIND is an IAM that is produced by the Potsdam Institute of Climate Impact Research. It incorporates the economy, the climate system, and a detailed representation of the energy sector. The NGFS REMIND model is aligned to 1.5°C warming at the end of the century, with limited risk of overshoot.
Carbon Risk Real Estate Monitor (CRREM)	The CRREM is a European Union-funded initiative for operational decarbonisation of real estate assets, and has developed a science-based decarbonisation pathway aligned with the Paris Agreement climate goals to limit the global temperature rise to 1.5°C.
International Energy Agency (IEA)	The IEA is an intergovernmental organisation providing policy recommendations and analysis on the entire global energy system.
IEA Net Zero Energy Emissions by 2050 (NZE)	The IEA NZE scenario is consistent with limiting the global temperature rise to 1.5°C without overshoot. The global energy sector will achieve net zero emissions by 2050, with advanced economies reaching net zero in advance of others.
Mission Possible Partnership (MPP)	The MPP is an alliance focused on decarbonisation across seven sectors, including concrete, steel, aluminium, chemicals, ships, planes and trucks.
MPP Tech Moratorium	The MPP Tech Moratorium scenario confines investments to (near-) zero emissions technologies from 2030 onwards to reach net zero.

Right By You